



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

January 24, 2023

EXAMINATION SUMMARY

ERA23LA097

A. ACCIDENT

Location: Athens, Georgia
Date: December 29, 2022
Time: 1327 EST
Airplane: Piper PA-24-260, N9026P

B. INVESTIGATION PARTICIPANTS

Lynn Spencer - IIC
Eastern Region Aviation (ERA)
National Transportation Safety Board
Washington, DC

Robert Martellotti
Manager, Air Safety Investigation
Piper Aircraft, Inc.
Vero Beach, FL

John Pless
Aviation Safety Inspector
Federal Aviation Administration
Atlanta, GA

J. Michael Childers
Air Safety Investigator
Lycoming Engines
Williamsport, PA

C. ACCIDENT SUMMARY

On December 29, 2022, about 1327 eastern standard time, a Piper PA-24-260, N9026P, was

substantially damaged when it was involved in an accident near Athens, Georgia. The 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 and passenger departed Athens/Ben Epps Airport (AHN), Athens, Georgia, with 36 gallons of fuel around 1322 on an instrument flight plan. Shortly after leveling off at 6,000 ft mean sea level, the pilot felt a “jolt” and the engine “seemed to power down, like the engine went to idle.” The pilot established best glide speed, turned on the fuel pump, changed fuel tanks, and performed a check of the mixture, ignition, and master switch but was unable to restore engine power. He declared an emergency and turned back toward AHN. Less than a mile from the runway, the pilot realized that the airplane was not going to reach the airport and prepared to land in a field just past some trees; however, the airplane pitched up and stalled over the trees, then descended through the trees to the ground. The main wreckage came to rest inverted in the trees. There was no evidence of fire. Fuel was leaking from the right wing at the accident site, and fuel was recovered from the left wing upon recovery.

The wreckage was recovered to Atlanta Air Recovery, where the examination took place on January 24, 2023. The airplane had been stored outside since recovery and there had been large amounts of rain during severe weather that included tornadoes after recovery and before examination.



Photo 1- View of airplane from front before examination



Photo 2 - View of airplane from left wing before examination



Photo 3 - View of airplane from right wing before examination



Photo 4 - View of airplane from left rear before examination



Photo 5 - View of engine and propeller before examination

D. MAINTENANCE RECORDS

Major Repairs and Alterations

A review of the Federal Aviation Administration (FAA) Airworthiness file and FAA form 337 records indicated the following recent major repairs and alterations:

06-11-2020 Installation of Surefly electronic ignition module, PN SIM6L at aircraft tachometer 5,593.48 hours and aircraft total time of 5,593.48 hours.

07-21-2021 Installation of new electronic tach at tachometer reading 5,668.0 hours; installation of new instrument panel; installation of JPI EDM-930P

Logbooks

The most recent annual inspection was completed on August 3, 2022, at tachometer time 5,768.2 hours, and 776.2 hours since engine overhaul.

On January 12, 2022, at aircraft tachometer time of 5,718.8, the engine logbook shows the following entry:

Customer complained of inability to start aircraft. Confirmed condition and troubleshoot issue using Piper PA-24 MM and Surefly technical support. Confirmed faulty Surefly ignition SIM. Removed faulty existing SIM6L SN 6L-1020002. Installed supplied replacement Sim6L unit SN 6L-2520028 as per the Surefly installation instructions connecting to it to the existing wiring harness and MP line. Test run aircraft on ground. Ops check good. No leaks noted. Aircraft is returned to service with regard to work done above.

On December 29, 2022, at aircraft total time of 5,818.0 hours, the engine logbook shows the following entry:

1. Removed left magneto (Surefly, p/n SIM6L), sn#6L-2520028
2. Installed new left magneto (SureFly, pn #SIM6L, sn#6L-3322010)
3. Removed right magneto (Slick) model 6350) sn#93110017
 - a. Repaired magneto (coil came loose (free) and shorted out) resulting in magneto failure.
 - b. Installed serviceable coil assy pn #3975 (NSN)
 - c. Installed 2 serviceable coil retainers pn #3040
 - d. Inspected magneto internally, re-assembled, and set internal "E" gap timing
4. Installed magneto, time and synced
5. Performed ground run and test, all checked OK
6. Owner performed flight test, all checked OK

E. EXAMINATION

1.0 Examination Summary

The airframe examination revealed no anomalies that would have precluded normal operation prior to impact, except for the electrical fuel pump that would not operate. The engine examination revealed no pre-impact mechanical failure of any rotating or reciprocating component of either engine; however, the left magneto ground strap was not connected to the magneto and its hardware was not located, debris was observed in the fuel servo filter, and water was observed in the fuel samples as well as the gascolator bowl.

2.0 Wreckage Description

The fuselage with engine attached at its mounts was intact, with the cabin area mostly undamaged and the instrument panel fully intact. The outer half of the left wing was impact damaged to the spar. The flap and aileron remained attached. The majority of the right wing structure located forward of the spar was highly crushed, and the wing was impact separated mid-span. The right aileron was partially attached. The aft fuselage displayed crushing and the empennage was fractured behind the baggage compartment. The empennage was intact with leading edge damage to both sides of the stabilator. The vertical stabilizer and rudder remained attached, and the rudder displayed deformation.

The empennage had been cut at the base of the vertical stabilizer to facilitate recovery. All airplane components and control surfaces were identified and located.

3.0 Airframe

Flight Control System

Flight control cable continuity was established from the primary flight control surfaces to the main cabin area, except for impact and recovery related separations. Stabilator trim jackscrew displayed 9 threads/.75 inches which is consistent with a neutral to nose up trim position.

Flap position was retracted. Flap transmission jackscrew exhibited 10 threads/1.75 inches which is consistent with a flap up position.

Landing Gear

All landing gears were in the up position.

Airframe Fuel System

The fuel selector handle was found in the right aux position. The fuel selector valve was in the right aux fuel tank position. Fuel selector valve was field tested with low pressure air and was

operational in all positions. Fuel and water were observed in the fuel gascolator bowl. Debris was observed in the fuel gascolator filter. Low pressure air was used to check all fuel lines from the fire wall to the 4 bladder fuel tanks, no obstructions were noted.

All fuel tanks except the right aux tank appeared to be intact. The right aux bladder tank was destroyed by impact. The left main, left aux, and right main fuel caps were in-place. The right aux fuel cap was not in place.

The electrical fuel pump was field tested with DC power source and would not operate. Rust was noted on the shaft bearing. The fuel pump was stuck and could not be rotated by hand.

Seats and Seatbelts

The front seats were attached to their rails, and the seat bases were detached from their backs. No shoulder harnesses were installed. The left and right seat belts were attached to their mounts and the attachment latches appeared undamaged.

Instrument Panel/Cockpit Controls/Switches

The instrument panel was intact and the electronic flight controls had been removed at recovery. A JPI EDM was retained for data download.

The flight control levers indicated: Throttle, full forward; propeller, full forward; mixture, full forward.

Airframe Examination Photos



Photo 6 - View of gascolator in airplane belly below flight selector



Photo 7 - View of gascolator filter with debris



Photo 8 - View of gascolator bowl before testing



Photo 9 - View of gascolator bowl with red water-finding paste



Photo 10 - View of recovered fuel with water present



Photo 11 - Close-up view of water in fuel

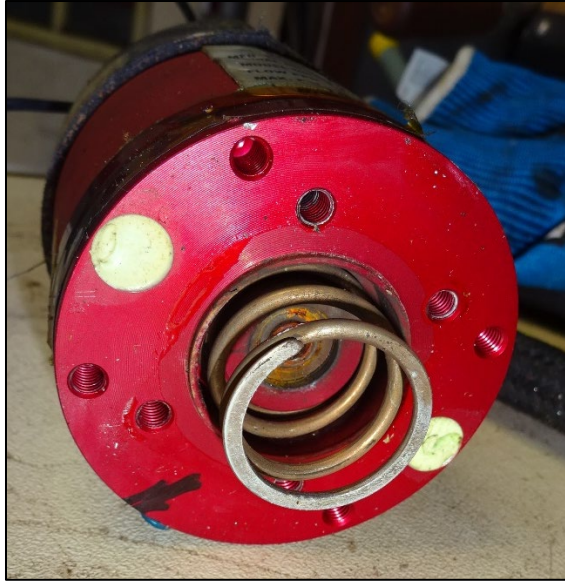


Photo 12 - Electric fuel pump with corrosion evident

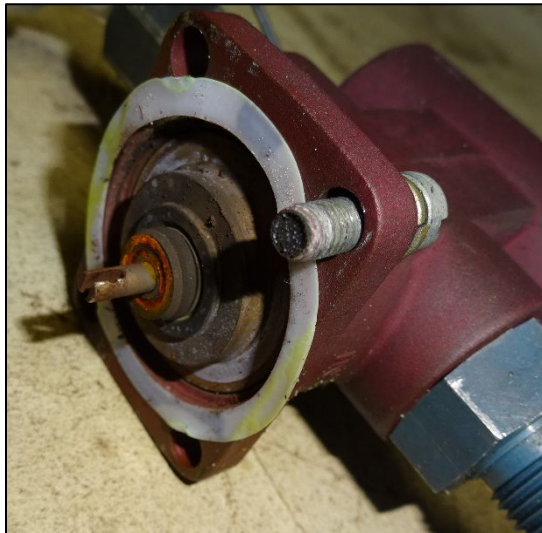


Photo 13 - Electric fuel pump attachment fitting with corrosion



Photo 14 - View of flight controls

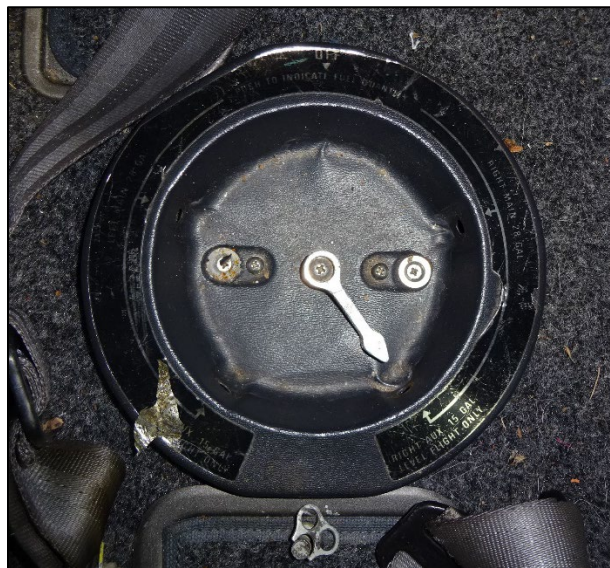


Photo 15 - View of fuel selector selected to right aux tank

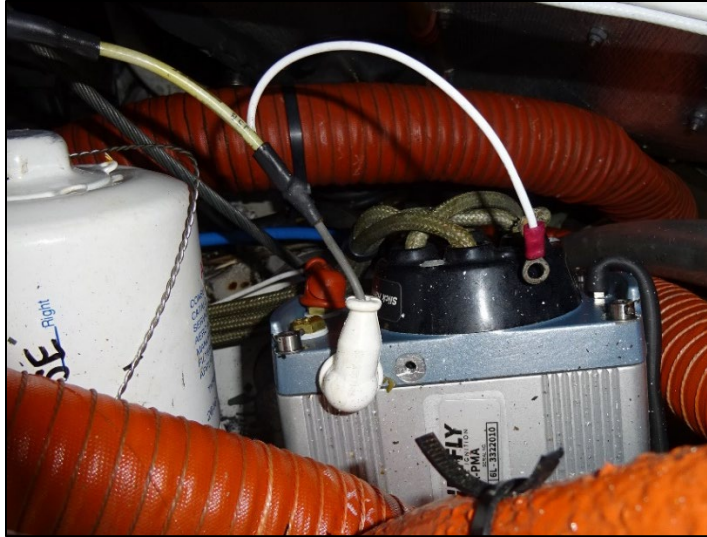


Photo 16 - View of left magneto ground strap disconnected from the magneto

4.0 Engine

The engine was a Lycoming IO-540-D4A5, serial number RL-5869-48E. It was installed on the airplane with the propeller on July 11, 2014. The propeller hub was a Hartzell Model HC-C2YK-1BF, serial number AW2438, with blade serial numbers D43196 and D43076. The propeller governor was a Hartzell model F-4-4A, serial number A158T. The engine had accrued about 825.8 hours since overhaul.

As first viewed, the engine was laying on the floor at Atlanta Air Recovery and remained attached to the aircraft fuselage through the tubular mount. The left side mount tubes were bent, and the engine was canted to the left. The propeller and propeller spinner remained attached to the engine crankshaft flange. The engine mount tubes, hoses, wires and cables were cut, and the engine was suspended from a lift and partially disassembled to facilitate the examination. The induction airbox and the exhaust tubing were impact damaged. The induction air filter and the exhaust tubing were unobstructed.

The engine crankshaft was rotated by turning the propeller and continuity of the crankshaft to the rear gears and to the valvetrain was confirmed. Suction and compression were achieved on all six cylinders. The interiors of the cylinders were observed using a lighted borescope and no anomalies were noted. The aircraft hour meter was electronic and some of the instruments had been removed. The “tach” time at the time of the accident could not be determined. The right magneto was removed on the day of the accident and a new one installed. At that time the engine had accumulated 825.8 hours of time-in-service since being rebuilt by Lycoming Engines.

Fuel System

The fuel injector servo remained attached to the engine and no damage was noted. The induction airbox remained attached to the servo and was partially crushed. The throttle control cable remained attached to the servo throttle arm and the arm was positioned at the full throttle position. The cockpit throttle control was fully forward. The mixture control cable remained attached to the servo mixture control arm and the arm was positioned at the full rich position. The cockpit mixture control was fully forward. The servo was partially disassembled, and no damage observed to the rubber diaphragms or other internal components. The servo fuel inlet screen contained a small amount of “fuzzy” material but was unobstructed.

The fuel flow divider remained attached to the engine and no damage was noted. The steel injector lines were secure. The flow divider was partially disassembled and no damage to the rubber diaphragm or other internal components was noted. The fuel injector nozzles were unobstructed.

The engine driven fuel pump remained attached to the engine and no damage was noted. The pump was removed and produced air from the outlet port when actuated by hand. The pump was partially disassembled, and no damage was noted to the rubber diaphragms or internal check valves. Liquid with an odor consistent with aviation gasoline was observed in all fuel lines forward of the aircraft firewall and in the engine driven fuel pump, fuel injector servo and the fuel flow divider.

Ignition System

Both magnetos remained attached to the engine and no external damage was noted. The left magneto “P” lead shield ground was observed not attached to the magneto. When the left magneto was removed and connected to a 12-volt power supply, sparks were observed from all ignition towers when rotated using an electric drill. The right magneto was removed and produced spark from all ignition towers when rotated using an electric drill. The spark plugs exhibited gray coloration and worn normal condition. The ignition harness was impact damaged.

Engine Accessories

The starter remained attached to the engine. No damage was noted, and it was not removed. The alternator remained attached to the engine. No damage was noted, and it was not removed. The alternator belt remained in place and unbroken. Oil was observed in the engine. The oil suction screen and oil filter element were absent of debris.

Engine Photos



Photo 17 - Cylinder Nos 2, 4, and 6 with rocker covers removed



Photo 18 - Cylinder Nos 1, 3, and 5 with rocker covers removed



Photo 19 - Fuel flow divider after examination



Photo 20 - Spark plugs



Photo 21 - Fuel injectors

5.0 Propeller

The propeller remained attached to the engine crankshaft flange. The propeller spinner remained attached to the propeller. The spinner tip was impact damaged. The propeller blade marked "A" was free to rotate in the hub. That blade was bent aft about 60 degrees at about 16 inches out board of the hub and bent forward about 30 degrees at about 8 inches inboard of the tip. The blade marked "A" was bent aft about 90 degrees at about $\frac{3}{4}$ span. The propeller governor remained attached to the engine and no damage was noted. The propeller control cable remained attached to the governor control arm and the arm was positioned at the full increase RPM stop. The cockpit throttle control was positioned fully forward. The governor was removed and the governor oil screen observed absent of debris. The governor drive spline was rotated freely by hand.

Propeller Photos



Photo 22 - View of propeller blade "B"



Photo 23- View of deformation of the outermost portion of propeller blade "B"



Photo 24 - View of propeller blade "A"



Photo 25 - Photo of propeller with blades attached

