

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24FA150

AIRFRAME AND ENGINE EXAMINATION REPORT

May 17, 2024

TABLE OF CONTENTS

A. ACCIDENT	3
B. AIRFRAME AND ENGINE EXAMINATION REPORT	3
C. SUMMARY	3
D. DETAILS OF THE EXAMINATION.....	4
1.0 AIRFRAME EXAMINATION.....	4
1.1 Fuselage.....	4
1.2 Empennage	4
1.3 Wings	5
1.4 Landing Gear.....	6
1.5 Cockpit.....	7
1.6 Fuel/Fuel System.....	7
2.0 ENGINE EXAMINATION	8
3.0 PROPELLER EXAMINATION	9
4.0 AIRCRAFT INFORMATION	10

A. ACCIDENT

Location: Thurlow, Montana
Date: May 14, 2024
Time: 0715
Airplane: Piper PA-18-150 / N14323

B. AIRFRAME AND ENGINE EXAMINATION REPORT

IIC Fabian Salazar
National Transportation Safety Board
Federal Way, Washington

FAA John Cosenza
Federal Aviation Administration
Helena, Montana

Party Member Jonathan Hirsch
Piper Aircraft
Vero Beach, Florida

Party Member Mark Platt
Lycoming Engines
Williamsport, Pennsylvania

C. SUMMARY

On May 14, 2024, about 0715 mountain daylight time, a Piper Aircraft PA-18-150 Super Cub airplane, N41323, was substantially damaged when it was involved in an accident near Forsyth, Montana. The pilot and passenger received fatal injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

On May 15 and 16, 2024, the IIC, along with the FAA representative and the Party Member for Piper Aircraft responded to the accident scene to begin the field investigation.

At the conclusion of the airframe and engine examinations, it was determined that there were no mechanical malfunctions or failures that would have precluded normal operation. A Garmin 496 GPS (serial number: 19712680) was recovered from the cockpit and retained for further data download.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

1.1 Fuselage

The airplane came to rest next to a hill at 46°.328928 -106°.37472, at an elevation of about 2,618 ft mean sea level (msl), with the fuselage nose down and the empennage nearly vertical, as shown in figure 1. The fuselage was substantially damaged from the firewall aft to the empennage. The engine cowling and engine were displaced upwards and aft.



Figure 1. Google Earth image showing the location of the accident airplane and the location of the fragments of the position lights.

Flight control continuity was confirmed from the primary flight control surfaces to the cockpit controls.

1.2 Empennage

The empennage exhibited minor damage and did not contact the terrain.

1.3 Wings

Both wings exhibited substantial damage to the leading edges.

The right wing remained attached to the fuselage and exhibited significantly more damage than the left. The right wing was twisted upwards from the tip to the root. The right aileron and right split flaps remained attached to the aft end of the wing. The struts remained attached to the wing and fuselage. The majority of the green navigation light was found shattered and embedded in the dirt, oriented toward the top of the airplane.

The left wing remained attached to the fuselage. Areas of the leading edge were flattened and displaced aft. The left aileron and left split flaps remained attached to the aft end of the wing. The struts remained attached to the wing and fuselage. Fragments of the red navigation light were found resting in the dirt, oriented toward the belly of the airplane.



Figure 2. Image showing wings, fuselage, and empennage.

1.4 Landing Gear

The airplane was tail wheel equipped with the tail wheel exhibiting no damage. The main landing gear was equipped with over-sized "tundra tires." Both main landing gear struts exhibited buckling and bending failures.



Figure 3. Image showing the underside and landing gear

1.5 Cockpit

The cockpit was crushed aft and exhibited substantial damage. The instrument panel was displaced over the top of the engine and firewall.

Both occupants were secured with seat belts and shoulder harnesses.

The seats remained secured to the cabin floor.

The front seat was equipped with flight controls (control stick, rudder pedals, throttle) The aft seat was not equipped with a control yoke but did have rudder pedals and a throttle lever. The throttle appeared to be mid-travel.

An emergency locator transmitter was found mounted in the aft-left cabin. The switch was in the forward position, but the ELT was not transmitting.

The following were recovered from the cabin area:

- Heckler & Koch Inc. Semi-automatic shotgun, serial number: M209004. Loaded with shotgun shells.
- Single-shot shotgun. One shell in the chamber
- Pistol, stainless steel revolver.
- Multiple 12-gauge shotgun shells generally contained in two plastic coffee cans. Most of the shells were in the can but many had fallen out of the can and were spilled out in the cockpit and on the ground. Around 80 t 100 shells were present. The investigating staff did not count them.

The weapons were examined and turned over to law enforcement to be returned to the pilot's family.

1.6 Fuel/Fuel System

Each wing had a fuel tank installed. The right tank's fuel cap separated from the port. The locking tabs were bent downwards. The right tank remained secured in the wing and was breached with no fuel present in the tank. An area of dark earth was seen downhill from the right fuel tank, consistent with fluid draining downhill from the right wing. The left-wing fuel tank remained secure in the left wing. Fuel remained in the tank. A sample of the left-wing tank fuel revealed a clear, not-blue fluid with the smell and consistency of automotive gasoline. About three gallons of fuel drained from the left-wing tank during the time that the airframe was examined.

2.0 Engine Examination

The engine remained secured to the damaged firewall by the engine mounts. The engine was separated from the engine mounts with mechanical cutters and set up on pallets for examination. The top spark plugs were removed, and all appeared a dry grayish color, consistent with running lean.



Figure 4. Image showing the engine after it was separated for examination.

The rocker covers were removed, and all four interiors appeared oil wetted without contamination.

The engine was rotated, and all four cylinders exhibited thumb-force compression, with uniform rocker arm movement, and vacuum from all cylinders. The #1 cylinder exhibited less vacuum than the other cylinders. An examination of the push rod covers revealed a bent exhaust push rod cover.

Both magnetos remained secured at their respective mounts (#1 serial number: 192139, #2 serial number: 204462) and produced a spark at all eight leads when rotated by hand.

The carburetor had fractured and separated from the intake plenum at the neck. The butterfly valve remained secure and appeared undamaged. The bowl was removed, exposing two undamaged plastic floats. The needle separated and was found in the carburetor. The throttle and mixture control cables remained secured to the carburetor. The air filter remained attached to the carburetor but was crushed.



Figure 5. Image showing the underside and the carburetor

3.0 Propeller Examination

The propeller remained attached to the engine at the propeller flange. The fixed pitched aluminum propeller exhibited minimal damage to one propeller blade and a near 90° bend to the other propeller blade. A significant gouge was found in the dirt consistent with a propeller strike. One blade exhibited chord-wise striations. Neither propeller blades exhibited evidence of high-power rotation.



Figure 6. Image showing the underside of the engine and the propeller

4.0 Aircraft Information

The airplane was a Piper PA-18-150, Serial number: 18-7409083 equipped with a Lycoming 4-cylinder engine. A placard identified the engine model as O-320-A2B. A second tag was permanently attached to the original tag that stated the engine was "changed to a O-320-B2B." The engine serial number remained L-37468-27A.



Figure 7. Engine data plate with second data plate, permanently attached.

The registration number was not listed in the FAA directory as being a valid registration number for the airplane.

Submitted by:

Fabian Salazar
IIC