

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR22LA337

AIRFRAME AND ENGINE EXAMINATION

July 26, 2023

A. ACCIDENT

Location: Seeley Lake, Montana
Date: September 3, 2023
Time: 1500 mountain daylight time
Airplane: Cessna 180, N3135D

B. AIRFRAME AND ENGINE EXAMINATION

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C. SUMMARY

Examination of the recovered wreckage was conducted at the facilities of Inter-State Aviation, Pullman, Washington, on July 26, 2023. No evidence of any preexisting mechanical malfunction was observed with the recovered airframe or engine that would preclude normal operation.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Examination of the recovered airframe revealed that flight control cable continuity was established visually for all primary flight control surfaces. All cable separations were separated by recovery personnel. The trimmable stabilator control wheel was separated. The actuator was measured and found to be at 0°. The manual flap position could not be determined.

The fuel strainer screen and glass bowl were clean and contained no fuel.

The fuel selector handle separated from the valve. The fuel selector valve was in the "left" tank position. Correct operation of the valve for all positions was verified by applying air to the fittings.

Both fuel tanks exhibited crush damage. The leading edge and portion of the left fuel tank was torn open. The right fuel tank appeared intact. Both fuel tank finger

screens were free of debris. Visual examination of both bladder tanks revealed evidence of small wrinkles (less than ¼ inch) throughout.

Both fuel caps were found installed.

The left and right fuel tank float gauges (fuel indicator) were intact. When the floats were moved by hand, corresponding movement on each gauge needle was observed. Both gauges were placarded "NO TAKEOFF" for ¼ tank or less.

Numerous separations were observed throughout the fuel lines, consistent with impact damage.

Both front seats were equipped with STC installed single point single strap inertia real restraints.

The airframe was equipped with engine monitoring equipment; however, they contained no nonvolatile memory.

The magneto switch was in the "both" position.

The fuel flow transducer was free of debris and unrestricted.

All engine controls were found in the "full forward" position and could not be moved due to impact damage.

Carburetor heat control in the cockpit was in the "off" position.

The tachometer was digital and could not be powered up.

2.0 Engine Examination

Examination of the recovered engine, a Continental O-470, which was modified to a P-Ponk O-470-50, serial number 3046, remained attached to the airframe via its mounts. All accessories remained attached their respective mounts. The upper spark plugs, and rocker box covers were removed.

All six cylinders were examined internally using a lighted borescope. Each cylinder exhibited normal operational signatures and the pistons, intake and exhaust valves were unremarkable. Cylinders Nos. 2, 4, and 6 had residual oil pooled inside, consistent with how the engine was stored (left side low). All intake and exhaust valve springs and rocker arms were intact and oil coated. The crankshaft as rotated by hand using the propeller. Rotational continuity was established throughout the engine and valve train. Corresponding movement of the aft gears was observed

when the propeller was rotated. Thumb compression was obtained on all 6 cylinders. Equal movement of all intake and exhaust rocker arms was observed.

The left and right magnetos were removed. Both magneto drive shafts rotated by hand with impulse coupling engagement. When the magneto drive shafts were rotated, both magnetos produced spark on all ignition leads or posts. The ignition harness was intact and undamaged.

The upper spark plugs exhibited normal operational signatures. Cylinder Nos. 1, 3, and 5, exhibited light grey deposits within the electrode area. Cylinder Nos. 2, 4, 6 were oil coated within the electrode area.

The carburetor was removed from the engine. The throttle, mixture, and carburetor heat controls remained attached to their respective engine positions. The carburetor heat was in the "cold" or "off" position. The throttle and mixture control arms moves from stop to stop freely by hand. The carburetor was disassembled. The floats were found intact. No fuel was observed within the float bowl. The mixture metering sleeve was free of debris. The accelerator pump was intact. The floats were intact and unremarkable. The fuel inlet finger screen contained a slight ammount of debris, however, was unrestricted.

The exhaust was impact damaged and appeared to be unrestricted.

The induction system was impact damage and unrestricted.

The 3-bladed propeller assembly exhibited impact damage and all 3 blades remained within the propeller hub. 2 blades exhibited slight aft bending from about mid span. 1 blade exhibited about 70° at the blade tip.

The propeller governor control arm remained attached. The control cable remained secured.

Submitted by:

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