

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA23FA164

WRECKAGE EXAM REPORT

April 6, 2023

A. ACCIDENT

Location: John's Island, South Carolina
Date: March 25, 2023
Time: 1252 EDT
1652 UTC
Airplane: Piper PA-28-161, N21480

B. WRECKAGE EXAM REPORT

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C. SUMMARY

HISTORY OF FLIGHT

On March 25, 2023, at 1252 eastern daylight time, a Piper PA-28-161, N21480, was substantially damaged when it was involved in an accident near John's Island, South Carolina. The private pilot was fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 flight

AIRCRAFT INFORMATION

The Piper PA-28-161 is a single-engine, four-seat, low-wing airplane that is powered by a Lycoming O-320-03G 160-horsepower engine. The airplane and engine's last annual inspection was conducted on March 16, 2023, at a total time of 3,792.88 hours. The engine had accrued 429.1 hours since overhaul.

WRECKAGE INFORMATION

The airplane impacted a marsh and was embedded in thick mud, water, and vegetation. The disposition of the airplane was consistent with it impacting the ground in a nose-low attitude at a high rate of speed. There was no post-impact fire. First responders reported fuel was present in and around the wreckage. All major components of the airplane were located at the accident site. An on-scene examination could not be conducted due to the terrain. The airplane was recovered five days after the accident and taken to Atlanta Air Salvage, Griffin, Georgia, where a comprehensive engine and airframe exam was conducted on April 6, 2023.

Postaccident examination of the airplane revealed that it sustained extensive damage from impact forces. Both wings, including the flaps and ailerons, the fuselage, and the entire tail section exhibited impact damage. Both wing fuel tanks were breached. Flight control continuity was established for each flight control surface to the cockpit area. The only cuts noted to flight control cables was from salvage personnel to separate the wings and tail section for recovery. The manual flap selector handle was loose but still connected by a cable. The flap handle was found in

the third notch of flaps position (25 degrees). Due to impact damage, it was not possible to check the flap chain/sprocket system to confirm the flap position noted on the selector handle. The horizontal stabilator trim actuator was found in the neutral trim position.

The fuselage and cockpit area were crushed. Most of the instruments and radios were too damaged to be examined. The throttle and mixture controls were crushed, but the primer handle was found in the in-and-locked position. The RPM gauge exhibited impact damage, but the needle was stopped at 3,050 RPM (redline was 2,600 RPM). The attitude indicator and directional gyros were recovered and disassembled. No scoring was noted on the interior of either gyro housing.

The firewall fuel filter was not located. The fuel selector handle exhibited impact damage and was positioned to right wing tank. When the handle was moved, a clear detent was not felt or heard. The unit was partially disassembled, and low-pressure air was blown through to decipher which tank the selector was set to. It was set to the right-wing fuel tank. The electric fuel boost pump was removed and disassembled. The screen was filled with mud. The pump operated when power was applied.

Examination of the engine revealed that the exhaust muffler, carburetor, alternator, and oil sump had separated from the engine and were not recovered in the wreckage. The starter ring gear support was fragmented.

The engine was manually rotated by turning the crankshaft flange. Compression/suction and valve train continuity was established on all four cylinders. Mud and water were observed inside the engine crankcase and cylinders. The interiors of the cylinders were observed using a lighted borescope and no anomalies were noted.

The engine driven fuel pump was impact fractured and the pumping section separated from the engine. The pumping section was partially disassembled and no damage to the internal diaphragms or internal check valves observed. Fuel was noted in the fuel line to the fuel pump. The fuel supply fittings were fractured, and the internal fuel screen was contaminated with mud.

The left magneto remained attached to the engine and did not produce spark when rotated by hand. Water drained from the magneto when it was partially disassembled. Corrosion was observed on the internal components. Only the right ignition drive assembly remained attached to the engine. Other ignition components were not observed.

The top spark plugs were removed and gray in color consistent with normal wear per the Champion Check-a-Plug chart. The No. 1 and No. 4 bottom spark plugs

also exhibited normal wear similar to the top plugs. The No. 2 and No. 3 bottom plugs were impact damaged. The ignition harness was impact destroyed.

The vacuum pump remained attached to the engine and no damage was noted. The pump was partially disassembled, and no damage noted to the composite drive assembly, carbon rotor or carbon vanes.

Oil was observed in the engine. The oil filter element was removed and absent of debris. The oil in the filter appeared new.

The two-bladed (fixed pitch) propeller remained partially attached to the engine crankshaft flange. The flange was bent, and three propeller bolts were broken. One propeller blade was bent aft about 90 degrees at about mid-span and twisted toward the propeller face. The other blade was bent aft about 30 degrees at about mid-span and twisted toward the blade face. Both blades exhibited leading edge paint abrasion.

No mechanical deficiencies were noted with either the engine or airplane that would have precluded normal operation prior to the accident.

Submitted by:
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