

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24LA034

AIRFRAME AND ENGINE EXAMINATION

January 19, 2024

A. ACCIDENT

Location: Hayden, Idaho
Date: November 13, 2023
Time: 0800 PST
16:00Z
Airplane: Cessna 310 D

B. AIRFRAME AND ENGINE EXAMINATION

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C. SUMMARY

On November 13, 2023, about 0800 Pacific standard time, a Cessna 310D, N86H, was substantially damaged with it was involved in an accident near Hayden, Idaho. The pilot sustained minor injuries. The airplane was operated as a Title 14 Code of Federal Regulations personal flight.

The pilot reported that he had departed Coeur d'Alene Airport - Pappy Boyington Field (COE), Hayden, with an intended destination of Nampa, Idaho. As he ascended to about 4,500 ft mean sea level, he noticed that the manifold pressure on the left engine indicated about 21 inches, while the manifold pressure for the right engine indicated 23 inches. Despite his efforts to troubleshoot the difference in manifold pressure for the two engines, he was unsuccessful, and noted that the left engine seemed to be unresponsive. The pilot decided to return to COE, and while on final approach to runway 2, the left engine "either went to idle or lost all power," followed by the sound of the stall warning horn. The airplane then immediately rolled left and impacted the ground short of runway 2.

Post accident examination of the airplane by a Federal Aviation Administration inspector revealed that the airplane impacted the ground about 250 ft before the approach end of runway 2. The fuselage and wings were substantially damaged and both engines were separated from the engine nacelles.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

1.1 Fuselage

The nose of the aircraft sustained aft crushing damage and was displaced to the left. The cabin structure was intact, with the exception of cuts made by rescue crew to extricate the pilot.

1.2 Empennage

The empennage was bent toward the left approximately 90 degrees aft of the #3 and #4 seats.

1.3 Wings

The left wing was crushed upward, the wing spars were partly fractured. The upper wing skin exhibited compression wrinkles and skin separation at the rivet joints. The left wing-tip fuel tank was impact separated and ruptured. The right wing was bent upward approximately 15 degrees at the aileron flap intersection. The right wing-tip fuel tank was fracture separated and ruptured. Both wing engine mount structures were fracture separated from the wings. The engines remained attached to the mounts. Flaps were observed in the down position.

1.4 Landing Gear

The nose landing gear was folded aft into the belly skin, the left main landing gear broken from its mounting location, the right main landing gear was extended and locked.

1.5 Cockpit

The left engine fuel selector was in the "LEFT ON TANK"" position, the right engine fuel selector was in the "RIGHT ON TANK"" position. All 4 engine ignition switches were found in the off position. Both manifold pressure needles were "matched" at 28".

1.6 Fuel/Fuel System

The left wing-tip bladder type main fuel tank was ruptured. The auxiliary fuel pump and tank outlet were separated from the rest of the bladder consistent with impact related damage. The fuel supply hose from the bladder to the pump inlet remained attached. The bladder was pliable. Air was passed from the fuel supply

line at the firewall through the fuel selector valve to the wing tip connection. No obstruction was detected. Air was passed through the fuel return line from the firewall to the wing tip connection. No obstruction was detected. The left fuel strainer bowl had been replaced with a clear plastic bowl. The screen was free of debris and appeared in new condition.

The right wing-tip bladder type fuel tank was ruptured. The auxiliary fuel pump and tank outlet were attached to the bladder. The fuel supply hose from the bladder to the pump inlet remained attached. The bladder was pliable. Due to the reported accident circumstances the right fuel system from the firewall to the wing tip connection was not examined.

2.0 Engine Examination

2.1 Left Engine

Continental IO-470-D
S/N: 78687-1-D

The engine remained attached its mount and the mount was impact separated from the firewall. The engine and propeller control cables were fractured near the firewall.

The left engine throttle and mixture control cable attachment to the cable mount bracket had been modified to incorporate a sectioned piece of aluminum fluid line and rubber padded adel clamp. The mixture arm from the mixture cable gear drive to the mixture valve was fractured. The throttle control cable mount near the throttle valve was bent. The throttle linkage from the throttle valve to the throttle cable gear drive was in contact with the throttle valve.

The left engine air intake cover was removed for examination. The filter was clean, and no obstructions were observed from the filter to the throttle valve. The throttle valve body sustained impact damage. The valve linkage was intact from the valve arm to the throttle control gear drive. The valve was in the fully open position and could not be operated by hand. A wrench was used to operate the gear drive and valve and the valve moved in conjunction with the drive gear.

All accessories and propeller remained attached to the engine. All oil and fuel pump lines were secure their respective fittings. No evidence of any preaccident oil or fuel leaks were observed.

Throttle, mixture, and propeller control continuity was not able to be established from the cockpit controls to the engine due to impact related damage, the cables were fracture separated at the nacelle.

The top spark plugs were removed, and all 6 cylinders were examined internally using a and found to be unremarkable. The crankshaft was rotated by hand using the propeller, rotational continuity was established throughout the engine and valve train. Thumb compression/suction was not able to be examined due to propeller impact damage preventing complete rotation of the crankshaft.

Both magnetos were removed, and spark was produced on all 12 ignition harness leads when rotated. The actuation of both impulse couplings engaging was observed when the magnetos were rotated. The upper spark plugs appeared normal per the Champion Check-a-Plug chart.

The fuel pump was unremarkable. All six fuel injector nozzles were removed and found to be free of debris. The fuel manifold valve was intact and undamaged. The fuel manifold valve was disassembled. No liquid was observed in the fuel manifold valve cavity. The diaphragm and internal spring were intact and undamaged. The screen was free of debris. The fuel inlet screen on the fuel servo was free of debris.

2.2 Right Engine

Continental IO-470-D
S/N: 75563-9-D

The engine remained attached its mount and the mount was separated from the firewall. All accessories and the propeller remained attached to the engine. All oil and fuel pump lines were secure at all their respective fittings. No pre accident evidence of any oil or fuel leaks were observed.

Throttle, mixture, and propeller control continuity was not able to be established from the cockpit controls to the engine due to impact related damage, the cables were fracture separated at the nacelle,

The engine was externally unremarkable and was not examined further due to the pilot reporting no issue with the right engine.

3.0 Propeller Examination

3.1 Left Propeller

The left propeller remained attached to the crankshaft. Blade "A" was bent aft midspan and exhibited "S" bending with vertical and horizontal gouging. Blade "B" was bent forward midspan and exhibited "S" bending and horizontal leading edge gouging.

3.2 Right Propeller

The right propeller remained attached to the crankshaft. Blade "A" was bent aft midspan and exhibited "S" bending with horizontal leading edge gouging and was twisted torsionally towards high pitch. Blade "B" was bent forward midspan and exhibited "S" bending and horizontal leading edge gouging.

Submitted by:

Zane Brown
Aviation Accident Investigator