Aviation Investigation Final Report

Location:	Suffolk, Virginia	**Accident Number:**	ERA23FA103
Date & Time:	January 7, 2023, 12:13 Local	**Registration:**	N592FL
Aircraft:	Piper PA28	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The accident occurred about 5 miles from the destination airport near the conclusion of a short cross-country flight. Automatic dependent surveillance - broadcast (ADS-B) data showed that about 2 miles from the accident location the airplane's descent rate rapidly increased to 500 ft/min with the airspeed staying just above 90 knots. The descent rate slowed to 200 ft/min before it rapidly increased to more than 1,500 ft/min during the final minute of flight. A performance study showed that a steep banked turn would have been required to orient the flight path with the wreckage direction and that the airplane's final known speed was close to its stall speed in the turn. A witness reported seeing the airplane in a nosedive with two spiral trails of black smoke about 5 to 10 ft behind the airplane; however, she did not observe any fire from the airplane.

Six days before the accident, the pilot brought his airplane to a mechanic, as it had an excessive engine rpm drop during a run-up magneto check. The mechanic changed some spark plugs but did not have a chance to run the engine. Three days before the accident, the pilot arrived at the mechanic's hangar and performed a ground run of the engine on the ramp area near the mechanic's hangar so the mechanic could listen to the engine. As soon as the pilot ran the engine, the mechanic knew that the new spark plugs did not correct the problem as the engine was "skipping." The pilot shut down the engine and the mechanic informed the pilot that the airplane was not to be flown until he could investigate further, and he would most likely be able to do it the following week. The mechanic later moved the pilot's airplane from the ramp in front of his hangar, into the pilot's hangar, as bad weather was forecast. The mechanic added that he had not completed the maintenance on the airplane and that the pilot did not contact him before departing on the accident flight to see if the maintenance had been completed.

Postaccident Examination of the wreckage revealed that the hold-down nuts on both magnetos were only finger tight. Some rotational damage was noted on both propeller blades. No other preimpact mechanical malfunctions were identified.

Due to the combination of black smoke that the witness observed trailing the airplane, the limited rotational damage signatures that were observed on the propeller blades, and the only finger tight magneto hold-down nuts that were found during the postaccident engine examination, it is likely that the loose magnetos detrimentally affected ignition, which resulted in a partial loss of engine power. Given that there was a known, unresolved maintenance issue that existed prior to the flight, had the pilot positively affirmed the airplane's airworthy condition with the mechanic prior to the flight, it is likely the accident would not have occurred. Additionally, the witness description of the airplane's final descent, the airplane's calculated speed during it's final maneuvering, and the lack of a horizontal debris field observed at the accident site suggested that the airplane entered an aerodynamic stall before it impacted the ground.

Probable Cause and Findings

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

The pilot's decision to fly the airplane without confirming it had been released from maintenance, which resulted in a partial loss of engine power due to loose magnetos. Contributing to the outcome was the pilot's failure to maintain adequate airspeed and his exceedance of the airplane's critical angle of attack, which resulted in an aerodynamic stall.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Magneto/distributor - Not serviced/maintained
Personnel issues	Aircraft control - Pilot
Aircraft	Angle of attack - Capability exceeded

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event
Approach	Loss of engine power (partial) (Defining event)
Approach	Loss of control in flight
Approach	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On January 7, 2023, about 1213 eastern standard time, a Piper PA-28-140, N592FL, was destroyed when it was involved in an accident near Suffolk, Virginia. The pilot and passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot owned the airplane and based it at the departure airport, Northeast Regional Airport (EDE), Edenton, North Carolina. According to a mechanic at EDE, the pilot and he were friends and the pilot contacted him on January 1, 2023, to inform him that the engine rpm drop was excessive during a magneto check and that he had parked the airplane on the ramp in front of the mechanic's hangar for further evaluation. The mechanic looked at the airplane on January 4th, 2023. He removed the spark plugs, cleaned them, and checked them for resistance. He found that two spark plugs had very high resistance and one spark plug fired a little weak, so he replaced the three affected spark plugs and reinstalled the five other spark plugs in the engine.

The pilot arrived later that day, before the mechanic had a chance to perform an engine run as he was busy working on another airplane. The pilot asked if he could perform an engine run on the ramp and the mechanic said yes, because he could listen to the engine from his hangar. As soon as the pilot ran the engine, the mechanic knew "right away" that the new spark plugs did not correct the problem as the engine was "skipping." The pilot shut down the engine and the mechanic informed the pilot that the airplane was not to be flown until he could investigate further, and he would most likely be able to do so on Monday, January 9, 2023.

The mechanic moved the pilot's airplane from the ramp area in front of his hangar into the pilot's hangar, as bad weather was forecast for Sunday. The mechanic added that the pilot returned to the airport on Saturday, January 7, saw the airplane in his hangar, and took it flying without contacting him. At the time of the accident, the airplane had not been released from maintenance as the mechanic had not had an opportunity to further investigate the engine anomaly.

According to family members, the accident flight was a short (40 nautical miles) cross-country flight to get lunch at a restaurant at Suffolk Executive Airport (SFQ), Suffolk, Virginia.

According to automatic dependent surveillance - broadcast (ADS-B) flight track information from the Federal Aviation Administration (FAA), the airplane approached SFQ in cruise flight at an altitude of about 1,800 ft mean sea level msl. About 2 miles from the wreckage location, the airplane's descent rate rapidly increased to 500 ft/min with the airspeed staying just above 90 knots. The descent rate slowed to 200 ft/min before it rapidly increased to more than 1,500 ft/min during the final minute of flight. An aircraft performance study (for more information, see the Aircraft Performance Study in the public docket for this accident) showed that a steep banked turn close to the airplane's stall speed would have been required to orient the flight path with the wreckage direction. A witness reported that she was a front seat passenger in a car and observed the airplane in a nosedive. At that time, there were two spiral trails of black smoke, about 5 to 10 ft behind the airplane; however, she did not observe any fire from the airplane.

Pilot Information

Certificate:	Private	**Age:**	53,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	April 14, 2022
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 1, 2022
Flight Time:	102 hours (Total, all aircraft), 36 hours (Pilot In Command, all aircraft)		

Passenger Information

Certificate:		**Age:**	Male
Airplane Rating(s):		**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

The pilot's logbook was not recovered. On his application for a private pilot certificate, dated November 15, 2022, he reported a total flight experience of 102.2 hours, of which 36 hours were solo/pilot-in-command. The pilot received his private pilot certificate on December 1, 2022.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N592FL
Model/Series:	PA28 140	**Aircraft Category:**	Airplane
Year of Manufacture:	1971	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-7125455
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	Annual	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	O-320-E3D
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The airplane's most recent maintenance logbooks were not recovered.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	SFQ,70 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	12:15 Local	**Direction from Accident Site:**	358°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.26 inches Hg	**Temperature/Dew Point:**	9°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Edenton, NC (EDE)	**Type of Flight Plan Filed:**	None
Destination:	Suffolk, VA (SFQ)	**Type of Clearance:**	None
Departure Time:	11:44 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	36.602222,-76.598056

The airplane impacted nose-down in a marshy field, about 5 miles from the destination airport, and no debris path was observed. The wreckage came to rest upright and was oriented south. A section of engine cowling was located about 50 ft south of the main wreckage. A postimpact fire consumed the majority of the wreckage, with the exception of the wings and engine. Flight control cable continuity was confirmed from both wing ailerons to the cockpit area. Due to impact and thermal damage, continuity could not be confirmed for the elevator and rudder, nor could an elevator trim setting be determined.

The engine was buried in about 3 ft of mud and was examined following its transport to a recovery facility. The propeller remained attached to the engine. Both propeller blades exhibited some S-bending and chordwise scratching. The examination revealed that the right magneto had separated from the accessory housing (consistent with impact). Its hold-down nuts remained with the accessory housing on the engine were found finger tight against the remainder of the magneto mounting flange. The left magneto remained attached to the rear

accessory housing and its hold-down nuts were also finger tight. Examination of the engine did not reveal any other preimpact mechanical malfunctions.

Medical and Pathological Information

According to the autopsy report from the Commonwealth of Virginia, Office of the Chief Medical Examiner, Norfolk, Virginia, the pilot's cause of death was blunt force trauma to head, torso, and extremities, and the manner of death was accident. No significant natural disease was identified by the pathologist.

Toxicology testing by the FAA Forensic Sciences Laboratory detected cetirizine in the pilot's liver and muscle tissue at 649 nanograms per gram (ng/gm) and 108 ng/gm, respectively. Cetirizine is a second-generation antihistamine used to relieve hay fever and allergy symptoms. It is available over the counter, commonly marketed as Zyrtec. Although designed to be less sedating, cetirizine does have some sedating properties. The generally non-impairing gastric reflux medication famotidine was also detected in his liver and muscle tissue. No blood specimens were available for testing.

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Jay Venerable; FAA/FSDO; Richmond, VA Ryan Enders; Lycoming Engines; Williamsport, PA Jonathan Hirsch; Piper Aircraft; Vero Beach, FL
Original Publish Date:	May 2, 2024
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=106549