Aviation Investigation Final Report

Location:	Mountain Ranch, California	**Accident Number:**	WPR17FA125
Date & Time:	June 9, 2017, 14:30 Local	**Registration:**	N3717Q
Aircraft:	Beech 95 C55	**Aircraft Damage:**	Destroyed
Defining Event:	VFR encounter with IMC	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The instrument-rated commercial pilot departed on a 46-nautical-mile visual flight rules (VFR) flight in the multiengine airplane. Radar data indicated that, as the airplane approached the destination airport at an altitude about 500 ft above ground level, it turned northwest and climbed and appeared to be heading toward a nearby airport. The airplane then entered a right turning descent. The final radar target associated with the airplane was at 3,649 ft mean sea level (about 700 ft agl) about 1 nautical mile north of the accident site.

The pilot received two weather briefings before departing on the accident flight, the second about 45 minutes before departure. During the second briefing, the pilot was provided AIRMETs Tango and Sierra for moderate turbulence and mountain obscuration due to clouds and mist, valid for the route of flight and the area of the destination airport. The pilot was also advised during this briefing that VFR flight was not recommended.

Review of weather information revealed the presence of multiple cloud layers in the area of the accident site around the time of the accident, including scattered clouds at 1,600 ft above ground level (agl), a broken ceiling at 2,900 ft, and an overcast ceiling at 6,500 ft.

Despite the forecasts indicating marginal VFR conditions for the destination airport, the pilot chose to depart and continue into an area of low cloud ceilings and rising terrain. It is likely that, while maneuvering at low altitude, the terrain was obscured or the pilot's in-flight visibility was limited by the cloud conditions, which resulted in controlled flight into terrain.

Witness marks in the trees and damage to the airplane were consistent with a controlled flight into terrain event. The airframe and engine examination revealed no mechanical anomalies that would have precluded normal operation.

The toxicology report yielded positive findings for ethanol and for citalopram, a prescription antidepressant. It is likely that some of the ethanol was the result of postmortem production; however, due to limited tissue specimens, whether some of the ethanol was from ingestion or if it impaired the pilot could not be determined. It is unlikely that the pilot's use of citalopram resulted in impairment, but whether the pilot was impaired by the effects of depression could not be determined. Additionally, due to the extent of injury, autopsy was unable to determine if the pilot had any potentially impairing natural disease.

Through a review of the pilot's FAA certified medical information, it was determined that the pilot was instrument rated. However, the pilot's logbook was not available, and investigators were not able to determine the pilots instrument currency.

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 rules flight into instrument meteorological conditions and mountain obscuration that resulted in controlled flight into trees and terrain.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Below VFR minima - Decision related to condition
Environmental issues	Below VFR minima - Effect on operation
Environmental issues	Obscuration - Response/compensation
Environmental issues	Mountainous/hilly terrain - Contributed to outcome
Aircraft	Altitude - Not attained/maintained

Factual Information

History of Flight

Enroute	VFR encounter with IMC (Defining event)
Enroute	Controlled flight into terr/obj (CFIT)

On June 9, 2017, at 1430 Pacific daylight time, a Beech 95-C55, N3717Q, impact heavily forested terrain near Mountain Ranch, California. The commercial pilot was fatally injured, and the airplane was destroyed. The pilot/owner operated the airplane as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Marginal visual meteorological conditions prevailed in the area of the accident site and no flight plan was filed for the flight, which departed Del Mar Farms Airport (CN99), Patterson, California, at 1348 and was destined for Columbia Airport (O22), Columbia, California.

Radar track data for the accident flight indicated that the airplane departed CN99 about 1348 and flew directly toward O22, located about 46 nautical miles (nm) northeast. The airplane climbed and maintained an altitude of 2,600 ft mean sea level (msl) until it was about 4 nm from O22, which was located at an elevation about 2,120 ft msl. The data indicated that, at that point, the airplane began a climb, then turned northwest toward Calaveras County Airport/Maury Rasmussen Field (CPU), San Andreas, California, about 13 nm northwest of O22. The airplane climbed to 4,000 ft msl before entering a descent. The airplane continued in a right turn and data was lost at 1413:29 with the airplane on a northeast heading at an altitude of 3,649 ft msl about 1 nm north of the accident site. The pilot was not in contact with air traffic control during the accident flight.

An Alert Notice (ALNOT) was issued; the airplane was subsequently located by the Calaveras County Sheriff's Department on June 13, 2017.

Pilot Information

Certificate:	Commercial	**Age:**	75,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 5, 2017
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	5316 hours (Total, all aircraft), 0 hours (Total, this make and model)		

The pilot held a commercial pilot certificate with ratings for airplane single- and multiengine land and instrument airplane. His most recent Federal Aviation Administration (FAA) second-class medical

certificate was issued on April 5, 2017, with the limitation that he must wear corrective lenses for near and distant vision. On the application for that medical certificate, the pilot reported 5,136 total hours of flight experience with 70 hours in the previous six months.

The pilot's personal logbook was not available for review, as such the pilot's instrument currency was not determined.

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3717Q
Model/Series:	95 C55 UNDESIGNAT	**Aircraft Category:**	Airplane
Year of Manufacture:	1967	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TE-298
Landing Gear Type:	Tricycle	**Seats:**	
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental Motors
ELT:		**Engine Model/Series:**	IO-520-SER
Registered Owner:		**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

According to the airplane's logbooks, the last annual inspection was completed on June 29, 2016, at a total airframe time of 3,920.9 hours. The left and right oil filters were dated January 26, 2017, with 3,937.3 total airframe hours. On March 3, 2017, the left main fuel cell and left auxiliary fuel cell were replaced. At that time, the logbook entry indicated 3,937.3 total airframe hours.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCPU,1325 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	13:55 Local	**Direction from Accident Site:**	231°
Lowest Cloud Condition:	Scattered / 800 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 2400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/ Unknown
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/ Unknown
Altimeter Setting:	29.98 inches Hg	**Temperature/Dew Point:**	18°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	PATTERSON, CA (CN99)	**Type of Flight Plan Filed:**	None
Destination:	COLUMBIA, CA (O22)	**Type of Clearance:**	VFR
Departure Time:	22:27 Local	**Type of Airspace:**	

The pilot received two weather briefings on the day of the accident. The first one was at 0457 and was an abbreviated briefing in which the pilot requested the current weather and Terminal Aerodrome Forecast (TAF), and winds aloft at 6,000 ft for Stockton Metropolitan Airport (SCK), Stockton, California; SCK was approximately 50 miles southwest of the accident site.

During the second weather briefing, at 1304, the pilot was provided with AIRMET advisories Tango and Sierra, as well as the current O22 METAR, winds aloft at 6,000 ft, and was advised that visual flight rules (VFR) flight was not recommended.

AIRMET advisories Tango and Sierra were issued at 1345 and valid at the time of the accident. AIRMETs Tango and Sierra forecast moderate turbulence below 18,000 ft and mountain obscuration conditions due to clouds and mist. Similar conditions existed for the accident site and along the intended route of flight.

Weather observations from area airports around the time of the accident indicated marginal visual flight rules (MVFR) to VFR conditions due to cloud ceilings, which varied between 1,000 ft and 3,300 ft above ground level (agl) (2,500 ft and 4,200 ft msl in the mountainous terrain along the flight path).

CPU, the closest official weather observation point, located 12 miles southwest of the accident site. The 1355 observation included wind from 060° at 6 knots, 10 miles visibility, scattered clouds at 900 ft agl, broken ceiling at 1,600 ft agl, overcast skies at 3,300 ft. agl, temperature 18°C, dew point 15°C, and an altimeter setting of 29.95 inches of mercury. The 1415 observation included wind from 020° at 3 knots, 10 miles visibility, scattered clouds at 900 ft agl, broken ceiling at 1,600 ft agl, overcast skies at 2,700 ft agl, temperature 18°C, and dew point 15°C, and an altimeter setting of 29.95 inches of mercury. The 1435 weather observation included wind from 330° at 3 knots, 10 miles visibility, scattered clouds at 1,600 ft, broken clouds at 2,900 ft, and overcast clouds at 6,500 ft, temperature 20°C, dew point 15°C, and an altimeter setting of 29.94 inches of mercury.

O22, the next closest official weather observation point, located 15 miles south of the accident site. The 1355 observation included wind from 240° at 3 knots, scattered clouds at 800 ft agl, a broken ceiling at 2,400 ft agl, overcast skies at 3,300 ft agl, temperature 18°C, dew point 14°C, and an altimeter setting of 29.99 inches of mercury. The 1435 observation included calm wind, scattered clouds at 1,300 ft agl, an overcast ceiling at 2,200 ft agl, temperature 18°C, dew point 14°C, and an altimeter setting of 29.98 inches of mercury.

The Area Forecast issued at 1245 and valid at the accident time forecast a broken ceiling at 3,500 ft to 5,000 ft msl with broken skies at 8,000 to 10,000 ft msl, and cloud tops at 18,000 ft. Isolated light rain showers were also forecast.

Airport Information

Airport:	COLUMBIA O22	**Runway Surface Type:**	
Airport Elevation:	2120 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	38.830543,-122.710815(est)

The airplane came to rest inverted on a southerly heading on a 65° slope at an elevation of 2,950 ft msl about 15 miles north of O22. The wreckage was in a forested and hilly area with fragmented pieces throughout the 500 ft debris path, which culminated at the top of an adjacent hill. The fuselage (instrument panel, seats, and cabin area), right engine, and portions of the right wing were identified near the top of a hill; the debris field extended downhill to the left wing and left engine. Several treetops between the two hills exhibited signatures consistent with impact. Vegetation in the immediate vicinity of the empennage and both wings was brown and discolored consistent with fuel blight.

Responding law enforcement reported a strong smell of fuel at the accident site.

The right wing had fragmented into multiple pieces; however, the right aileron and flap were present. The aileron control cable exhibited signatures consistent with overload. The right propeller assembly separated from the engine at the propeller flange, which was embedded in the side of the hill. The propeller assembly included all three propeller blades; the blades exhibited S-bending and torsional

twisting. Both magnetos separated from the engine due to impact damage. The P-leads also sustained impact damage. The outboard 3 ft of the right wing was located about 10 ft east of the left wing and engine.

The left propeller assembly separated from the engine and was embedded in the ground downhill of the fuselage and uphill from the left engine. The propeller assembly included all three propeller blades, which exhibited S-bending and torsional twisting.

The empennage, which included portions of the horizontal and vertical stabilizers, rudder, and elevators was located downhill from the fuselage. The flight control cables, pulleys, and control tubes were continuous to the forward empennage. Separation signatures were consistent with overload.

The left engine and fragments of the left wing were located at the bottom of a hill adjacent to a dry creek bed. The left aileron and left flap were identified with leading edge skin damage that displayed accordion crushing from leading to trailing edge. The left main landing gear was found under the left flap assembly. The left engine came to rest inverted and exhibited impact damage with dirt and vegetation embedded in the engine. The exhaust tubing was separated and crushed. The outboard 3 ft of the left wing was located at the top of the adjacent hill.

The flap actuator measurement was consistent with a flaps-retracted position. The landing gear was consistent with a gear-retracted position.

Examination of the airframe revealed no mechanical anomalies that would have precluded normal operation.

Right Engine

A visual examination of the right engine revealed no obvious holes in the case. Both magnetos separated from the engine. The right magneto sustained impact damage and a functional check was not possible; the magneto was disassembled with no anomalies identified with the internal components. The left magneto remained intact and sparked at all leads when manually rotated.

The ignition harness sustained damage to all the leads. The spark plugs sustained impact damage and the bottom spark plugs were removed. The Nos. 4- and 6-cylinders top spark plug center electrodes were missing. According to the Champion Check-a-Plug Chart, the spark plugs exhibited a normal wear pattern. There were no signs of lead or carbon fouling of the electrodes.

Borescope examination of the cylinders revealed no stuck intake or exhaust valves, and operating signatures appeared normal. There was organic matter (dirt, tree fragments, and rocks) in the cylinders. The vacuum pump vanes remained intact and coated with residual oil. The drive shaft was manually manipulated and rotated without binding.

Left Engine

A visual examination of the left engine revealed no obvious holes in the case. Both magnetos separated from the engine; the right magneto was heavily impact damaged and the left magneto remained intact.

The ignition harness sustained damage to all the leads. The spark plugs were removed, and normal operating signatures were observed. Borescope examination of the cylinders revealed no stuck intake or exhaust valves and operating signatures appeared normal. The vacuum pump vanes were intact and coated with residual oil. The drive coupling had separated; however, it was reinserted, manually manipulated and rotated without binding.

Additional Information

Controlled Flight into Terrain (CFIT) Accidents

The FAA defines a Controlled Flight into Terrain (CFIT) accident as one that "occurs when an airworthy aircraft is flown, under the control of a qualified pilot, into terrain … with inadequate awareness on the part of the pilot of the impending collision." In Aril 2003, the FAA published Advisory Circular (AC) 61-134, entitled "GENERAL AVIATION CONTROLLED FLIGHT INTO TERRAIN AWARENESS." The AC highlights the inherent risk that CFIT poses for general aviation (GA) pilots.

The AC defined "situational awareness" as the pilot's knowledge "of what is happening around the aircraft at all times in both the vertical and horizontal planes. This includes the ability to project the near-term status and position of the aircraft in relation to other aircraft, terrain, and other potential hazards."

The AC stated that "in visual meteorological conditions, the pilot in command (PIC) is responsible for terrain and obstacle clearance (See and Avoid)…" and identified several CFIT risks, including:

- Loss of situational awareness

- Breakdown in good aeronautical decision making

- Failure to comply with appropriate regulations

- Failure to comply with minimum safe altitudes

The AC also cited extracts from the FAA Aeronautical Information Manual (AIM), that listed frequent pilot-involved causal factors for general aviation accidents and stated that many of those same factors applied to CFIT accidents. These factors included:

- Inadequate preflight preparation and/or planning

- Failure to see and avoid objects or obstructions

- Improper in-flight decisions or planning

The AC further stated that "VFR flight operations may be conducted at mountainous terrain with the application of sound judgment and common sense. Proper pre-flight planning, giving ample consideration to…knowledge of the terrain and pilot experience in mountain flying are prerequisites for safety of flight. Continuous visual contact with the surface and obstructions is a major concern and flight

operations under an overcast or in the vicinity of clouds should be approached with extreme caution."

NTSB Safety Alert regarding CFIT Accidents

In January 2008, the NTSB issued a Safety Alert (SA) entitled "Controlled Flight Into Terrain in Visual Conditions." The SA stated that recent investigations identified several accidents that involved CFIT by pilots operating under visual flight conditions, that the pilots appeared unaware that the aircraft were in danger, and that increased altitude awareness and better preflight planning likely would have prevented the accidents.

The SA suggested that pilots could avoid becoming involved in a similar accident by accomplishing several actions, including:

- Proper preflight planning

- Obtaining flight route terrain familiarization via sectional charts or other topographic references

- Maintaining awareness of visual limitations for operations in remote areas

- Following IFR [instrument flight rules] practices until well above surrounding terrain

- Advising ATC about potential inability to avoid terrain

- Employing a GPS-based terrain awareness unit

Medical and Pathological Information

The Forensic Consultant's Medical Group, Inc., Stockton, California, performed the autopsy of the pilot. The cause of death was reported as multiple blunt force injuries; the autopsy was limited due to the extent of injury.

Toxicology testing performed at the FAA Forensic Sciences Laboratory identified 93 mg/hg ethanol (equivalent to 0.093 gm/dl), isopropanol, N-Butanol, and citalopram in muscle tissue.

The detected ethanol could have been from ingestion of alcohol or a byproduct of microbial activity after death. The pilot reported on his most recent application for a medical certificate that he had high blood pressure that was controlled without medications and reported no other medications. Citalopram, marketed as Celexa, is a prescription antidepressant not known to directly cause sleepiness or other impairing symptoms. No further records from the pilot's treating physician were obtained.

Administrative Information

Investigator In Charge (IIC):	Cornejo, Tealeye
Additional Participating Persons:	Cholena Devlin; Federal Aviation Administration; Sacramento, CA Peter Basilie; Textron Aviation ; Wichita, KS Nicole Charnon; Continental Motors Inc.; Mobile, AL
Original Publish Date:	November 6, 2019
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=95367