Aviation Investigation Final Report

Location:	Blanch, North Carolina	**Accident Number:**	ERA19LA135
Date & Time:	March 24, 2019, 19:35 Local	**Registration:**	N1933P
Aircraft:	Piper PA22	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious, 1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot completed a 25-minute flight before a passenger boarded the airplane for the accident flight. After a normal takeoff, the engine lost all power during the initial climb. The pilot switched the fuel selector to the other tank. Unable to restore engine power, the pilot attempted to land in an open field to the left of the departure runway; the airplane landed hard, resulting in substantial damage to the fuselage and wings.

Examination of the airframe and engine did not reveal any evidence of a preimpact mechanical malfunction or failure, and the exact quantity of fuel onboard at the time of the accident could not be determined due to impact damage. The reason for the loss of engine power could not be determined based on the available information.

Probable Cause and Findings

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

A total loss of engine power for undetermined reasons.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Initial climb	Collision with terr/obj (non-CFIT)

On March 24, 2019, about 1935 eastern daylight time, a Piper PA-22-150, N1933P, was substantially damaged during a forced landing shortly after takeoff from a private grass airstrip near Blanch, North Carolina. The private pilot sustained serious injuries and the passenger sustained minor injuries. The airplane was registered to and operated by Caswell Insurance Services Inc. under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Day visual meteorological conditions prevailed, and no flight plan was filed for the local flight; the flight was originating at the time of the accident.

The pilot reported that he flew around for about 25 minutes just prior to the accident flight, landed, and boarded a passenger for the accident flight. He completed all preflight procedures and noted that the fuel gauges indicated each tank was ½ full. Shortly after takeoff to the south in the initial climb, the pilot reported that the engine lost "fuel or power." He attempted to land in an open field and banked left, but the landing touchdown was hard. The pilot could not recall which tank the fuel selector was selected to for takeoff, but he remembered switching the tanks when the loss of power occurred. He reported departing with 15 gallons of fuel onboard.

According to a witness, when the engine lost power it sounded as if the fuel to air mixture was cutoff, and when the airplane banked to the left, the engine sputtered, but did not regain power.

A Federal Aviation Administration (FAA) inspector traveled to the accident site and observed that the airplane impacted an open grass area to the left (southeast) of the takeoff direction. The airplane came to rest upright, with the left wing down. The wings and fuselage sustained substantial damage.

Flight control cable continuity was established from the flight control surface to the cockpit. The smell of fuel was present around the accident site. The fuel selector was found selected to the off position, which was consistent with first responders reporting that they had moved the lever from an undetermined position to off. The left fuel tank was found about 1/4 full, and the right tank was found empty. The right wing was found elevated above the fuselage and fuel spillage was observed. When the fuel selector was selected to the left tank, fuel was observed to flow freely from the impact damaged valve.

Examination of the engine revealed that when the crankshaft was rotated by hand, valve train continuity was established, and thumb compression and suction was observed on all cylinders. The magnetos were removed and operated by hand with the impulse coupling, with no anomalies observed. Each spark plug produced a spark, except for two bottom plugs that were filled with oil. Clean spark plugs were placed in these positions and spark was observed in both positions. The carburetor was broken into two pieces due

to impact damage. No debris or fluids were observed in the intact portion of the carburetor. Examination of the airframe and engine revealed no evidence of preimpact mechanical malfunction or failures.

According to FAA airmen records, the pilot held a private pilot certificate with an airplane single-engine land rating. His most recent third-class medical certificate was issued in March 2013. The pilot could not locate his logbooks and did not report when his most recent flight review was completed. He reported that he had flown 1 hour in the past 90 days.

According to FAA airworthiness records, the high-wing airplane was powered by a Lycoming O-320-B2A 150-horsepower engine. The most recent annual inspection was completed in March 2018. The owner's handbook stated the airplane had a standard fuel capacity of two 18-gallon wing fuel tanks and at 75% power, consumed 9 gallons per hour.

The airplane was placarded with FAA Airworthiness Directive 67-24-02 which stated in part:

To forestall the possibility of engine fuel starvation during takeoff operations, install a placard on the right fuel quantity gauge, as shown in Piper Service Bulletin No. 250 dated June 2, 1967. The placard shall read: "Right Tank Level Flight Only With Less Than 1/3 Tank." A 1/3 tank capacity equals 6 gallons. Aircraft equipped with a single fuel quantity gauge must also have the placard installed.

At 1940, the nearest weather conditions 20 miles southeast at Person County Airport (TDF) Roxboro, North Carolina, reported wind 200° at 7 knots, visibility 10 statute miles, clear skies, temperature 17°C, dew point 0°C, and barometric pressure of 30.14 inches of mercury.

According to the FAA Carburetor Icing-Probability Chart, the atmospheric conditions were not conducive to serious carburetor icing at glide or cruise power.

Pilot Information

Certificate:	Private	**Age:**	40,Male
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:**	No
Medical Certification:	None None	**Last FAA Medical Exam:**	March 1, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	515 hours (Total, all aircraft), 402 hours (Total, this make and model), 515 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N1933P
Model/Series:	PA22 150	**Aircraft Category:**	Airplane
Year of Manufacture:	1955	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	22-2684
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	March 5, 2018 Annual	**Certified Max Gross Wt.:**	2000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320-B2A
Registered Owner:		**Rated Power:**	150 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	TDF,609 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	19:40 Local	**Direction from Accident Site:**	128°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.13 inches Hg	**Temperature/Dew Point:**	17°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Blanch, NC (PVT)	**Type of Flight Plan Filed:**	None
Destination:	Blanch, NC (PVT)	**Type of Clearance:**	None
Departure Time:	19:35 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Private AIrstrip PVT	**Runway Surface Type:**	Grass/turf
Airport Elevation:	387 ft msl	**Runway Surface Condition:**	Dry
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 Minor	**Latitude, Longitude:**	36.4925,-79.311668(est)

Administrative Information

Investigator In Charge (IIC):	Gerhardt, Adam		
Additional Participating Persons:	Tim McQuain; FAA/ FSDO; Greensboro, NC Clinton Festa; FAA/ FSDO; Greensboro, NC		
Original Publish Date:	December 3, 2020	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99156		