

National Transportation Safety Board

Office of Aviation Safety

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ERA23FA270

WRECKAGE EXAMINATION

June 19-20, 2023

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A. ACCIDENT

Location: Ebensburg, Pennsylvania
Date: June 17, 2023
Time: 0506 EDT
0906 UTC
Airplane: N7628Y, Piper PA-30

B. WRECKAGE EXAMINATION

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C. SUMMARY

On June 17, 2023, about 0506 eastern daylight time, a Piper PA-30, N7628Y, was destroyed when it was involved in an accident near Ebensburg, Pennsylvania. The pilot and a passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The accident site was located on private property in a heavily-wooded area about 2 nm south of 9G8. The wreckage debris field was about 375 ft in length and about 120 ft wide, oriented on a heading of 120°. A measured swath through the trees was consistent with a 55° left bank and 30° descent angle at

the time of impact. The first identified point of impact was to a tall hemlock tree. At the base of the tree lay a fragment of the pitch trim tab. Fragments of the left wing were found next along the path, followed by an impact crater, engines, propellers, and tail control surfaces. The wings came to rest along either side of the path. Toward the end of the wreckage path lay the forward cabin area and seats. Burned areas were noted along the wreckage path, with active fires still burning in two trees. All structural components of the aircraft were located within the confines of the wreckage debris field.

2.0 Airframe Examination

The wreckage was examined and documented at the accident site on June 19-20, 2023. A follow-up examination at a salvage facility was not necessary.

2.1 Fuselage

The fuselage was destroyed, with fragments distributed along the wreckage path. The instrument panel, yoke assemblies, and rudder pedal bar remained together and came to rest at the base of a tall tree. The aileron, rudder, and stabilator cables remained attached to their respective cabin controls and could be traced to broomstraw cable separations. The instrument panel was destroyed; the instruments and radios were distributed along the wreckage path. One gyro cage from an instrument was found and appeared to have rotational scoring on the interior. Due to extensive fragmentation, flight control cable continuity could not be established during the investigation.

The engine control quadrant remained intact but displayed impact deformation. The throttle and propeller control levers appeared to be positioned fully forward, and the mixture levers appeared to be positioned to lean. Damage precluded determination of any other control or switch positions.

The front left and front right seats were found midway through the wreckage path, each displaying extensive deformation to their frames. Two lap belts were found buckled and came to rest near the remains of the instrument panel.

2.2 Empennage

The empennage was fragmented. The vertical stabilizer was found near the impact crater and displayed crushing and thermal damage. The rudder was impact separated from the stabilizer and was broken into two pieces, each found roughly midway through the wreckage path. The stabilator was broken into two sections, each found roughly midway through the wreckage path.

Sections of empennage skin, the stabilator trim barrel, and the stabilator balance weight were found alongside the forward cabin/instrument panel. Damage to the trim barrel precluded any determination of trim position.

2.3 Wings

Left Wing

The left wing was fragmented. The left wing inboard section and engine nacelle and a flap were noted along the right side of the wreckage path. The main landing gear upper strut remained attached to the wing and was observed within the landing gear well. Aileron control cables were observed within the inboard wing section, with each cable terminating in broomstraw cable separations.

The outboard wing came to rest along the left side of the wreckage path. The left aileron remained attached. The aileron control bellcrank remained within the outboard wing section; the control cable remained attached, terminating in a broomstraw cable separation, and the balance cable had impact separated. The stops were unremarkable.

Right Wing

The right wing was fragmented. The right wing inboard section came to rest next to the forward cabin and instrument panel. The right flap remained attached to the inboard wing section.

The right outboard wing section was fragmented and distributed along the wreckage path. The main landing gear remained attached to the wing and was observed within the landing gear well. The aileron was impact separated and was found midway down the wreckage path, displaying impact deformation.

The right aileron bellcrank and adjacent structure was found about 10 ft up a tree near the forward cabin. About 10 ft of aileron cables remained attached, each terminating in broomstraw cable separations. The control stops appeared undamaged.

2.4 Landing Gear

See "2.3 - Wings" for documentation of the main landing gear. The nose landing gear and surrounding structure were fragmented.

2.5 Cockpit

See "2.1 - Fuselage" for documentation of the cockpit.

2.6 Survivability

The accident was not survivable.

2.7 Fuel/Fuel System

The fuel selector assemblies were not observed within the wreckage. All fuel tanks were ruptured and compromised; no residual fuel was noted. Fuel blight was noted on vegetation throughout the wreckage debris field.

3.0 Engine Examination

Left Engine

The left engine examination was conducted on-scene on June 19 and 20th with the NTSB, Piper Aircraft, and Lycoming present.

The powerplant was a four cylinder, air cooled, direct drive, horizontally opposed, fuel injected, naturally aspirated engine with a rating of 160HP @ 2700RPM.

As first viewed, the left hand engine came to rest inverted approximately 6 ft from the first impact craters. The engine was heavily fragmented. The camshaft was exposed and broken in the area of the no. 1 and 2 cylinders. The crankshaft was broken in the same area. The majority of the crankcase shattered forward of the no. 1 and 2 cylinders. Cylinder no.1 was liberated from the engine and found approximately 10 ft before the engine in the wreckage's path of travel. Cylinder no. 2 head was found next to cylinder no. 1. The barrel of cylinder no. 2 was imbedded with a large chunk of from the initial tree that was contacted.

The bottom half of the accessory housing was destroyed and missing. The oil sump was destroyed. The engine data plate was found approximately 20 yards further along the aircrafts travel path. The left-hand engine was mostly destroyed by impact forces.

The propeller governor was impact-separated from the accessory housing of the engine. The governor data plate was skewed from the impact. The

governor gasket was orange in color and did not have the standard oil screen of a typical governor gasket. The unit pumped engine oil when the drive was rotated by hand.

The fuel injector remained with the engine firewall and was partially damaged during the impact sequence. The fuel inlet screen was liberated from the unit and found in the soil beneath the engine. The diaphragms of the regulators remained intact and undamaged.

The flow divider was separated from the engine and found with the engine firewall. The unit was opened for further analysis. The diaphragm was undamaged.

The fuel injector nozzles were not recovered/examined.

The engine diaphragm fuel pump was separated from the accessory housing during the impact sequence. The lower portion of the pump was recovered. The diaphragms were damaged from impact forces.

The left magneto remained partially attached to the remainder of the accessory housing but the unit was damaged by the impact forces. The unit did not produce spark and the magneto was opened for further examination. Damage to the shaft and gearing prevented full rotation of the magneto drive.

The right magneto was destroyed by impact forces.

All of the spark plugs were destroyed during the impact sequence.

The harness was destroyed from impact forces.

The starter was impact-separated and destroyed by the impact forces. The forward section/Bendix drive portion of the unit was recovered. A large impact on the housing displaced the housing metal as a likely result of engine crankshaft rotational forces.

The alternator was destroyed.

The vacuum pump remained attached to the accessory housing but was damaged by thermal forces. The unit was removed and the shear shaft was sheared and melted.

The oil filter was impact-separated and destroyed. The right magneto was pressed into the oil filter canister housing.

The intake system and exhaust system for the engine were separated and destroyed.

The crankshaft main bearings were exposed and exhibited the part number SL13884A M10 D with a date code of 04-12.

Right Engine

The right engine examination was conducted on-scene on June 19 and 20th with the NTSB, Piper Aircraft, and Lycoming present.

The powerplant was a four cylinder, air cooled, direct drive, horizontally opposed, fuel injected, naturally aspirated engine with a rating of 160HP @ 2700RPM.

As first viewed, the right hand engine came to rest against a tree almost in a vertical position. The oil sump was separated from the block and the magnetos were resting beside the engine.

The engine was hoisted for an examination. The firewall and mounts were cut to facilitate the engine examination.

The governor gasket was orange in color and did not have the standard oil screen of a typical governor gasket.

The governor pumped oil when the drive was rotated. The unit was impact separated from the accessory housing.

The fuel injector was separated from the engine sump but remained with the engine via control cables. The fuel inlet screen was removed for further examination and was unobstructed. The fuel regulator was disassembled and a liquid consistent with aviation fuel was present. The fluid was tested with a water finding paste and no water was present. The air side of the regulator was absent of fuel.

The flow divider remained secured to the top of the engine and was mostly undamaged. The lines to the divider were secured. The unit was opened for further analysis and fuel was found in the divider. Water finding paste was used and no water was present.

The nozzles remained in their respective cylinder heads and were unobstructed.

The diaphragm fuel pump remained secured to the accessory housing and had minor impact damage to the pump housing. The unit was removed and did pump when actuated by hand. The unit was disassembled and the diaphragms were undamaged.

Both magnetos were separated from the accessory housing and were impact damaged. Both units produced spark at all leads when rotated.

The spark plug heads for cylinders no. 1 and no. 2 bottoms were not examined due to damage from the impact forces. The harness ends of top nos. 1, 2, bottom 3, and 4 plugs remained installed in their respective cylinders and were removed for further analysis. Top nos. 3 and 4 plugs were mostly undamaged.

The spark plugs that were examined displayed coloration consistent with normal engine operation when compared to the Champion AV-27 Check-A-Plug chart.

The harness was destroyed by impact forces.

The starter was impact separated from the engine and was not examined.

The alternator was destroyed by impact forces.

The vacuum pump remained attached to the accessory housing. The unit was removed and opened for further analysis. The carbon veins were destroyed.

The suction screen remained with the impact separated sump and was full of organic debris.

The oil filter was liberated from the accessory housing and the filter housing had minor crush damage. The element was free of debris.

The intake pushrod for the no. 2 cylinder was missing. Damage to the exhaust pushrod of the no. 1 cylinder was visible. The rocker box covers were removed to facilitate the examination.

The engine rotated when via the vacuum pump drive when force was applied. Thumb compressions were established on cylinder nos. 2, 3, and 4. Valve movement was observed on all cylinders, with the exception of the no. 2 intake valve. The no. 1 cylinder was not holding compression as a result of damage from the impact forces cracking the cylinder head.

The majority of the intake and exhaust stacks were missing.

The dipstick was located with the engine but was impacted separated from the crankcase.

Nothing was found during the examination of both engines that would have precluded either engine from producing power prior to the impact sequence.

4.0 Propeller Examination

Left Propeller

The left propeller was impact separated from the engine. Both propeller blades displayed chordwise scratching and deformation opposite the direction of rotation.

The two-bladed Hartzell propeller was separated by impact forces at the crankshaft flange. Both blades exhibited "S" bending and leading edge scoring consistent with power on the engines at the time of the impact sequence.

Right Propeller

The right propeller was impact separated from the engine. One propeller blade was impact separated and not located within the wreckage. The remaining propeller blade displayed leading edge damage and chordwise scratching.

The propeller was impact separated from the engine at the crankshaft flange. The propeller was imbedded into an impact crater approximately 5 yards ahead of the engine on the aircraft travel path. One blade remained attached to the hub. The second blade was broken into pieces. A center portion of the blade was found several yards away from the propeller and the engine further along the aircraft travel path.

Submitted by:

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