



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Central Region

Aircraft Examination and Accident Site Summary

CEN22FA208

A. ACCIDENT

Location: Broomfield, Colorado

Date: May 22, 2022

Aircraft: Piper PA-32-260

NTSB IIC: Michael Folkerts

B. SUMMARY

On May 22, 2022, about 1149 mountain daylight time, a Piper PA-32-260, N85CT, was substantially damaged when it was involved in an accident near Broomfield, Colorado. The pilot and pilot-rated passenger sustained fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to automatic dependent surveillance-broadcast (ADS-B) information obtained from a private source, the airplane departed Erie Municipal Airport (EIK) on Runway 16. About 3,000 ft from the departure end of the runway, the airplane made a left turn, descended, and impacted terrain.

Two experienced pilots that lived along the airplane's flight path reported hearing abnormal engine noises. The first pilot, who was located about 800 ft prior to the departure end of Runway 15, observed the airplane fly past about 50 to 100 ft above ground level (agl). About 5 seconds later, he heard several popping noises.

The second pilot was located about 1,000 ft to the west of the accident site and reported hearing a "loud carburetor cough" followed a few seconds later by a "quieter carburetor cough". Within 10 seconds, he heard the airplane impact the ground.

A third witness located about 2,000 ft northeast of the accident site observed the airplane in a climb about 50 ft agl with a high nose attitude. The airplane subsequently turned left and descended. The witness did not observe the airplane impact the ground.

Examination of the airframe and engine was conducted at the accident site by the NTSB IIC, FAA personnel, and a Lycoming safety representative. A follow up examination occurred at a recovery facility by the NTSB IIC, FAA personnel, and safety representatives from Lycoming and Piper.

C. DETAILS OF THE INVESTIGATION

Accident Site Information

The airplane impacted in a grassy area of a residential community. About 35 ft beyond the initial impact, six propeller strike marks spaced about 1 ft apart were located on a paved road. The airplane bounced and subsequently impacted a large tree about 100 ft from the propeller strike

marks, which resulted in the engine/cockpit area separating from the remainder of the fuselage. The airplane received substantial damage to the fuselage, empennage, and wings.

Airframe Examination

All components of the airplane were observed at the impact site, with no indications of a wire strike. Fuel was recovered from the left main, right main, and right wingtip fuel tanks, with no indications of contamination.

Fuselage

The fuselage was separated into two sections at the forward face of the wing spar carry through. The engine, firewall, forward baggage area, instrument panel, and forward seating areas remained together and displayed impact damage. The cabin roof displayed recovery cuts at the level of the lower window frames.

Control cable continuity could be established through impact separations and recovery cuts. The yokes and yoke shafts remained installed through the instrument panel and remained connected to the tee bar. The tee bar was impact damaged. The aileron chain was displaced from the tee bar sprockets and the aileron cables were impact separated. The aileron cables and attached chain ends remained with the aft cabin and terminated in recovery cuts at the wing roots. The stabilator cables remained attached to the tee bar and displayed broomstraw separations adjacent to the separation at the front of the wing spar carry through, as well as a recovery cut in the empennage. The rudder pedal bar was impact damaged. The left rudder control cable and attachment tang were impact separated and remained with the aft cabin section. The right rudder cable remained attached to the pedal bar and displayed a broomstraw separation adjacent to the separation at the front of the wing spar carry through. The rudder cables displayed a recovery cut in the empennage.

The flap handle was found positioned to 10° and the control cable remained attached to the handle but was impact separated from the torque tube chain.

The fuel selector valve assembly remained mounted within the cabin floor and displayed impact damage to the control and drain arms. All b-nuts remained securely attached, however the fuel line from the left main fuel tank was impact separated. The fuel selector appeared to be positioned between the left wingtip tank and off positions. The fuel selector valve was removed for examination. The fuel bowl contained fuel that appeared free from debris or water. The screen was free from blockage. When rotated by hand, the fuel selector handle moved smoothly with tactile detents at all positions. When tested with low air pressure, the fuel selector functioned as expected.

The electric fuel pump was unremarkable. The fuel pump was removed from the cabin floor, and when tested with a 12 volt power supply, it pumped water. The screen was removed and appeared free from debris.

The #1 and #2 (front left and front right) seats were impact damaged and separated from the seat tracks. The #1 and #2 lap belts were buckled but were impact separated from the center cabin tunnel. The #1 shoulder harness displayed a recovery cut and the inertia reel was deformed and locked in place. The #2 shoulder harness was not attached to the lap belt, appeared undamaged,

and the inertia reel functioned when tested. The #3, #4 (center row) seats were impact separated from the floor. The #5 and #6 (aft row) seats remained mounted to the cabin floor.

Left Wing

The left wing was impact separated from the fuselage at the attachment points. The wing was buckled and deformed. The left main landing gear was impact separated. The pitot mast was impact separated. The lift detector was impact damaged.

The left aileron remained attached to the wing and was buckled. The aileron bellcrank and stops were impact damaged. The aileron cables remained attached to the bellcrank and terminated in recovery cuts at the wing root. The flap was impact damaged.

The left main fuel tank was deformed, and the fuel cap remained installed in the fuel filler. The left wingtip tank was impact separated and voided, and the cap was absent from the filler.

Right Wing

The right wing was recovery cut from the fuselage at the root. The wing displayed skin tearing near the wing root and a fold about midspan. The right main landing gear remained mounted to the wing and was unremarkable.

The right aileron remained attached to the wing and appeared undamaged. The aileron bellcrank and stops were unremarkable. The aileron cables remained attached to the bellcrank; the control cable terminated in a recovery cut at the wing root, and the balance cable terminated in a recovery cut about 52 inches inboard from the wing root.

Empennage

The empennage displayed a recovery cut adjacent to the leading edge of the vertical stabilizer. The vertical stabilizer was unremarkable. The rudder remained attached to the vertical stabilizer and the skin was impact damaged. The rudder stops appeared undamaged. The rudder control cables remained attached to the rudder control horn. The stabilator remained attached to the empennage and displayed dents to the right side leading edge. The stabilator control stops appeared undamaged. The stabilator control cables remained attached to the balance weight.

The pitch trim barrel appeared undamaged. One thread, or ½ inch of trim screw extension was observed from the top of the barrel, correlating to partial nose down trim.

The instrument panel was deformed. The flight displays appeared undamaged. The electric fuel pump switch was found in the on position. The primer pump handle was in and latched. The throttle and propeller control handles were fully forward. The mixture control knob was found extended about 1 inch out from the panel. The carburetor heat cable was impact separated flush with the panel and its position could not be determined. The fuel selector handle was impact separated from the bezel but remained connected to the fuel selector valve assembly.

Engine and Propeller Examination

The engine remained attached to the firewall. There were no openings or voids noted to the crankcase. The crankshaft could be rotated by hand, producing normal valve movement. Thumb compression could be achieved on 5 of the 6 cylinders, however the #2 cylinder did not produce compression. Testing with a compression tester revealed the cylinder held 0 PSI of air pressure when tested at 80 PSI. The #2 cylinder was removed, revealing the presence of carbon deposits between the exhaust valve and seat. The #2-cylinder exhaust guide was worn.

The carburetor remained mounted to the engine and appeared undamaged. Fuel staining was noted to the bottom of the bowl and inside of the throat. The air box was crushed. The carburetor bowl contained fuel; however, brown flakes were seen at the bottom of the bowl. The carb floats were unremarkable. The carburetor inlet screen was free of debris.

The magnetos remained attached to their mounting pads and produced sparks at all posts when rotated by hand. The spark plugs showed normal wear. The mechanical fuel pump emitted fuel from the outlet when the crankshaft was rotated. The oil screen was free from debris.

Propeller

The propeller remained mounted to the crankshaft flange. All three propeller blades remained mounted to the hub. For identification purposes in this report, the blades are labeled A, B, and C.

Blade A was bent aft and had curled about 540°. The blade tip was impact separated. The blade displayed deep chordwise scraping to the back, and the leading edge was gouged.

Blade B Was bent aft and curled about 180°. The blade was also bent opposite of the direction of rotation. The blade tip was impact separated. The blade displayed deep chordwise scraping to the back, and the leading edge was gouged. The trailing edge of the blade had a wavy appearance.

Blade C was curled aft about 90°, was loose in the hub, and was in the feathered position. The blade displayed deep chordwise scraping to the back, and the leading edge was gouged.

Additional Aircraft Information

After landing at EIK on April 30, 2022, the airplane was serviced with 26.6 gallons of 100LL fuel. A review of EIK fuel records indicated this was the airplane's last refueling.

Maintenance logs indicated an avionics upgrade was completed on Feb 4, 2022. The pilot-rated passenger had assisted with the installation. The avionics upgrade included a Garmin G5, Dynon SV HDX1100 primary flight display (PFD) and multi-function display (MFD). The airplane flew about 22 hours since the avionics installation. The purpose of the accident flight was to troubleshoot an avionics issue.