Aviation Investigation Final Report

Location:	Summersville, Missouri	**Accident Number:**	CEN19FA093
Date & Time:	March 5, 2019, 22:04 Local	**Registration:**	N7369W
Aircraft:	Piper PA28	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting a multileg cross-country flight and had last refueled the airplane with 26.98 gallons of fuel about 375 miles from the accident location and about 450 miles from the destination airport. After departure from the last fuel stop, the pilot continued on the final leg of the flight in dark night conditions. Radar data consistent with the accident flight showed the airplane on course about 5,000 ft mean sea level for about 4 hours. Just before the end of the radar track, the airplane began descending, then turned north and then southeast. The airplane impacted trees and terrain. The right wing separated and the fuselage was buckled.

The wreckage of the airplane was found on wooded, hilly terrain the next morning by a motorist on a nearby road. The airplane impacted the trees and terrain in an attitude, consistent with a forced landing. The dark night conditions likely would have made it difficult for the pilot to see the trees during the landing.

Postaccident examination of the airplane revealed that the two fuel tanks were not compromised; the left fuel tank was empty, and the right fuel tank contained only a minimal amount of fuel. Only a trace amount of fuel was found in the fuel lines and fuel pump. The damage to the propeller blades was consistent with little or no engine power at the time of impact. No preimpact mechanical malfunctions or failures with the airframe or engine were noted during the examination, although the emergency locator transmitter was found to be inoperable.

The airplane averaged about 94 knots ground speed during the flight, and the entire flight from the fuel stop to the destination airport should have taken about 4 hours 48 minutes at that speed. Although the extent of the pilot's preflight fuel planning and in-flight fuel monitoring could not be determined, with a fuel burn rate of 10 gallons per hour, there was not enough fuel to complete the planned flight with the required 45-minute night flight fuel reserve. Thus, the pilot's preflight fuel planning was likely inadequate, and the engine lost power due to fuel exhaustion.

Although the emergency locator transmitter did not activate, there was insufficient information from which to determine whether or how this affected survivability in this accident.

Probable Cause and Findings

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

The total loss of engine power due to fuel exhaustion. Contributing to the accident was the pilot's inadequate preflight fuel planning and in-flight fuel monitoring.

Findings

Aircraft	Fuel - Fluid level
Personnel issues	Fuel planning - Pilot

Factual Information

History of Flight

Enroute-cruise	Fuel exhaustion (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On March 5, 2019, about 2204 central standard time, a Piper PA 28-180 airplane, N7369W, was substantially damaged when it was involved in an accident near Summersville, Missouri. The pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the owner of the airplane and a family member of the pilot, the pilot traveled to Virginia on commercial airline flights the morning of the accident to pick up the airplane for the owner and return to Missouri. The pilot departed New River Valley Airport (PSK), Dublin, Virginia, at an unknown time and was en route to Downtown Airport (3DW), Springfield, Missouri. Investigators established that the pilot stopped at London (Corbin) Magee Airport (LOZ), London, Kentucky, for fuel about 1731 and departed about 1801.

The pilot did not receive, nor was he required to receive, air traffic control services. The accident airplane squawked a nondiscreet beacon code of 1200, and positive radar identification could not be made. However, radar data depicted a flight track consistent with the airplane's reported departure time from LOZ. According to the radar data, the airplane was westbound at an altitude of 5,000 ft mean sea level. Just before the radar data ended, the altitude started to decrease, and the airplane turned towards the north followed by about a 180° course reversal toward the southeast. The wreckage was located the next morning by the driver of a vehicle on a nearby road. The flight track ended about 2204, about 1.8 nautical miles northwest of the accident location. The wreckage was found the next morning by a motorist on a nearby road.

Pilot Information

Certificate:	Private	**Age:**	64,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:**	August 28, 2018
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 17, 2017
Flight Time:	690.8 hours (Total, all aircraft), 5 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7369W
Model/Series:	PA28 180	**Aircraft Category:**	Airplane
Year of Manufacture:	1963	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-1251
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	April 25, 2018 Annual	**Certified Max Gross Wt.:**	2400 lbs
Time Since Last Inspection:	20 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4925.6 Hrs at time of accident	**Engine Manufacturer:**	Lycoming Engines
ELT:	C91A installed, not activated	**Engine Model/Series:**	O-360-A3A
Registered Owner:		**Rated Power:**	180 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

A placard mounted on the airplane wing adjacent the fuel cap indicated a maximum fuel capacity of 25 gallons. According to the Piper Cherokee PA-28-180 Owner's Handbook, the engine would burn about 10 gallons per hour at 75% horsepower. The fuel capacity was 50 gallons total: 25 gallons in each wing fuel tank, with 1 gallon per side that was unusable.

According to a fuel receipt from LOZ, the pilot purchased 26.98 gallons of fuel at a self-service pump. Investigators were unable to determine if this amount filled both fuel tanks to capacity.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	KUNO,1228 ft msl	**Distance from Accident Site:**	40 Nautical Miles
Observation Time:	21:53 Local	**Direction from Accident Site:**	190°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.43 inches Hg	**Temperature/Dew Point:**	-6°C / -12°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	London, KY (PSK)	**Type of Flight Plan Filed:**	None
Destination:	Springfield, MO (3DW)	**Type of Clearance:**	None
Departure Time:	18:01 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	37.195926,-91.70314(est)

The accident site had deciduous walnut trees and hilly terrain covered in short grass (see figure 1). The airplane came to rest on a measured heading of 99° at an elevation of 1,310 ft.

The initial impact point was located at the top of a 45-ft-tall tree, characterized by broken branches. The main wreckage came to rest about 76 ft east of the initial impact point. A section of the right wing, broken branches, and paint chips were scattered on the ground between the initial impact point and a second tree. The second tree was about 45 ft tall and exhibited broken branches near the top and witness marks consistent with impact from the airplane. Additional branches, plexiglass, paint chips, torn metal from the wing, torn fiberglass, the baggage door, and a fragmented red lens cover were scattered over 45 ft between the second tree and the main wreckage.

Figure 1. Accident Site

The main wreckage included the fuselage, empennage, left wing, and engine and propeller assembly. The right wing came to rest about 14 ft north of the main wreckage.

The right wing included the right aileron, right flap, right fuel tank, and the right main landing gear. The right fuel tank was not compromised and contained less than 1 cup of fuel. The left wing remained attached to the fuselage at the wing spar and included the left flap, left aileron, left fuel tank, and left main landing gear. The left fuel tank was not compromised and contained no fuel.

The engine remained attached to the fuselage; the engine mounts were intact, and the tubing was bent down. The two-blade propeller remained attached at the flange. One propeller blade was extended in the air and exhibited chordwise scratches along the entire chambered face of the blade. The second blade was bent and embedded in the ground. The blade was bent aft slightly, exhibited chordwise scratches on the cambered face of the blade, and had several leading-edge nicks.

The engine-driven fuel pump and electrical fuel pump line contained a trace amount of fuel; the carburetor contained liquid consistent with fuel. The examination of the engine and airframe revealed no mechanical anomalies that would have precluded normal operation before the accident.

The emergency locator transmitter was examined and was found to be nonfunctional. Investigators were not able to determine if this was impact related or if the condition existed before the accident flight.

Medical and Pathological Information

Southwest Missouri Forensics performed an autopsy of the pilot; on March 7, 2019. The cause of death was multiple blunt force injuries with environmental hypothermia contributing to the death.

The Federal Aviation Administration's Forensic Sciences Laboratory, Oklahoma City, Oklahoma, performed toxicological tests on specimens that were collected during the autopsy. Results were negative for carbon monoxide and ethanol. Atorvastatin (a medication used to treat high cholesterol) and cetirizine (a sedating antihistamine) were detected in the urine. About 48.3 ng/mL ceterizine was detected in the blood

Administrative Information

Investigator In Charge (IIC):	Rodi, Jennifer		
Additional Participating Persons:	Louie Bettis; FAA St. Louis FSDO; St. Ann, MO Kathryn Whitaker; Piper Aircraft; Vero Beach, FL Mike Childers; Lycoming Engines; Williamsport, PA		
Original Publish Date:	May 27, 2021	**Investigation Class:**	3
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99061		

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