

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR22LA313

FOLLOW-UP EXAMINATION

11/6/2022

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. FOLLOW-UP EXAMINATION.....	3
C. ACCIDENT SUMMARY.....	3
D. DETAILS OF THE EXAMINATION.....	3
1.0 COCKPIT.....	4
2.0 AIRFRAME EXAMINATION.....	4
2.1 Fuselage.....	4
2.2 Empennage	4
2.3 Wings.....	5
2.3.1 Left wing.....	5
2.3.2 Right wing.....	5
2.4 Landing Gear.....	5
2.4.1 Left Fuel System.....	5
2.4.2 Right Fuel System	5
3.0 ENGINE EXAMINATION	6
3.1 Left Engine.....	6
3.2 Right Engine	8
4.0 PROPELLER EXAMINATION	9
4.1.1 Left Propeller.....	9
4.1.2 Right Propeller	9
5.0 AIRCRAFT INFORMATION	9

A. ACCIDENT

Location: St. Ignatius, Montana
Date: August 23, 2022
Time: 1150 Mountain daylight time
Airplane: N4009Y Piper PA-30 Comanche

B. FOLLOW-UP EXAMINATION

Investigator	Eleazar Nepomuceno National Transportation Safety Board Federal Way, Washington
Party Member	Kathryn Whitaker Piper Aircraft Inc. Phoenix, Arizona

C. ACCIDENT SUMMARY

On August 23, 2022, about 1150 Mountain daylight time, a Piper PA-30 Twin Comanche, N4009Y, was substantially damaged when it was involved in an accident near St. Ignatius, Montana. The pilot and passenger sustained minor injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

According to the pilot, he was repositioning the airplane to a nearby airport about 15 miles north for maintenance. After an uneventful preflight, the pilot started both engines without incident. The pilot verified that both engine RPM needles matched, and he taxied the airplane to the runway. He positioned the airplane on the runway, set the engines to full power and departed westbound. He stated that as the airplane transitioned through ground effect, the airplane ceased to climb and that he applied "a lot" of right rudder. Shortly after airplane crossed the end of the runway, the pilot observed powerlines on their flight path and rolled the airplane to the left. Subsequently, the airplane impacted a road and cartwheeled to a stop.

D. DETAILS OF THE EXAMINATION

With limited resources in the private hangar, the airplane remained on its belly during the examination. As a result, certain sections of the airframe and engine were inaccessible for further examination.

1.0 Cockpit

The instrument panel remained intact. The following gauges, levers and switches were found in the following positions/values:

- Hobbs time - 117.0
- Left and right fuel quantity - empty
- Left and right oil press - 0
- Left and right oil temperature - 0
- Left and right cylinder head temp - 0
- RPM - 0
- Left and right EGT - 0
- Manifold Pressure- 26 in Hg
- Left and right fuel flow - 0
- Wing flap position - Full up
- Cowl flap - full forward
- Turn coordinator - wings level, ball centered
- Artificial Horizon - nose up 10 degrees, left 10 degrees
- Auto Pilot - OFF
- VSI - 100
- Master - OFF
- 4 magneto switches - OFF
- Starter- neutral
- Left boost pump - ON
- Right boost pump - OFF
- Strobe - neutral
- Position lights - OFF
- Brakes (hand lever) - full forward
- Left and right throttles - forward position
- Left and right propeller levers- forward position
- Left and right mixture levers - midspan position
- Landing gear - UP positions
- Flap position indicator - 0 degrees
- Left and right fuel selector levers - OFF

2.0 Airframe Examination

2.1 Fuselage

The aircraft was on its belly with the landing gear retracted. The fuselage displayed impact deformation to the nose, belly, and cabin roof. The windscreens were cracked. The main cabin and baggage doors remained within their frames and appeared undamaged. The forward cabin seat frames displayed deformation to the frames. The seat restraints were unremarkable. No shoulder harnesses were installed in the aircraft.

2.2 Empennage

The empennage remained attached to the fuselage and was canted to the left. The left side of the stabilator displayed a semi-circular crush impression to its trailing edge. The right side of the stabilator was bent downward. The vertical stabilizer and rudder were unremarkable.

2.3 Wings

2.3.1 Left wing

The left inboard wing, including the nacelle and engine, remained attached to the fuselage. The wing outboard of the nacelle was impact separated. The left main and aux fuel caps remained in place within the fuel fillers. The left main and aux fuel cells were empty, though some silt was noted at the bottom of the cells. The fuel screens were free of blockage when observed using an inspection mirror.

The left flap remained attached to the wing at the inboard flap mount, however the outboard end of the flap had been impact separated from the wing. The impact damaged aileron remained mounted to the outboard wing section.

2.3.2 Right wing

The right wing remained attached to the fuselage; the outboard end was impact damaged and deflected upward. The aileron and flap remained attached to the wing and each displayed buckling.

The right wing main and aux fuel caps remained within their filler necks. The aux fuel tank was full to the filler neck, and the main wing tank was mostly full. The fuel observed within the tank was turbid and discolored.

2.4 Landing Gear

All landing gears appeared to be retracted in the airframe's wheel wells.

2.4.1 Left Fuel System

The left wing main and auxiliary fuel tanks were breached from impact damage during the accident sequence. The remaining fuel was recovered and stored within 5 5-gallon buckets. The fuel recovered had a "dark green" color. The fuel was tested for water contamination using Sar-gel, which had a negative result. The fuel is being retained for further examination.

2.4.2 Right Fuel System

The right main and auxiliary fuel tanks remained intact. Both tanks were full of fluid consistent with fuel. The fuel within the tanks were also "dark green" in color. The fuel was tested for water contamination using Sar-gel, which had a negative result. The fuel is being retained for further examination.

3.0 Engine Examination

Both engines were still installed on its respective mounts, without any signs of uncontained failures.

3.1 Left Engine

The installed left engine was Lycoming IO-320-B1A, serial no. L-938-55 (figure 1) appeared free from impact damage. The crankshaft was manually rotated, and appropriate movement of the valve rocker arms was observed. The crankshaft and camshaft freely rotated, and both impulse couplings were heard engaging.

Thumb compression and suction to all four cylinders were established. The spark plugs electrodes displayed normal wear, with no mechanical damage. The throttle and mixture control cables remained attached to the fuel servo. The fuel servo inlet screen was removed and free from blockage. The fuel flow divider was free of obstructions and the diaphragm was intact. The outlet elbow on the mechanical fuel pump was loose however no fuel leakage from the elbow or attached fuel line was evident. The mechanical pump was removed and found unremarkable.



Figure 1. Top view of left engine

The left and right magnetos installed on the left engine were manufactured by Bendix, model no. 4373, serial nos. 00052272 and 00052347, respectively (figure 2 & 3). The magnetos were secured on its respective mounting pad. Both magnetos were removed and revealed that each were free of impact damage. All drive gears were found unremarkable. Each terminal produced sparks when the drive gear was manually rotated by hand. According to the engine logbooks, the last 500-hour inspection was completed on April 5, 2004, with which the magneto to engine timing was set to 25 degrees.



Figure 2. View of the left magneto from the left engine



Figure 3. View of the right magneto from the left engine

3.2 Right Engine

The installed right engine was Lycoming IO-320-B1A, serial L-909-55 and appeared free from impact damage. The crankshaft could not be rotated through a full rotation due to the interference with the propeller on the hangar floor. The top spark plugs electrodes displayed normal wear no mechanical damage. The throttle and mixture control cables remained attached to the fuel servo. The fuel servo inlet screen was free from blockage. The fuel flow divider diaphragm was intact.

The magnetos produced sparks at all posts when the drive gear was rotated by hand.

4.0 Propeller Examination

4.1.1 Left Propeller

The left propeller remained attached to the left engine crankshaft. Both propeller blades were bent aft nearly 90°. The blades displayed both chordwise and longitudinal scrapes. The blade leading edges were chipped. The spinner displayed crush damage to one side.

4.1.2 Right Propeller

The right propeller remained attached to the left engine crankshaft. Both propeller blades were bent aft nearly 90° and twisted. One propeller blade rotated freely within the hub. The blades displayed both chordwise and longitudinal scrapes. The blade leading edges were gouged.

5.0 Aircraft Information

According to a witness, the airplane has not flown for at least 2 years prior to the accident flight, in which was the last time the airplane was also fueled.

Submitted by:

Eleazar Nepomuceno
Aviation Accident Investigator