Aviation Investigation Final Report

Location:	Ormond Beach, Florida	**Accident Number:**	ERA17LA070
Date & Time:	December 17, 2016, 16:07 Local	**Registration:**	N410BC
Aircraft:	Beech A36	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot reported that he was returning to his home airport and was practicing maneuvers at 1,200 ft. The left fuel tank ran dry, and the engine experienced a total loss of power. He stated that his normal procedure was to exhaust the fuel in one tank before switching to the other tank. He attempted to restart the engine after switching to the right tank, which, he stated, held 40 gallons of fuel. The engine would not restart, so he conducted a forced landing in a field. After touchdown, the landing gear collapsed, and the airplane nosed down into the ground.

Examination of the fuel system revealed that the left wing was substantially damaged and that the left wing fuel tank was breached. The right wing had minimal damage, and the right wing fuel tank was undamaged. No fuel was found in either fuel tank, and the wing tank selector handle was found in the "off" position. Examination of the engine and airframe did not reveal any evidence of preimpact mechanical malfunctions or failures that would have precluded normal operation.

Blood was drawn from the pilot about 1 hour after the accident, and it tested positive for 0.177 gm/dl of alcohol. At the time of the accident, the pilot's alcohol level was likely at or above 0.185 gm/dl, which is considered impairing. The pilot's impairment by alcohol before and during the flight likely led to his improper fuel mismanagement and the subsequent loss of engine power.

Probable Cause and Findings

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

The pilot's impairment by alcohol before and during the flight, which led to his improper fuel management and resulted in fuel exhaustion and a subsequent loss of engine power.

Findings

Aircraft	Fuel - Fluid management
Personnel issues	Alcohol - Pilot
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Soft surface - Contributed to outcome
Personnel issues	Qualification/certification - Pilot

Factual Information

History of Flight

Maneuvering	Fuel exhaustion (Defining event)
Maneuvering	Loss of engine power (total)
Maneuvering	Attempted remediation/recovery
Emergency descent	Off-field or emergency landing
Landing	Landing gear collapse
Landing	Nose over/nose down
Landing-landing roll	Collision with terr/obj (non-CFIT)

On December 17, 2016, at 1607 eastern standard time, a Beech A36, N410BC, was substantially damaged during a forced landing at Ormond Beach, Florida. The private pilot was seriously injured. The airplane was registered to and operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Day, visual meteorological conditions prevailed at the time, and no flight plan was filed. The flight originated at DeLand Municipal Airport (DED), DeLand, Florida, about 1430 and was destined for Mid Florida Air Service Airport (X55), Eustis, Florida.

The pilot reported in a telephone interview that he was returning to his home airport and was practicing maneuvers at 1,200 feet. The left fuel tank ran dry, and the engine lost all power. He stated that his normal procedure was to exhaust the fuel in one tank before switching to the other. He attempted a restart after switching to the right tank, which, he stated, held 40 gallons of fuel. The engine would not restart, so he performed a forced landing in a field. After touchdown, the landing gear collapsed and the airplane nosed down into the ground.

The pilot did not complete and return the NTSB Form 6120.1, Pilot/Operator Aircraft Accident Report, as requested on multiple occasions by the NTSB investigator-in-charge. The pilot also did not provide the aircraft maintenance records when requested by the Federal Aviation Administration (FAA) inspector. The details of the latest annual inspection of the aircraft and engine were not available.

The wreckage was recovered from the accident site on December 22, 2017. According to the salvage operator, the left wing was substantially damaged and the left wing fuel tank was breached. The fuselage sustained structural damage. The right wing had minimal damage and the right wing fuel tank was undamaged. No fuel was found in either wing fuel tank. The wing tank selector handle was found in the "OFF" position.

The engine was examined on April 6, 2017. The engine was rotated by hand at the propeller, and compression and suction were observed on all six cylinders. All gears were observed rotating at the accessory (rear) section of the engine. The top spark plugs were removed; their electrodes were intact and were light grey in color. The engine-driven fuel pump was removed; the drive coupling was intact and the pump rotated smoothly.

The engine-driven fuel pump was forwarded to the manufacturer's facility for further examination. The fuel pump displayed impact damage signatures; one of the fuel line AN fittings was fractured. The fuel pump drive shaft was noted to have remained intact and the fuel pump drive shaft was capable of normal rotation. The fractured AN fitting was removed and a serviceable fitting was installed. The fuel pump was placed on a production bench for testing; the fuel pump operated normally. There were no anomalies noted.

According to the FAA medical file, the pilot was first medically certified to fly in 1978. In 2004, he reported a diagnosis of hypertension and treatment with medication. In February, 2008, he was admitted to hospital for several weeks with multiple complex complications of chronic alcoholism, then was admitted for alcohol rehabilitation, and he reported that to the FAA. After obtaining more information including a neurology evaluation following an alcohol withdrawal seizure, and a psychiatric evaluation, the FAA eventually granted him a special issuance third class medical certificate in 2009, which was dependent on him being evaluated and undergoing periodic testing for alcohol.

At the time of his last aviation medical examination, dated August 30, 2011, the pilot reported 1,650 total flight hours. In September, 2011, he tested positive for alcohol and the FAA withdrew his medical certificate in November, 2011.

The pilot was taken emergently to the hospital by helicopter following the accident. Blood drawn at 1709 tested positive for 0.177 gm/dl of alcohol. No other toxicology testing was performed.

Ethanol is the intoxicant commonly found in beer, wine, and liquor. It acts as a central nervous system depressant. After ingestion, at low doses, it impairs judgment, psychomotor functioning, and vigilance; at higher doses it can cause coma and death. The effects of ethanol on aviators are generally well understood; it significantly impairs pilots' performance, even at very low levels. CFR Part 91.17 (a) prohibits any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more ethanol in the blood.

Unlike many other substances, ethanol is eliminated from the body at a fairly constant rate. The rate varies with the regularity of drinking and whether or not the individual has recently eaten, but ranges from 0.010 gm/dl/hr in infrequent drinkers with an empty stomach to as high as 0.035 gm/dl/hr in heavy drinkers who have eaten. As a result, the minimum and maximum levels of ethanol can be back-calculated with some assurance of accuracy. Thus, at the time of the accident, the pilot's alcohol level was likely at or above 0.185 gm/dl.

Pilot Information

Certificate:	Private	**Age:**	57,Male
Airplane Rating(s):	Single-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:	None None	**Last FAA Medical Exam:**	August 30, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1500 hours (Total, all aircraft), 1000 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N410BC
Model/Series:	A36 UNDESIGNAT	**Aircraft Category:**	Airplane
Year of Manufacture:	1979	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-1606
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	3651 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:		**Engine Model/Series:**	IO-520 Series
Registered Owner:	On file	**Rated Power:**	
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	OMN,27 ft msl	**Distance from Accident Site:**	8 Nautical Miles
Observation Time:	14:50 Local	**Direction from Accident Site:**	80°
Lowest Cloud Condition:	Scattered / 5000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.1 inches Hg	**Temperature/Dew Point:**	28°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Deland, FL (DED)	**Type of Flight Plan Filed:**	None
Destination:	Eustis, FL (X55)	**Type of Clearance:**	None
Departure Time:	14:30 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	29.266666,-81.254722(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Antonio Gonzalez; FAA FSDO; Orlando, FL
Original Publish Date:	April 4, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=94513