Aviation Investigation Final Report

Location:	Albemarle, North Carolina	**Accident Number:**	ERA20LA127
Date & Time:	March 5, 2020, 14:22 Local	**Registration:**	N335W
Aircraft:	Piper PA23	**Aircraft Damage:**	Substantial
Defining Event:	Fuel related	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The owner of the multiengine airplane was receiving a check out in the airplane from the flight instructor. During the initial climb, about 200 ft above ground level, the instructor noticed a decrease in airspeed and the pilot receiving instruction stated that both engines were losing power. The instructor immediately confirmed that the mixture levers were full rich and that the propeller and manifold levers were full forward. He also turned on the electric fuel pumps, which had not been turned on before takeoff. With insufficient runway remaining on which to land, the pilots continued over trees at the end of the runway before landing in a field. The instructor further stated that the electric fuel pump switches were on the far left of the instrument panel and he was unable to see their position before the loss of engine power. He added that he believed that the loss of engine power was the result of the electric fuel pumps being off.

Examination of the engines, fuel systems, ignition systems, and induction systems did not reveal any preimpact mechanical malfunctions, and examination of fuel samples from each fuel tank and both engine fuel sumps did not reveal any anomalies. Subsequent testing of the left and right engine mechanical fuel pumps revealed that they operated within specifications. Review of checklists in an owner's manual and airplane flight manual for the airplane make and model revealed instructions in both to use the electric fuel pumps during takeoff. Thus, it is likely that the pilot receiving instruction did not turn on the electric fuel pumps, which were located on his side of the instrument panel, before takeoff, and the instructor did not ensure that they were on.

Probable Cause and Findings

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

The pilots' failure to ensure that the electric fuel pumps were on before takeoff, which resulted in a partial loss of power on both engines during initial climb.

Findings

Aircraft	Fuel pumps - Not used/operated
Personnel issues	Use of policy/procedure - Pilot
Personnel issues	Use of policy/procedure - Instructor/check pilot
Personnel issues	Use of equip/system - Pilot

Factual Information

History of Flight

Initial climb	Fuel related (Defining event)
Initial climb	Loss of engine power (partial)
Emergency descent	Off-field or emergency landing
Landing	Collision with terr/obj (non-CFIT)

On March 5, 2020, about 1422 eastern daylight time, a Piper PA-23-250, N335W, was substantially damaged when it was involved in an accident near Stanley County Airport (VUJ), Albermarle, North Carolina. The airline transport pilot and pilot receiving instruction were not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 instructional flight.

According to a Federal Aviation Administration (FAA) inspector, the owner of the airplane was not onboard during the accident flight but was taking a video recording of the accident takeoff. The owner did not possess a multiengine land rating. The owner's flight instructor was seated in the left seat, receiving a "check out" in the make and model airplane from the pilot-in-command (PIC) flight instructor seated in the right seat. After the "check out," the owner's flight instructor could then provide training to the owner. The accident flight was the first flight after an annual inspection was completed on the airplane. Additionally, the airplane was completely fueled prior to the accident flight.

According to the PIC, during initial climb, about 200 ft above ground level, the pilot receiving instruction was the pilot flying. The PIC noticed a decrease in airspeed and the pilot receiving instruction stated that the engines were losing power. The PIC immediately made sure the mixture levers were full rich, and the propeller and manifold levers were full forward. He also switched on the electric fuel pumps, which had not been turned on prior to takeoff. The PIC further stated that the electric fuel pump switches were on the far left of the instrument panel and he was unable to see their position prior to the loss of engine power. The PIC added that he believed that was the mistake that caused the dual loss of engine power.

The PIC then coached the pilot receiving instruction to push forward on the yoke to retain airspeed; however, the airplane was too fast to land back on the remaining runway. The engines never fully recovered power and they climbed over trees at the end of the runway before making a hard landing in a muddy field.

Examination of the accident site by the FAA inspector revealed that during impact with the field, the airplane slid for about 190 ft. The left main landing gear separated and the nose gear collapsed, followed by the airplane rotating 180° before coming to rest upright. The inspector observed damage to the left wing spar, left wheel well, nose wheel well, and lower fuselage.

Review of a copy of the video corroborated the pilots' statements. Further examination of the engines was performed by an independent mechanic. The top spark plugs were removed from both engines and

no anomalies were observed with their electrodes. The crankshaft was rotated by hand on both engines and valve train continuity was confirmed to the rear accessory section. Additionally, thumb compression was attained on all cylinders. Examination of the induction systems did not reveal any blockages or obstructions. Eight-ounce fuel samples were obtained from each of the four fuel cells as well as the left and right engine fuel sumps. All samples were noted to be blue in color and no water or debris were detected in any of the six samples. The magnetos were removed from both engines and rotated at 420 rpm for 10 seconds. All four magnetos produced spark at all leads.

The left and right engine mechanical fuel pumps were then removed and forwarded to a facility for testing. Both pumps tested satisfactorily within specifications.

Review of checklists in an owner's manual and airplane flight manual for the make and model airplane revealed instructions in both to turn the electric fuel pumps on prior to takeoff.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	58,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	November 22, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 31, 2019
Flight Time:	16000 hours (Total, all aircraft), 40 hours (Total, this make and model), 194 hours (Last 90 days, all aircraft)		

Other flight crew Information

Certificate:	Airline transport; Commercial	**Age:**	26,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	April 2, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	December 22, 2018
Flight Time:	1019 hours (Total, all aircraft), 0 hours (Total, this make and model), 689 hours (Pilot In Command, all aircraft), 210 hours (Last 90 days, all aircraft), 46 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N335W
Model/Series:	PA23 250	**Aircraft Category:**	Airplane
Year of Manufacture:	1962	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	27-3017
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	March 2, 2020 Annual	**Certified Max Gross Wt.:**	5200 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	4027 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, not activated	**Engine Model/Series:**	TIO-540
Registered Owner:	On file	**Rated Power:**	250 Horsepower
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:	VUJ,609 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	14:15 Local	**Direction from Accident Site:**	220°
Lowest Cloud Condition:	Scattered / 3100 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	13°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Albemarle, NC (VUJ)	**Type of Flight Plan Filed:**	None
Destination:	Albemarle, NC (VUJ)	**Type of Clearance:**	None
Departure Time:	14:22 Local	**Type of Airspace:**	

Airport Information

Airport:	Stanley County VUJ	**Runway Surface Type:**	Asphalt
Airport Elevation:	609 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	04R	**IFR Approach:**	None
Runway Length/Width:	5499 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	35.416667,-80.150833(est)

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Derek Jackson; FAA/FSDO; Charlotte, NC
Original Publish Date:	January 28, 2021
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101075