



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Central Region

December 10, 2021

ON SCENE OBSERVATIONS

CEN22FA067

This document contains 30 embedded photos.

A. ACCIDENT

Location: Houston, TX
Date: December 8, 2021
Aircraft: Piper PA28-140, Registration N3865K, Serial #28-23754
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

Samantha Link
Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

Troy Helgeson
Air Safety Investigator
Lycoming Engines
Williamsport, Pennsylvania

Jon Hirsch
Air Safety Investigator
Piper Aircraft Inc
Vero Beach, Florida

Ramon Reyes
Aviation Safety Inspector - Airworthiness
Federal Aviation Administration
Houston, Texas

Sam Creamer
Aviation Safety Inspector
Federal Aviation Administration
Houston, Texas

Marissa Colclasure
Aviation Safety Inspector
Federal Aviation Administration
Houston, Texas

C. SUMMARY

An on scene examination of the airframe and engine was conducted on December 10, 2021. No anomalies were noted during the examination.

D. DETAILS OF THE INVESTIGATION

1.0 Accident Site Overview

The airplane impacted a wooded area about 2.5 miles south of the airport. The debris path was about 50 feet long on a heading of 320 degrees. The first identified point of impact were two topped trees. Followed by the first piece of debris about 10 feet later, which was a fragment of outboard right wing. It remained wrapped around, and high, in a tree. Continuing along the debris path were a series of topped trees. Each one was topped slightly closer to the ground. Scattered on the ground around these trees were various fragments the right wing, the main landing gears, and the vertical stabilizer with rudder attached. Next was a large impact crater in the soft dirt. It was about 2.5 feet deep by 5 feet long. Inside of the crater was the propeller assembly, the starter ring gear, spark plug fragment, and other fragments of engine. Portions of

engine cowling, right-side door, and various instruments/radios were in the vicinity around the crater.

The main wreckage came to rest just beyond the impact crater. It contained the major components of the airplane: the engine, cabin, inboard wings, aft fuselage, and empennage. The airplane came to rest nose low with the tail extending on an angle upward. The airplane appeared to be somewhat upside down, but still overall vertical. The engine was completely separated from the airplane and came to rest near the empennage. The firewall, instrument panel, and cabin area were heavily damaged.

Major GPS Points:

First tree: N29 46.647, W095 40.538

Wing tip Tree: N29 46.652, W095 40.538

Fuselage: N29 46.654, W095 40.545

1.1 Accident Site Photos



Figure 1: Last Piece of Debris looking toward Beginning of Debris Path



Figure 2: First Topped Trees and Outboard Right Wing Fragment

Intentionally left blank. Please proceed to the next page.



Figure 3: From Impact Crater showing Series of Topped Trees

Intentionally left blank. Please proceed to the next page.



Figure 4: Fragments of Right Wing Scattered Below Topped Trees



Figure 5: Impact Crater



Figure 6: From beginning of Impact Crater looking toward Main wreckage.

2.0 Airframe Examination

- The cabin area was destroyed.
 - The instrument panel was fragmented. The instruments were separated from their mounting pads and distributed throughout the debris path.
 - The directional gyro was destroyed and only the faceplate was located.
 - The attitude indicator was disassembled, and no scoring was noted within the internal gyro.
 - The turn coordinator was disassembled.
 - A small score mark was noted within the internal gyro.
 - The front two seats were fracture separated and easily removed from the cabin area.
 - Given how the airplane was positioned, the aft seat was inaccessible, however, one half of the seat cushion was able to be removed.
 - The seat tracks remained intact, but were fracture separated from the airframe.
- The inboard portion of the left wing remained attached to the wing spar. It was fracture separated about midspan.
 - The fuel cap remained secured; however, the fuel tank was breached, and no fuel was noted.
 - The flap remained secured to the inboard portion of the wing.

- The aft fuselage and empennage were extended upward on an angle.
 - The aft fuselage exhibited extensive downward accordion crushing.
 - A large impact dent, consistent with tree impact, was noted on the right side of the aft fuselage just in front of the empennage.
 - The vertical stabilizer and rudder were fracture separated.
 - They were found about mid debris field.
 - The stabilator remained attached to the aft fuselage.
 - Its counterweight remained attached.
 - It moved freely when manipulated by hand.
 - The trim tab remained attached.
 - The trim jackscrew was measured and was consistent with a partial nose up trim setting.
- The right wing was fractured into several pieces.
 - The outboard right wing came to rest wrapped around and high up in a tree.
 - The wingtip with green navigation light was fracture separated and found early in the debris path.
 - A narrow portion of right wing and aileron was found about mid debris path. It exhibited a leading-edge tree strike, and it was heavily accorded.
 - The inboard portion of the wing was fracture separated from the fuselage.
 - The fuel cap remained secured in place.
 - The fuel tank was breached, and no fuel was present.
 - The flap remained attached.
- Fuel selector was removed.
 - It was in the left position.
 - Air was blown through it, and no blockages were noted.
 - The selector was manipulated; it had distinct detents.
- The fuel system was heavily fragmented, and no fuel was noted in the system. The smell of fuel was not noted at the accident site.
- The flight controls were heavily fragmented; however, control continuity was established throughout.
 - They remained connected at their respective attachment points, but the cables were fractured consistent with overload.
- The vacuum pump was located and disassembled.
 - The internal veins and components were fractured.
- The fuel strainer was fracture separated from the firewall and found near the engine.
 - The sump drain was fracture separated from the bowl. The fuel strainer was disassembled:
 - No fuel was noted in the bowl.
 - No debris was noted in the screen.

2.1 Airframe Photos



Figure 7: Aft Fuselage and Stabilator



Figure 8: Left Wing



Figure 9: Inboard Right Wing



Figure 10: Cockpit Flight Controls



Figure 11: Vertical Stabilizer and Rudder

Intentionally left blank. Please proceed to the next page.

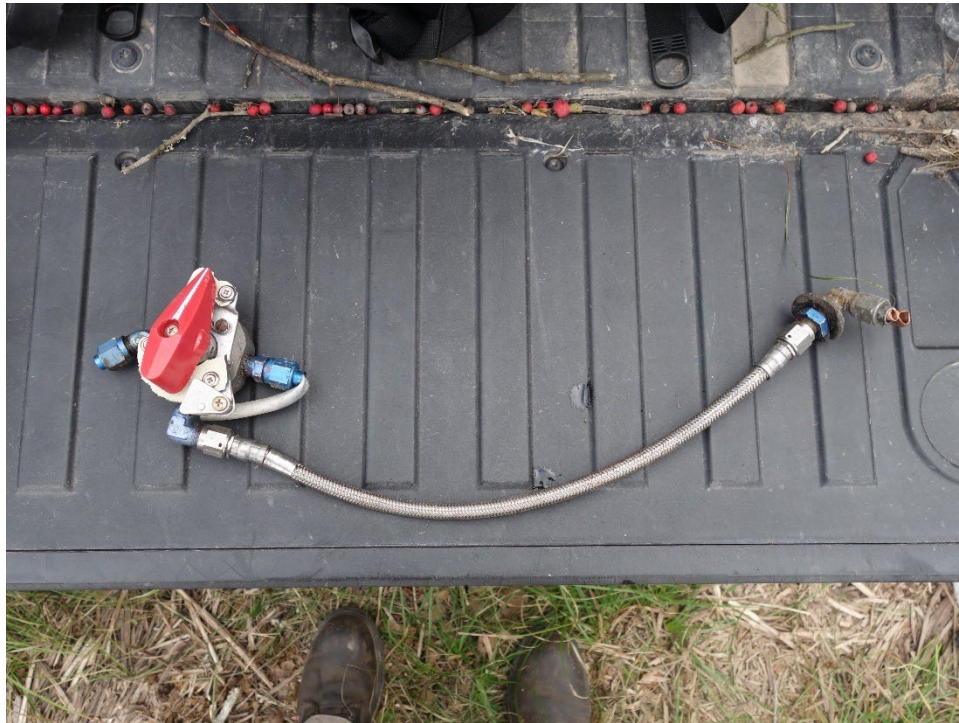


Figure 12: Fuel Selector Valve



Figure 13: Recovered Instruments



Figure 14: Turn Coordinator

Intentionally left blank. Please proceed to the next page.



Figure 15: Fuel Strainer



Figure 16: Vacuum Pump

3.0 Engine Examination

- The engine was found fracture separated from the airframe.
 - It came to rest mostly upright near the aft fuselage and empennage.
- There were no obvious visual signs of catastrophic mechanical anomalies.
- The propeller assembly was fracture separated from the propeller flange.
 - The propeller flange was bent.
 - The starter ring gear was fracture separated; it was found in the impact crater.
- The #1 cylinder exhibited impact damage.
 - The upper spark plug, and push rods were fracture separated and found within the impact crater.
 - The cylinder head was cracked.
- The magnetos remained secured to their mounting pads. The ignition harness was present and exhibited damage consistent with impact.
 - The right magneto was cracked at the seam consistent with impact. It was unable to be rotated.
 - The left magneto was removed.
 - The ignition harness was cut before the damaged areas and spark was obtained on all leads.
- The spark plugs exhibited rust on the tops of them. Several were fractured.
- The upper spark plugs were removed, except of the #1 cylinder (which was fracture separated).
 - The spark plugs were consistent with normal operations.
- The carburetor bowl was fracture separated from the engine. The metal floats remained attached, and both exhibited impact damage.
 - The floats were removed, and no fuel was noted inside of them.
 - One float exhibited distinct crush damage.
 - The second float exhibited a couple small spots of crush damage.
 - One side of the float appeared to be “sucked” inward.
- The engine was rotated by hand:
 - Thumb compression was established on all cylinders.
 - Including the #1 cylinder.
 - Valve continuity was established on all cylinders except the #1 cylinder.
 - The accessory gears rotated accordingly and did not exhibit damage.
- All cylinders were borescoped. The piston heads, cylinder walls, valves, and lower spark plugs were all consistent with normal operations.
- The engine driven fuel pump was removed and disassembled.
 - During disassembly, a small amount of fuel exited the pump. The fuel smelled consistent with 100LL Avgas.
 - The internal diaphragms, and valves were consistent with normal operations.
- The oil suction screen was removed and clear of debris.

3.1 Engine Photos



Figure 17: Where Engine Came to Rest



Figure 18: Front of Engine

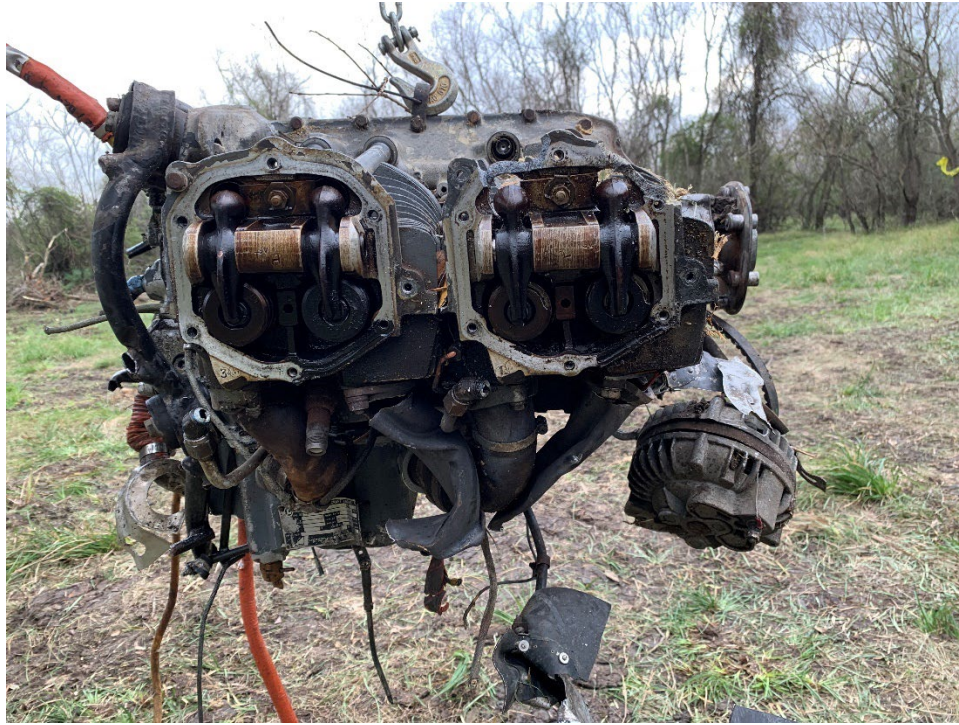


Figure 19: Right Side of Engine



Figure 20: Accessory Section



Figure 21: Left side of Engine



Figure 22: Damage to Number 1 Cylinder



Figure 23: Upper Spark Plugs

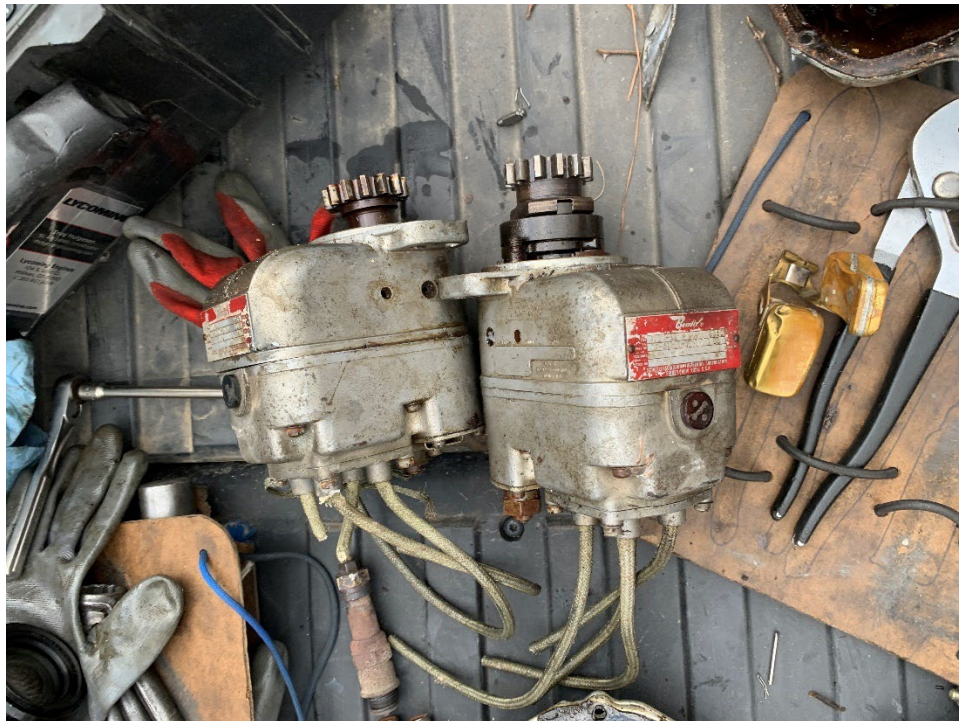


Figure 24: Magnetos



Figure 25: Remaining Portions of Carburetor

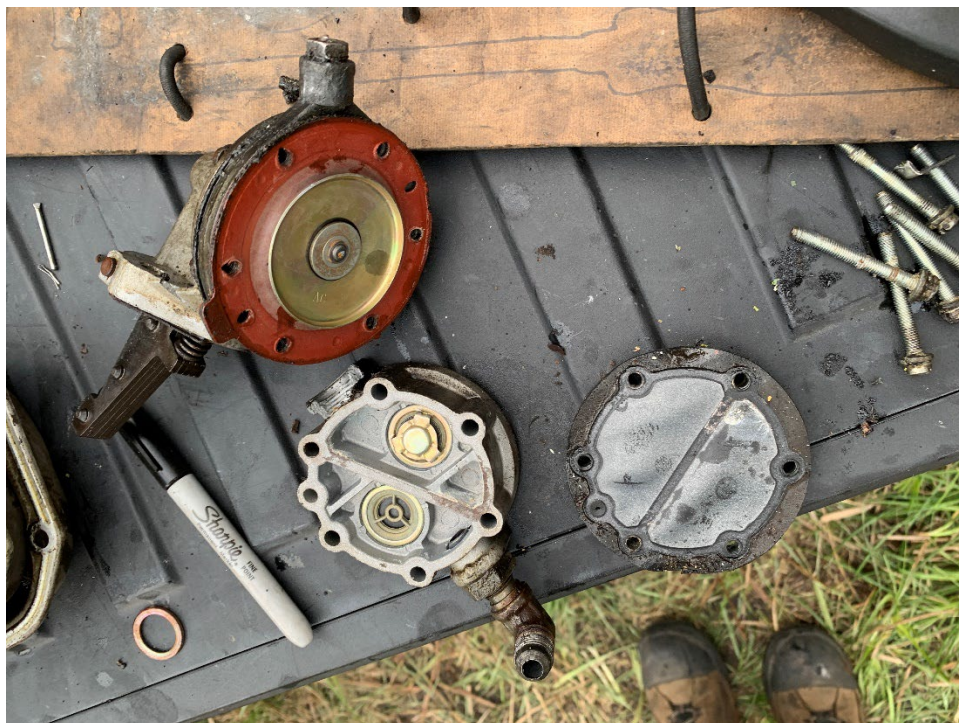


Figure 26: Fuel Pump

4.0 The Propeller Assembly

- The propeller assembly was found mostly buried in the impact crater.
 - Only about 1/3 of one blade extended above the dirt.
- The spinner was crushed aft past the propeller hub. It exhibited dirt packed ripples throughout.
- Both propeller blades remained attached to the hub, and both were bent in a large aft arc.
 - One blade was twisted and exhibited some waves towards the tip of the blade. However, still had an overall aft arc.
 - The second blade was flatter, but still had an overall aft arc.
- A tree, which was about 5 inches in diameter, appeared to have a very straight, about 45-degree cut, consistent with a propeller strike. This tree fragment was observed early in the debris field.

4.1 Propeller Photos



Figure 27: Face Side of Propeller Blades

Intentionally left blank. Please proceed to the next page.



Figure 28: Front of a Propeller Blade



Figure 29: Front of the other Propeller Blade



Figure 30: Cleaning Cut Tree consistent with Propeller Impact

END.

Submitted by: Samantha Link