Aviation Investigation Final Report

Location:	Fancy Gap, Virginia	**Accident Number:**	ERA19FA003
Date & Time:	October 6, 2018, 12:15 Local	**Registration:**	N38811
Aircraft:	Piper J3C	**Aircraft Damage:**	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The non-instrument-rated private pilot was conducting a visual flight rules (VFR) cross-country flight; instrument meteorological conditions (IMC) were forecast along the route, and the airplane was not equipped for flight in IMC. The pilot had entered a flight plan in the ForeFlight application that noted a cruise altitude of 2,100 ft mean sea level (msl) for the route of flight. Further, the ForeFlight application displayed a terrain cross-section overview which noted that the highest point along the route was 3,800 ft msl and indicated that the planned route and altitude for the flight conflicted with the rising terrain. About 1 hour 15 minutes after departure, the airplane impacted a mountain at 2,766 ft, about 150 ft below the summit. The accident site was about 36 miles from the destination airport along a direct route between the departure and destination airports. Accident site evidence and impact damage to the airplane were indicative of a high-speed impact, with a wreckage path that was oriented roughly opposite to the intended route of flight. Examination of the wreckage revealed no anomalies with the airplane that would have precluded normal operation before the accident.

Weather observations near the departure and destination airports, AIRMETs, and visible satellite weather images all indicated that the pilot likely encountered IMC en route, and based on the direction of the wreckage path relative to the intended route of flight, was likely maneuvering to return to visual meteorological conditions when the airplane collided with terrain. The forecasts warning of IMC were issued prior to the pilot's departure, and while it could not be determined whether the pilot accessed these forecast materials, the flight planning application on his personal electronic device would have allowed him to view this information if an internet connection was available.

Toxicology test results showed that the pilot was taking two antidepressants, indicating that he had significant depression, which can be associated with significant cognitive degradation. The testing also detected the presence of four impairing or sedating medications. The pilot made critical errors in judgment both when he decided to undertake the flight along a route where instrument meteorological conditions were forecast, and when he elected to continue flight after encountering those conditions. It is likely that the combination of his depression and his use of multiple impairing/sedating medications contributed to the pilot's poor decision-making and therefore contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The non-instrument-rated pilot's improper decision to undertake a flight into forecast instrument meteorological conditions (IMC) and his subsequent decision to continue the flight after encountering IMC, which resulted in controlled flight into terrain. Contributing to the accident were the pilot's depression and use of impairing/sedating medications, which resulted in poor decision-making.

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	Mountainous/hilly terrain - Contributed to outcome
Personnel issues	Use of medication/drugs - Pilot
Personnel issues	(general) - Pilot

Factual Information

History of Flight

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

On October 6, 2018, about 1215 eastern daylight time, a Piper J3C-65, N38811, was substantially damaged after it impacted terrain near Fancy Gap, Virginia. The private pilot was fatally injured. Instrument meteorological conditions prevailed at the time of the accident, and no flight plan was filed for the cross-country flight, which originated from Fayette Airport (WV59), Fayetteville, West Virginia, about 1100. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91 and was destined for Twin Lakes Airport (8A7), Mocksville, North Carolina.

According to information retrieved from one of the pilot's personal electronic devices, when the device was turned on and the ForeFlight application was started it showed that the pilot had entered a flight plan that noted "WV59 26NC 2100 FT." This indicated that the flight would depart from WV59 and fly to Booneville Airport (26NC), Booneville, North Carolina, which was about 22 nautical miles from the destination airport. The 2,100 ft indicated the planned altitude on the route of flight. Further, the ForeFlight application was displaying the map screen with a terrain cross-section overview, a "first strike" distance indicating 1 statute mile, and the highest point along the route indicating 3,800 ft mean sea level (msl), as shown in figure 1. According to ForeFlight, "first strike" was the distance "…from your origin or current position to where your first impact with terrain or an obstacle would be based on your planned altitude."

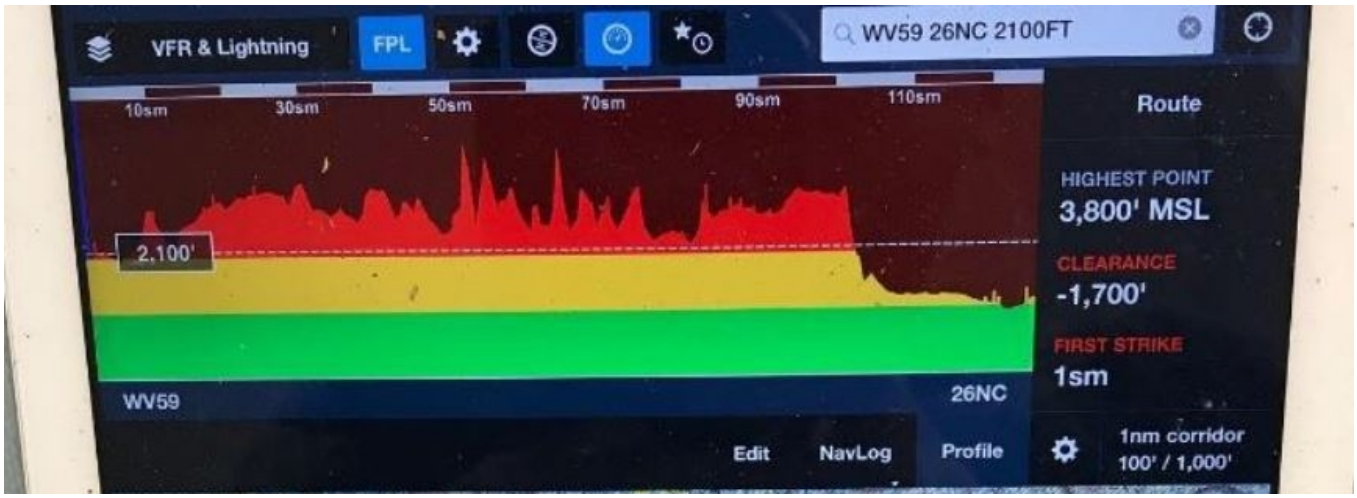

Figure 1. ForeFlight information displayed on pilot's personal electronic device.

According to a family member, the pilot left for the airport about 0900 on the day of the accident and most likely departed the airport about 1100. Later in the day, when the pilot had not contacted the family member or returned from the flight, the family member reported the pilot as overdue, and an alert notice was issued about 2220. Search and rescue crews located the airplane the next morning. The accident site was about 36 miles northwest of the destination airport in mountainous terrain.

According to an individual who worked near the accident site, the weather was "very foggy" on the day of the accident. A review of the pilot's mobile phone revealed a text message from a friend who was planning to meet the pilot after he arrived in North Carolina. The text message, which was sent at 1119, stated, "Low overcast here. Watch out for hard things. Call me wherever you land."

Pilot Information

Certificate:	Private	**Age:**	65,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Sport pilot Without waivers/limitations	**Last FAA Medical Exam:**	July 26, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

According to Federal Aviation Administration (FAA) records, the pilot held a private pilot certificate with a rating for airplane single-engine land. He did not hold an instrument rating. The pilot also held a third-class medical certificate dated July 26, 2012. The pilot's logbook was not located.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N38811
Model/Series:	J3C 65	**Aircraft Category:**	Airplane
Year of Manufacture:	1941	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	7288
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	May 10, 2018 Annual	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental Motors Inc
ELT:	C91 installed, not activated	**Engine Model/Series:**	C85-12F
Registered Owner:		**Rated Power:**	85 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

According to FAA airworthiness records, the airplane was manufactured in 1941 and was registered to the pilot in 2017. The airplane was equipped with a Continental Motors Inc. C85-12F, 85-horsepower engine that drove a fixed-pitch propeller. According to the maintenance logs, the airplane's most recent annual inspection was completed on May 10, 2018; at that time, the engine had accumulated 76.5 hours since major overhaul. The airplane was not equipped to fly in instrument meteorological conditions.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	HLX,2693 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	11:35 Local	**Direction from Accident Site:**	324°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 1200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.28 inches Hg	**Temperature/Dew Point:**	23°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Fayetteville, WV (WV59)	**Type of Flight Plan Filed:**	None
Destination:	Mocksville, NC (8A7)	**Type of Clearance:**	None
Departure Time:	11:00 Local	**Type of Airspace:**	

The 1051 recorded weather observation at Raleigh County Memorial Airport (BKW), Beckley, West

Virginia, which was 14 miles south of the departure airport, included calm wind, 10 miles visibility, clear skies, temperature 24°C, dew point 19°C; and an altimeter setting of 30.25 inches of mercury.

The 1135 recorded weather observation at Twin County Airport (HLX), Hillsville, Virginia, which was about 9 miles northwest of the accident location at an elevation of 2,693 ft msl, included wind from 220° at 7 knots, visibility 10 miles, broken clouds at 1,200 ft above ground level (agl), broken clouds at 1,700 ft agl, overcast clouds at 9,000 ft agl, temperature 23°C, dew point 21°C; and an altimeter setting of 30.28 inches of mercury.

The Mount Airy/Surry County Airport (MWK), Mount Airy, North Carolina, was located about 13 miles south-southeast of the accident site at an elevation of about 1,250 ft. The weather reported for the 1130 to 1230 period indicated unlimited visibility in unsaturated conditions at the surface and overcast clouds from 800 ft to 1,200 ft agl (2,050 ft to 2,450 ft msl).

At 1045, the National Weather Service Aviation Weather Center issued and updated AIRMET Sierra for mountain obscuration and instrument flight rules conditions for the area surrounding the accident location at the accident time. Additionally, AIRMET Sierra advised of ceilings below 1,000 ft, visibility below 3 statute miles, precipitation, and mist.

Geostationary Operational Environmental Satellite-16 visible data revealed cloudy conditions at the accident site and along the flight route to the destination.

Although it could not be confirmed if the pilot received an official weather briefing, the ForeFlight application was able to provide additional unofficial methods that, when an internet connection was available, the pilot could have utilized to make himself aware of the weather conditions he would have encountered during the flight.

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:**	36.638053,-80.707221

The accident site was at an elevation of 2,766 ft and was about 150 ft below a mountain summit. The accident site was on a 172° ground track along the route of flight between the departure and destination airports. Several trees exhibited impact scars before the location where the airplane came to rest, about 50 ft from the initial tree scar. All major components of the airplane were located near the wreckage. The debris path was oriented on a 320° heading.

The airplane came to rest in a nose-down position, the fuselage was impact damaged, and the skin was torn. The cabin was crushed aft. The header tank was breached, and a smell consistent with 100 low-lead aviation fuel was noted. Sections of the left and right wing were separated from the airframe. The right

and left wing fuel tanks were breached, and the left tank contained an undetermined amount of fuel. The empennage remained attached to the fuselage, and the skin was torn. The left and right horizontal stabilizers and elevators remained attached to the empennage and were impact damaged. The rudder remained attached to the vertical stabilizer through all attach points, and the skin was torn. Control cable continuity was confirmed from all flight control surfaces to their respective flight controls through breaks in the cable that were consistent with overload or tool cuts made by first responders.

The propeller remained attached to the flange and engine. One blade was bent aft about 20°, and the other blade exhibited tip curling. Chordwise scratching was noted on both blades, and leading-edge paint rub was also noted. Several cut tree branches, measuring between 2 and 10 inches, were noted along the debris path. All of the branches appeared to be cut at an angle of about a 45°, and several exhibited black paint transfer (the propeller was painted black).

The engine was impact-separated from the fuselage and was only attached via the throttle cable. The cowling was partially impact separated and was removed to facilitate further examination. The oil sump was impact damaged. The oil dipstick remained in the oil filler neck. The intake and exhaust systems were partially separated from the engine. All four cylinders remained attached and secured to the engine. The propeller rotated smoothly through 45° of motion and then stop when it contacted the crankcase. The propeller flange was bent by impact. Wood was noted in the No. 3 cylinder fins. When the propeller was rotated through the 45° of motion, movement was noted on the No. 1 rocker arms. The carburetor was separated and damaged by impact. It was disassembled, and no anomalies were noted.

No anomalies with the engine or airframe were discovered that would have precluded normal operation before the accident.

Medical and Pathological Information

The Office of the Chief Medical Examiner, Roanoke, Virginia, performed the autopsy on the pilot. The autopsy report indicated the pilot's cause of death was multiple blunt force injuries.

Toxicology testing performed at the FAA Forensic Science Laboratory identified no carbon monoxide or ethanol in the pilot's specimens but did identify several drugs in the pilot's specimens, as indicated below.

Bupropion and its metabolite hydroxybupropion were identified in the pilot's cavity blood and liver specimens. Bupropion is a prescription antidepressant used to treat major depression and to aid smoking cessation. It carried warnings including worsening depression, suicide, paranoia, agitation, and aggression as well as an increased risk of seizure. In addition, instructions for patients stated, "any central nervous system (CNS)-active drug like bupropion…may impair their ability to perform tasks requiring judgment or motor and cognitive skills."

Cetirizine was identified in the pilot's cardiac blood (0.185 µg/ml) and liver specimens. Cetirizine is a sedating antihistamine marketed as, among other names, Zyrtec. It carried of the following warnings: "drowsiness may occur; avoid alcoholic drinks; alcohol, sedatives, and tranquilizers may increase drowsiness; [and] be careful when driving a motor vehicle or operating machinery." The blood levels usually thought to have sedating effects were between 0.190 and 1.450 ug/ml.

Oxazepam was identified in the pilot's in cardiac blood (0.028 ug/ml) and liver specimens. Oxazepam, commonly marketed as Serax, is a prescription medication used to treat anxiety that was available as a schedule IV controlled substance. It carried the warning, "as with other CNS-acting drugs, patients should be cautioned against driving automobiles or operating dangerous machinery until it is known that they do not become drowsy or dizzy on oxazepam therapy." The blood levels usually thought to have psychoactive effects were between 0.050 and 0.200 ug/ml.

Sertraline, its metabolite desmethylsertraline, and famotidine were identified in the pilot's cardiac blood and liver specimens. Sertraline, commonly marketed as Zoloft, is an antidepressant that was generally thought not to be impairing. Famotidine, commonly marketed as Pepcid, is a heartburn treatment medication available over the counter and by prescription that was generally considered not to be impairing.

Zolpidem was identified in the pilot's cavity blood (0.028 ug/ml) and liver. Zolpidem, commonly marketed as Ambien, is a prescription sleep aid available as a schedule IV controlled substance. Because of its chemical effects and intended use, the medication is sedating. Instructions stated, "Patients should be cautioned against engaging in hazardous occupations requiring complete mental alertness or motor coordination such as operating machinery or driving a motor vehicle after ingesting the drug, including potential impairment of the performance of such activities that may occur the day following ingestion." The instructions also stated, "Patients should also be cautioned about possible combined effects with other CNS-depressant drugs. Dosage adjustments may be necessary when zolpidem tartrate was administered with such agents because of the potentially additive effects." The blood levels usually thought to be sedating were between 0.025 and 0.300 ug/ml.

Administrative Information

Investigator In Charge (IIC):	Kemner, Heidi
Additional Participating Persons:	Bruce Schummel; FAA/FSDO; Charleston, WV Michael Council; Continental Motors Inc. ; Mobile, AL
Original Publish Date:	April 20, 2020
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98418

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