

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24LA128

WRECKAGE EXAMINATION REPORT

April 17, 2024

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. WRECKAGE EXAMINATION REPORT	3
C. SUMMARY	3
D. DETAILS OF THE EXAMINATION.....	3
1.0 AIRFRAME EXAMINATION.....	3
2.0 ENGINE EXAMINATION	6
3.0 PROPELLER EXAMINATION	8

A. ACCIDENT

Location: Edgewater, FL
Date: 03/01/2024
Time: 1243 EST
1743 UTC
Airplane: Cub Crafters PA-18-150

B. WRECKAGE EXAMINATION REPORT

IIC Kurt Gibson
NTSB
Washington, D.C.

Party Member James Holmes
FAA
Orlando, FL

C. SUMMARY

The examination of the wreckage revealed that the left aileron direct control cable was fractured. The fracture was consistent with a pre-accident fracture. The control cable and the pulley located at the fractured section of the control cable displayed corrosion and wear and the pulley would not rotate smoothly and would occasionally bind.

D. DETAILS OF THE EXAMINATION

On April 9, 2024, the NTSB investigator-in-charge examined the wreckage at the operator's hangar. An airworthiness inspector from the FAA assisted him with the examination.

1.0 Airframe Examination

The airplane sustained substantial damage to the fuselage, left wing and the right wing. The right wing displayed significantly more damage than the left wing with most of the damage occurring between the wing strut attach point to the wing root.

Flight control continuity was established for the right aileron, elevator, and the rudder. Flight control continuity for the left aileron was able to be established for the left aileron balance cable which was continuous to the right aileron. The left aileron direct control cable was fractured at the pulley at the outboard, lower fuselage where

the cable exits the fuselage and is guided along the wing strut. The fracture was consistent with a preaccident fracture. The control cable was removed and visually inspected, there were several sections of cable that were corroded. It was observed that near the fracture area there were flat spots in the cable on both sides of the cable.



Figure 1: Both sides of the fractured left aileron direct cable



Figure 2: Both fractured ends of the left aileron direct cable



Figure 3: Fractured end of left aileron direct cable (control stick side of the cable)



Figure 4: Wear spots on left aileron direct cable (control stick side of the cable)



Figure 5: Fractured end of the left aileron direct cable (aileron side of the cable)

The pulley that was located at the fractured section of the left aileron direct cable was noted to have a small section of the pulley that was fracture separated, the

fracture area displayed an accumulation of dirt and grease. When manually rotating the pulley by hand, the pulley would not rotate freely and would occasionally bind. The pulley was removed, and it was observed that the bolt, bushing, and bushing housing were corroded. Further inspection of the pulley revealed that the channel of the pulley had a section that was visibly worn compared to the rest of the pulley which is consistent with the pulley not rotating during operation of the control cable. Inspection of the rudder cables and the aileron balance cables revealed additional corrosion to the portions of the cables that were external to the primary airplane structure.



Figure 6: Left aileron direct cable pulley



Figure 7: Left aileron direct cable pulley with visible corrosion

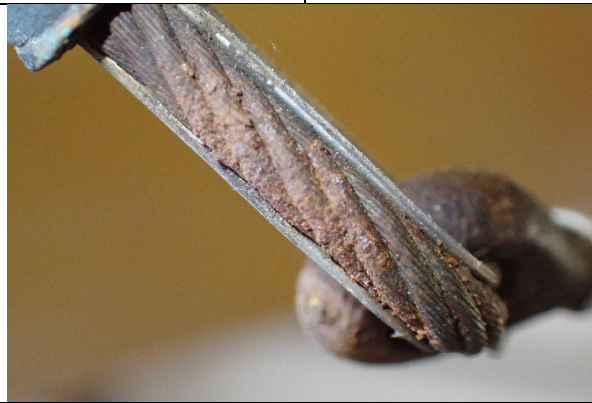


Figure 8: Left aileron balance cable eye end

The right aileron direct cable was visually examined, and it was observed that the portion of the cable that exited the lower fuselage displayed a significant amount of corrosion. Tension was removed from the cable and the cable was bent by this investigator to facilitate inspection for broken wire strands. It was observed that at the corroded portion of the cable, the cable was inflexible, and when bent flakes of rust would fall off the cable. The cable was inspected in multiple locations around the corroded areas and approximately 10 broken wire strands were found in the right aileron direct cable. The right direct cable pulley in the lower right portion of the fuselage was examined while still installed in the airplane. The pulley was capable of rotating freely and there was no binding; however, it was observed that the pulley

channel had a worn-out area of the channel which was consistent with the cable rubbing in the channel without the pulley rotating during operation.



Figure 9: Right aileron direct cable with visible corrosion and wear marks



Figure 10: Right aileron direct cable with visible corrosion and broken wire strands

In addition to the control cables, the airplane displayed corrosion in other locations, with most of the corrosion being found in the metal components that were external to the primary structure of the airplane. The main landing gear cables and some of the tubular structure in the cockpit had untreated corrosion.

The fuel strainer remained attached to the airframe and was undamaged. The strainer bowl was drained. The drained fluid had the color and odor consistent with 100LL AvGas. There was no water or debris contamination observed in the sample. The fuel strainer bowl was removed, and there was a small amount of debris at the bottom of the strainer bowl. The fuel strainer screen was visually inspected and there was a small amount of debris in the screen; however, the screen was not obstructed.

2.0 Engine Examination

The engine remained attached to the airframe through its engine mounts, control cables, wires, and hoses. The engine displayed impact damage and was pushed aft. The right magneto had impact separated from its mounting location.

The external portions of the engine displayed signs of untreated corrosion with the most corrosion occurring around the cylinder bases. The top spark plugs were removed from their respective cylinders and the crankshaft was rotated manually. All four cylinders displayed good thumb compression and suction and the crankshaft rotated normally without any binding. The rocker box covers were removed and the overhead components (rocker arms, valve springs, and valves) displayed normal lubrication signatures. It was observed that several of the valve springs were corroded; however, none of the valve springs were fractured. During crankshaft rotation, all the rocker arms and valves operated normally.

The carburetor remained attached to the induction system and to the airframe airbox. The throttle and mixture control cables remained attached to their respective control arms and were capable of normal operation while manipulating the cockpit engine controls. The fuel inlet line was secured to the carburetor and there were no visible indications of fuel leaks around the carburetor. The carburetor fuel inlet screen was removed and visually inspected; there were no contaminants within the inlet screen.

The right magneto was impact separated from its mounting location and displayed impact damage to its mounting flange. The magneto drive was rotated using a drill, and it was observed that the magneto was capable of producing a spark on all four towers. The left magneto remained attached to its installation point and appeared to be undamaged. The crankshaft was rotated, and it was observed that the left magneto was capable of producing a spark on all four towers. All the ignition leads remained secured to both magnetos and to each of the spark plugs. The top spark plugs were removed and visually examined, and the bottom spark plugs were examined using a lighted borescope. The top spark plugs displayed normal operating signatures and the bottom spark plugs displayed significant lead deposits; however, the spark plug electrodes did not appear to be lead fouled.

The exhaust system displayed signs of exhaust leaks around the Nos. 2 and 3 exhaust riser flanges at the cylinder installation point. There were no signs of obstructions in the exhaust system. The induction system remained secured to the cylinders and the carburetor and there were no signs of an intake leak observed.

According to the pilot, on the accident flight, the engine operated normally and was running at the time of impact with the hangar. The pilot reported there were no anomalies or mechanical failures with the engine that would have precluded normal operation.



Figure 11: No. 1 Cylinder with visible corrosion at the cylinder base

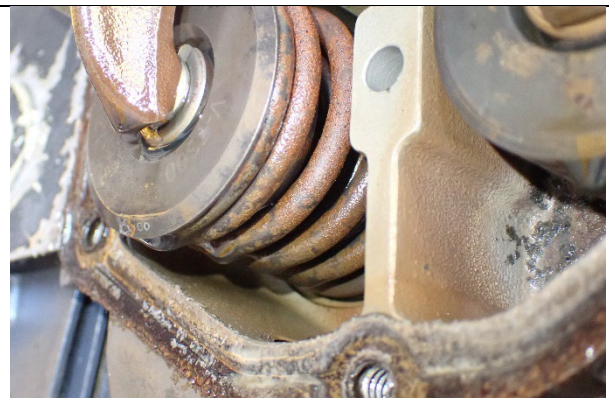


Figure 12: No. 1 Cylinder intake valve springs with visible corrosion

3.0 Propeller Examination

The two-bladed, fixed-pitch propeller remained attached to the crankshaft and displayed impact damage to both of the propeller blades. Both of the propeller blades displayed leading edge polishing, and both blade tips were bent aft.



Figure 13: Propeller



Figure 14: Propeller

Submitted by:

Kurt Gibson
Aviation Accident Investigator