

National Transportation Safety Board

Office of Aviation Safety

Denver, CO 80239



CEN23FA285

ENGINE AND PROP EXAMINATION SUMMARY

ACCIDENT

Location: Burlington, CO
Date: July 6, 2023
Time: 1330 mountain daylight time
Airplane: Piper PA-60-601P, Registration No. N100PB

WRECKAGE EXAMINATION GROUP

Investigator-In-Charge	Zane Brown National Transportation Safety Board Denver, Colorado
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ACCIDENT SYNOPSIS

On July 6, 2023 about 1330 mountain daylight time, a Piper PA-60-601P airplane, N100PB, was destroyed when it was involved in an accident near Burlington, Colorado. The pilot was fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

The airplane impacted terrain during some time after departing from Kit Carson County Airport (ITR) in Burlington, Colorado.

AIRPLANE DESCRIPTION

The airplane was a 1979 Piper PA-60-601P (Aerostar), serial number (s/n) 61P-0584-7963257. Two Lycoming IO-540-S1A5 reciprocating engines were installed. The engines provided thrust through constant-speed, full-feathering, three-blade, Hartzell propellers. The mid-wing airplane was of conventional aluminum construction with a retractable tricycle landing gear and wing flaps. The airplane had a pressurized cabin configured to seat six people. The airplane was equipped for operations in instrument meteorological conditions (IMC) and icing conditions.

DETAILS OF THE EXAMINATION

1. Engines

The right engine remained attached to its engine mounts and nacelles, and the left engine was located among the debris field attached to its mount that had fractured from its nacelle. The throttle quadrant was destroyed by impact and fire damage. Engine examinations will be conducted following recovery of the wreckage.

1.1 Left Engine

- 3 & 4 intake valves have little movement when the crank is rotated through.
- The engine exhibited significant impact damage to the crank flange, oil sump, starter mount, alternator mount, and exhaust.
- Both magnetos were found impact damaged and pulled away from their respective mounting locations. The Left magneto produced spark on all towers; the right magneto was not able to be tested due to impact damage.
- Both turbos were disassembled, and rotational scoring was noted on both compressor housings and wheels.
- GAMI injectors were installed, and injector #2 (J stamp) was observed installed in cylinder #6. Injector #6 (E stamp) was observed installed in cylinder #2.
- The vacuum pump was disassembled and found to be in operational condition.

- Spark plugs were observed to be in normal condition.
- The engine driven fuel pump and turbo scavenge pump were impacted damaged and not able to be tested.
- All cylinders were removed, and engine case was split. The camshaft was removed and significant spalling was observed on the 2nd and 5th lobes from the front of the camshaft. The 6th and 8th lobes exhibited burrs on the side of each lobe, at the lobe peak.
- The oil pump was removed, and scoring was observed on the housing and gear faces.
- The oil filter was removed and cut open, and its media was examined and was observed to be unremarkable.

Camshaft AS76148 A03 (WB1235 M395)

Lobe 1	Lobe 2	Lobe 3	Lobe 4	Lobe 5	Lobe 6	Lobe 7	Lobe 8	Lobe 9
1.460" (.363" Lift)	1.335" (.220" Lift)	1.470" (.366" Lift)	1.465" (.355" Lift)	1.274" (.150" Lift)	1.460" (.356" Lift)	1.463" (.357" Lift)	1.468" (.364" Lift).	1.465" (.369" Lift

1.2 Right Engine

- Thumb compression and suction was obtained on all cylinders.
- Valve train was continuous and correct with an appropriate amount of lift observed on all cylinders.
- The propeller governor was impact separated and was not recovered.
- The oil sump was fractured, and the engine data plate was not recovered.
- The engine driven fuel pump and turbo scavenge pump were impact damaged and not able to be tested.
- Vacuum pump was disassembled and found to be in operational condition
- The right magneto produced spark on all towers; the left magneto was not able to be tested due to impact damage.
- Both turbos were disassembled, and rotational scoring was noted on both compressor housings and wheels. The right turbo compressor wheel was found to move freely in rotation around its shaft.
- The oil filter was removed and cut open, and its media was examined and was observed to be unremarkable.

2.2 Propellers (HC-C3YR-2UF/FC8468-8R)

The right propeller was separated from the engine propeller shaft flange. One blade was separated from the hub, and its leading edge was lodged into the right engine intercooler core. The other two blades remained in the hub but could be rotated in their housing by hand.

The left propeller was separated from the engine propeller shaft flange. One propeller blade was separated from the hub, and the remaining two blades appeared to be in the normal range of operation. Two propeller blades were bent in the aft direction, and the remaining blade appeared to be slightly bent aft. All three blades exhibited chordwise gouging as well as other signatures of rotation at impact.



Figure 1 - Left engine Cylinder 3 & 4 Intake Lobe Spalling



Figure 2 - Left Engine, Left Turbo Rotational Scoring



Figure 3 - Left Engine Oil Filter Media



Figure 4 - Left Engine Oil Pump Housing