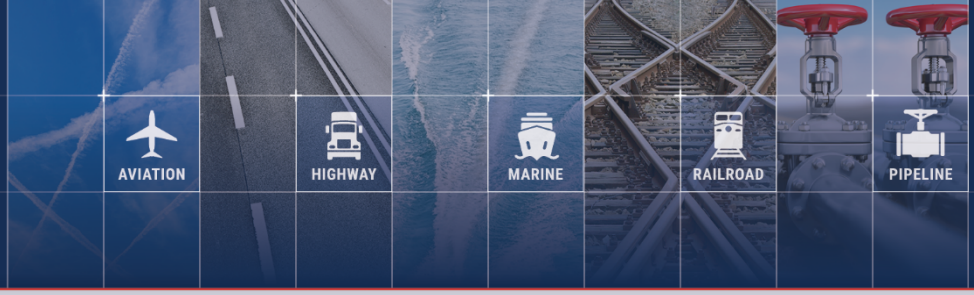

Aviation Investigation Final Report

Location:	Wilmington, North Carolina	**Accident Number:**	ERA22LA366
Date & Time:	June 29, 2022, 11:45 Local	**Registration:**	N4321M
Aircraft:	Piper PA-32RT	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was departing for a local flight, and following an uneventful preflight inspection, runup, and taxi, he began the takeoff. About 3 to 5 seconds into the initial climb the engine sustained a partial loss of power and the pilot elected to land straight ahead on the remaining runway. The runway was wet, and the airplane exited the departure end of the runway, coming to rest in a small retention pond. The pilot received minor injuries, the passenger was not injured, and the airplane's right wing was substantially damaged. A postaccident examination of the engine found no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation and the reason for the partial loss of engine power could not be determined.

Probable Cause and Findings

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

A partial loss of engine power during initial climb for reasons that could not be determined.

Findings

Aircraft	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Unknown or undetermined (Defining event)
Initial climb	Loss of engine power (partial)
Takeoff-rejected takeoff	Runway excursion

On June 29, 2022, at about 1145 eastern daylight time, a Piper PA-32RT-300, N4321M, was substantially damaged when it was involved in an accident near Wilmington, North Carolina. The private pilot sustained minor injuries and the passenger was not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he and a neighbor were taking the airplane for a local pleasure flight. The pilot performed a preflight inspection of the airplane in accordance with the airframe manufacturer's checklist. He performed a "normal" taxi and engine run up before beginning his takeoff. He reported that shortly after beginning the initial climb, within about 3 to 5 seconds, "the engine hesitated and stopped developing normal takeoff power." The pilot aborted the takeoff and landed back on the runway he had departed from with about 500 ft of its length remaining (the runway's total length was 3,000 ft). The runway was wet and the pilot attempted to stop before exiting the runway, but was unsuccessful. The airplane continued through grass and came to rest in a retention pond.

A postaccident examination of the wreckage by a Federal Aviation Administration (FAA) inspector revealed that the airplane was in about 5 ft of water, in a nose-low attitude, and the airplane's right wing had been substantially damaged. The inspector observed that there was fuel inside the left wing fuel tank with the appearance and smell of 100LL aviation fuel. The pilot reported there were about 60 gallons of fuel aboard before the takeoff.

The airplane's engine was examined after recovery from the pond. Water drained from the engine crankcase when the oil sump suction screen was removed. The crankshaft could not be rotated by hand. When the interiors of the cylinders were examined with a lighted borescope, water and corrosion debris were observed and the cylinder walls exhibited heavy corrosion. The Nos. 1, 3, and 5 cylinders were removed to gain access to the interior of the crankcase. Continuity of the crankshaft to the rear accessory drive gears and to the valvetrain was confirmed by visual observation. Additionally, no damage to the crankshaft, camshaft, or camshaft followers was observed.

The fuel injector servo remained attached to the engine and the throttle and mixture control cables remained attached to the servo through their respective control arms. Liquid with an odor consistent with aviation gasoline drained from the fuel servo when it was tilted, from the

fuel hoses connecting the engine-driven fuel pump to the fuel servo, and from the fuel servo to the fuel flow divider. The servo fuel regulator section was partially disassembled, and no damage was noted to the rubber diaphragms or other internal components. The fuel servo fuel inlet screen was absent of debris. The fuel flow divider remained attached to the engine, the fuel injector lines were secure, a few drops of water were drained, and no damage was noted to any of the internal components. The fuel injector nozzles were secure and unobstructed. The engine-driven fuel pump remained attached to the engine, a liquid with an odor consistent with aviation gasoline drained from the pump when it was removed and tilted. The pump produced air at the outlet port when operated by hand and no damage was noted to any of the internal components.

The dual magneto was removed from the engine and when its input shaft was rotated using an electric drill, spark was produced from all of the left magneto ignition towers but none of the right towers. The magneto was partially disassembled, and water and corrosion products were observed on the internal components, including the contact points. The spark plugs' electrodes exhibited dark gray coloration and exhibited a normal wear condition. Water and corrosion were observed in the spark plug electrode wells. No damage to the ignition harness was noted. The vacuum pump remained attached to the engine and no damage was noted. It was removed and produced air at the outlet port when rotated by hand. The oil suction screen exhibited wet, white corrosion products but no metallic debris. The oil filter media was absent of debris.

The propeller remained attached to the crankshaft flange. The propeller spinner tip was impact damaged. One propeller blade was undamaged, one was bent aft about 5° at about mid-span, and the remaining blade was bent aft about 15° at about mid-span. The propeller governor remained attached to the engine and no damage was noted. The propeller governor cable remained attached to the governor control arm. The governor drive was rotated by hand and produced oil at the outlet port. The governor oil screen was absent of debris. No evidence of any preimpact mechanical malfunctions or failures of the engine were identified during the examination.

A review of maintenance records showed that the airplane's last annual inspection was completed on May 19, 2022. During the inspection the engine, airframe, and propeller were found to be in an airworthy condition.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	69,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	February 4, 2021
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 31, 2022
Flight Time:	1969 hours (Total, all aircraft), 535 hours (Total, this make and model), 1849 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Pilot-rated passenger Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Left
Other Aircraft Rating(s):		**Restraint Used:**	3-point
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N4321M
Model/Series:	PA-32RT 300	**Aircraft Category:**	Airplane
Year of Manufacture:	1979	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32R-7985078
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	May 19, 2022 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	1 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3045 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-540-K1G5D
Registered Owner:	On file	**Rated Power:**	300 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:	SUT,25 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	11:55 Local	**Direction from Accident Site:**	219°
Lowest Cloud Condition:	Scattered / 1600 ft AGL	**Visibility**	5 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.26 inches Hg	**Temperature/Dew Point:**	25°C / 22°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Wilmington, NC	**Type of Flight Plan Filed:**	None
Destination:	Wilmington, NC	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	PILOTS RIDGE 03NC	**Runway Surface Type:**	Asphalt
Airport Elevation:	35 ft msl	**Runway Surface Condition:**	Wet
Runway Used:	9	**IFR Approach:**	None
Runway Length/Width:	3000 ft / 40 ft	**VFR Approach/Landing:**	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	34.104208,-77.900256(est)

Administrative Information

Investigator In Charge (IIC):	Young, Joshua
Additional Participating Persons:	Sarah Allen ; FAA/FSDO; Greensboro, NC J. Mike Childers; Lycoming Engines; Williamsport, PA
Original Publish Date:	November 15, 2023
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=105686