

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA156

AIRFRAME AND ENGINE EXAM

August 24, 2023

A. ACCIDENT

Location: Riverside, CA
Date: April 16, 2023
Time: 1010 mountain daylight time
Airplane: N8376W, Piper PA-28-180

B. AIRFRAME AND ENGINE EXAM

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NTSB	Joshua Cawthra National Transportation Safety Board Federal Way, Washington
Party Coordinator	Kathryn Whitaker Piper Aircraft, Inc Vero Beach, Florida

C. SUMMARY

Examination of the recovered wreckage was conducted August 24, 2023, at the facilities of Southwest Aircraft Transportation & Recovery in Chino, California. Postaccident examination of the recovered wreckage did not reveal any preaccident mechanical malfunction that would have precluded normal operation.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Examination of the recovered wreckage revealed that the fuselage exhibited denting and crushing along the bottom. The nosewheel landing gear was separated from the airframe.

The cabin door remained attached to the frame and was unremarkable. Shoulder harnesses had been installed in the forward seating positions and remained mounted to the cabin roof. According to wreckage recovery personnel, they removed the seats and interior cabin floor during recovery of the wreckage.

Instrument Panel / Cockpit Documentation:

Primer: In and locked

Throttle: Full forward

Mixture: Intermediate position

Carburetor Heat: In/Off

Magneto switch: Off and key absent

Fuel Selector Lever: Off, with no key located

Fuel Pump: Off

Tach: 4256.52

Hobbs: 555.5

Wreckage recovery personnel reported that they placed the fuel selector valve handle into the off position and had removed screws for the handle and indicator plate. When the valve was actuated by hand, it moved smoothly throughout all positions, with detent engagement.

Control cable continuity was established from the cockpit controls to all primary flight controls. The aileron cables had been disconnected at the turnbuckles in the cabin floor. The flap handle was in the retracted position.

The left wing had been cut during wreckage recovery, near the wing root and the left main landing gear was separated. The flap and aileron remained attached via their respective attachment points, and each exhibited impact damage. The left fuel tank remained in place and was unremarkable. The left fuel tank vent and drain exhibited impact damage. When low air pressure was applied to the fuel outlet line, no blockages were noted.

The right wing had been unbolted from the fuselage and the right main landing gear was separated. The flap and aileron remained attached via their respective attachment points, and the flap exhibited impact damage. The right fuel tank remained in place and was unremarkable. The right fuel tank vent exhibited impact damage. The right fuel drain was not observed. The fuel line adjacent to the landing gear well was impact damaged, however, when low air pressure was applied to it, air could pass through.

The empennage exhibited areas of denting and crushing. The vertical stabilizer and rudder remained attached at their attachment points and were unremarkable. The stabilator had been removed from the empennage to facilitate wreckage recovery and exhibited crushing to the leading edge. The stabilator trim screw was found extended about 1 inch (7 threads), which was equivalent to about neutral pitch trim.

The ELT had been removed from its tray during recovery and was located inside the cabin, in the off position.

2.0 Engine Examination

Engine Manufacturer: Lycoming
Engine Model Number: O-360-A3A
Engine Serial Number: A-8425-36A

The engine remained attached to the airframe via the engine mount. The bottom of the engine mount was crushed upward and aft. All engine accessories remained attached to the engine. All fuel lines remained connected and secure to their respective fittings. Throttle cable continuity was established from the throttle control to the carburetor throttle control arm. Throttle arm travel was observed from stop to stop, via actuation of the throttle control. Mixture control continuity was established from the mixture control lever to the carburetor mixture control arm. Mixture travel was observed from stop to stop, via actuation of the mixture control lever. The mixture control cable was attached to a portion of the engine mount that was bent, which placed tension on the cable. Carburetor heat cable continuity was established from the carburetor heat lever to the air intake box.



Figure 1: View of the recovered engine.

The upper spark plugs, and rocker box covers were removed. The propeller was rotated by hand and rotational continuity was established throughout the engine and valve train. Spark was observed on all spark plug ignition leads. Equal movement of all the intake and exhaust valve lifter arms was observed when the crankshaft was rotated. Thumb compression was obtained on all four cylinders.

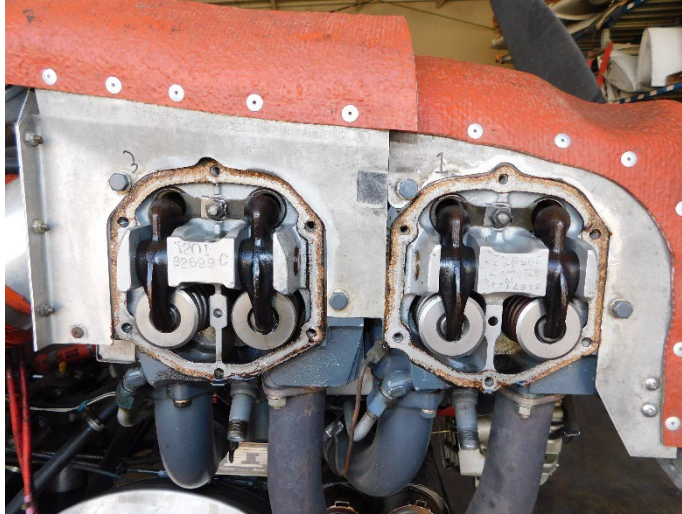


Figure 2: View of nos. 1 and 3 cylinders with rocker box covers removed.

An alternate fuel source was plumbed to the right-hand wing fuel inlet port. The engine was primed utilizing the airframe primer. Fuel was observed leaking from the gascolator. Safety wire was observed secure on the gascolator. The gascolator bowl was found to be loose at the bale nut and was tightened. The engine was started and ran normally, without the fuel leak. The engine was run at about 800 rpm. Due to the bent propeller blade, a mild vibration was felt at 800 rpm, and increased in intensity as power was advanced to about 1200 rpm. The engine was shut down utilizing the magneto switch. The alternate fuel source was removed and reattached to the left-wing fuel inlet port. The engine was started and run at 800 rpm. When the magneto switch was moved from both to left and right positions, the engine continued to run.

3.0 Propeller Examination

Manufacturer: Sensenich
Model Number: 76EM8

The two bladed, fixed pitch propeller remained attached to the flange. Blade A was undamaged. Blade B had a slight aft bend about mid span and had chordwise striations near the propeller tip.

Submitted by:
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Air Safety Investigator