Aviation Investigation Final Report

Location:	Huntsville, Texas	**Accident Number:**	CEN16FA001
Date & Time:	October 2, 2015, 10:30 Local	**Registration:**	N3552K
Aircraft:	Piper PA 28-140	**Aircraft Damage:**	Substantial
Defining Event:	Fuel starvation	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

A mechanic who worked for the fixed-based operator (FBO) at the airport reported that, on the day of the accident, the private pilot taxied the airplane to the maintenance hangar where he inflated the nose tire. The pilot told the mechanic he was flying the airplane to a nearby airport because someone there was interested in purchasing the airplane. No known witnesses saw the airplane take off. The air traffic control tower at the nearby airport did not have a record of the airplane landing there. The pilot was reported missing, and the wreckage was located later that evening on property adjacent to the departure airport.

The airplane came to rest inverted in a small clearing in a wooded area. The fuel selector was found in the "off" position. The left-wing fuel tank contained 2 cups of fuel, and the right-wing fuel tank contained about 4 gallons of fuel. A small amount of fuel was dripping from the right fuel cap before the airplane was righted. No evidence of fuel drainage from the left fuel tank was found. The airplane was not equipped with an ELT which likely contributed to the delay in locating the airplane. An examination of the airplane and engine did not reveal any anomalies that would have prevented normal operation. Damage to the starter housing from impact with the ring gear was consistent with slow rotation/no power at the time of impact. Based on the evidence, it is likely the engine lost power due to fuel starvation, which resulted from the pilot shutting off the fuel supply to the engine.

Although the autopsy and medical records showed that the pilot had arteriosclerotic cardiovascular disease, diabetes, and kidney stones, there was no evidence to suggest the pilot suffered an acute cardiac event or other medical incapacitation during the accident flight. A low therapeutic level of diphenhydramine, a sedating common over-the-counter antihistamine used to treat the common cold and hay fever, was detected in the pilot's heart and urine; however, it could not be determined whether the pilot was impaired by the effects of the drug at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The pilot's mismanagement off the fuel supply to the engine, which resulted in fuel starvation.

Findings

Aircraft	Fuel - Fluid management
Personnel issues	Incorrect action selection - Pilot

Factual Information

History of Flight

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

On October 2, 2015, about 1030 central daylight time, a Piper PA-28-140 airplane, N3552K, collided with terrain near Huntsville Municipal Airport (UTS), Huntsville, Texas. The private pilot was fatally injured, and the airplane was substantially damaged. The airplane was registered to a private individual and was being operated by the pilot as a 14 Code of Federal Regulations Part 91 personal flight. Visual flight rules conditions existed near the accident site at the time of the accident, and a flight plan had not been filed. The airplane departed UTS just before the accident and was destined for Lone Star Municipal Airport (CXO), Conroe, Texas.

A mechanic who worked for the fixed-base operator (FBO) reported that, on the day before the accident, the pilot was at UTS and that he replaced the airplane's battery. He added that, on the day of the accident, the pilot taxied the airplane to the maintenance hangar where he inflated the nose tire. The pilot told him that he was flying the airplane to Conroe because someone there was interested in purchasing the airplane. The mechanic stated that he told the pilot that the airplane had not been flown in a while, and the pilot stated that he might fly it around the area before heading to Conroe. The mechanic stated he did not see the pilot taxi the airplane nor take off, and no known witnesses saw the airplane take off.

CXO air traffic control tower personnel reported that the airplane did not land at the airport on the day of the accident.

The airplane owner, who was the pilot's brother-in-law, confirmed that the pilot replaced the airplane's battery on the day before the accident. He stated that the pilot was going to check the radios on the day of the accident, but that he was not supposed to fly the airplane.

About 1900, the pilot's family notified the Walker County Sheriff's Office that the pilot was missing. A search was initiated, and the wreckage was located about 2130 on a law enforcement shooting range that bordered the east side of UTS.

Pilot Information

Certificate:	Private	**Age:**	80
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
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:	Class 3 None	**Last FAA Medical Exam:**	July 13, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1550 hours (Total, all aircraft)		

The pilot's last Federal Aviation Administration (FAA) third-class medical certificate was issued on July 13, 2006. The medical certificate contained the limitation, "Not valid for any class after 07/31/2007. Must have available glasses for near vision."

On the application for his last FAA medical certificate, the pilot reported having 1,550 hours of flight time, 26 hours of which were flown in the preceding 6 months. The pilot's current flight time could not be determined because no personal flight records were located during this investigation.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N3552K
Model/Series:	PA 28-140	**Aircraft Category:**	Airplane
Year of Manufacture:	1967	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-23623
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 15, 2014 Annual	**Certified Max Gross Wt.:**	2200 lbs
Time Since Last Inspection:	1 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3942 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Not installed	**Engine Model/Series:**	O-320-E2A
Registered Owner:	On file	**Rated Power:**	160 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane was a low-wing, four-seat, fixed-tricycle-landing gear airplane, serial number 28-23623, manufactured in 1967. The engine, serial number L19195-27A, was installed in the airplane on June 11, 2003, in accordance with Supplemental Type Certificate SE367CH, which increased the horsepower to 160.

The last annual inspection was completed on February 15, 2014, at a tachometer time of 48.2 hours. The

tachometer time at the time of the accident was 49.5 hours. The aircraft total time at the time of the accident was calculated to be 3,942 hours.

An employee of the FBO at UTS reported that the airplane was last fueled at UTS on February 14, 2014. The amount of fuel added to the airplane is unknown. The airplane was kept in a hangar until May 5, 2015, when it was relocated to a ramp tie-down space.

The airplane owner stated that it had been about 1 year since the airplane was last flown. He reported that he and the pilot were planning on getting a ferry permit on October 5, 2015, so they could fly the airplane to Conroe for an annual inspection and to park the airplane outside the FBO to sell it. FBO personnel reported that the owner had rented a tie down space on their ramp, but as far as they knew, the airplane had not been parked there.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	UTS,363 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / 14 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.05 inches Hg	**Temperature/Dew Point:**	21°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Huntsville, TX (UTS)	**Type of Flight Plan Filed:**	None
Destination:	Conroe, TX (CXO)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Huntsville UTS	**Runway Surface Type:**	
Airport Elevation:	363 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Unknown

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:**	30.751943,-95.582496

The wreckage was located in a narrow clearing in a wooded area about 1/4 mile east of the approach end of runway 18 at UTC. The wreckage was inverted and on a heading of 10°. Tree branches were embedded in the bottom of the fuselage.

The aircraft battery power was found in the "on" position, and the wingtip lights were illuminated. The cockpit switches for the fuel boost pump, strobes, and instrument lights were in the "on" position. The magneto switch was in the "both" position. The carburetor heat knob was broken off, and the control cable appeared to be in the "off" (cold) position. The mixture control was full rich, and the throttle was at idle. The fuel selector was in the "off" position.

Examination of the airframe revealed that both sides of the aft fuselage were crushed inward and that the left-side crushing was more extensive. The top of the cockpit area was crushed downward to the top of the seats, but the remainder of the cockpit area was not compromised. All four seats were intact. The seats were equipped with seat belts, but shoulder harnesses were not installed. The airplane was not equipped with an electronic locator transmitter.

Both wings sustained impact damage, but they remained attached to the fuselage. The ailerons and flaps remained attached to their respective wings. Both the left and right fuel tanks were intact, and their fuel caps were secured. The right wing fuel tank contained about 4 gallons of fuel, and the left wing fuel tank contained about 16 ounces of fuel. A slow drip of fuel was observed coming from the right fuel tank filler cap before the airplane was righted. There was no evidence of fuel leakage from the left fuel tank. The fuel was clean and consistent with 100LL aviation fuel.

The horizontal stabilator, rudder, and vertical stabilizer sustained minor damage, and all remained attached to the empennage. The top of both the rudder and vertical stabilizer were crushed. The pitch trim drum displayed nine threads upper extension of the inner shaft, which was consistent with a trim setting of about 50% or 6° of the available 12° nose-up trim.

Flight control continuity was established from each flight control surface to their respective cockpit controls. Both the left and right flaps were in place, and the flaps were extended about 40°. All three landing gears remained attached.

The gascolator bowl was removed, and it was about three-quarters full of clean fuel that was consistent with 100LL aviation fuel. The gascolator screen and fuel boost pump filter were free of debris. The carburetor was removed and disassembled. Metal floats and a one-piece venturi were installed. No fuel was present in the carburetor bowl. The carburetor fuel inlet screen was examined, and it was free of debris.

The engine was rotated by hand using the propeller. Thumb compression, suction, and valve train continuity were confirmed to all cylinders. Accessory gear rotation was verified, and both magnetos sparked all leads when the engine was manually rotated. All spark plugs, Champion (REM40E) were removed and were light grey. All of the spark plugs were mid- to late-service life per the manufacturer's chart. Damage to the starter housing from impact with the ring gear was consistent with slow rotation/no power at the time of impact.

The propeller remained attached to the propeller flange. One propeller blade was straight. The other blade had a slight bend near its tip. No anomalies were identified with the airframe, flight controls, engine, engine components, or the propeller that would have prevented their normal operation.

Medical and Pathological Information

The Montgomery County Forensic Services Department conducted an autopsy on the pilot. The manner of death was attributed to "multiple blunt force injuries." The autopsy report stated the pilot had arteriosclerotic cardiovascular disease, diabetes, and kidney stones. The autopsy, FAA medical records, and the pilot's medical records from his personal physician were reviewed, and no evidence was found to suggest that the pilot suffered an acute cardiac event at the time of the accident.

Toxicology testing performed by the FAA's Bioaeronautical Research Sciences Laboratory identified 0.088 ug/ml of diphenhydramine in heart blood, and tamsulosin and yohimbine in cavity blood. All three drugs were also identified in urine. In addition, 366 mg/dl of glucose was confirmed in urine (normal is 0). Clinical lab tests performed on the pilot's vitreous found 8 mg/dl of glucose and his blood revealed a hemoglobin A1C of 9 %.

Diphenhydramine is a sedating common over-the-counter antihistamine used to treat the common cold and hay fever and as a sleep aid. Diphenhydramine carries the following FDA warning: may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g. driving, operating heavy machinery). The therapeutic range for diphenhydramine is 0.0250 to 0.1120 ug/ml. Tamsulosin is an alpha blocker used in the symptomatic treatment of benign prostatic hyperplasia. Yohimbine is an alkaloid with stimulant and aphrodisiac effects found naturally in Pausinystalia Yohimbe. Neither causes significant sedation or other psychoactive effects.

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Casey Storm; FAA; Houston, TX Mike McClure; Piper Aircraft; Vero Beach, FL John Butler; Lycoming; Williamsport, PA
Original Publish Date:	April 20, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92104