



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

September 16, 2021

AIRFRAME AND ENGINE EXAMINATION SUMMARY

WPR20LA304

This document contains 2 embedded photos.

A. ACCIDENT

Location:	Seeley Lake Airport, Montana
Date:	September 12, 2020
Aircraft:	N3270R, Cessna 172H
NTSB IIC	Albert Nixon

B. PARTICIPANTS

Albert Nixon	Jennifer Barclay
Senior Aviation Accident Investigator	Air Safety Investigator
National Transportation Safety Board	Textron Aviation
Federal Way, WA	Wichita, KS

C. SUMMARY

Examination of the wreckage was conducted at the facilities of Arlin's Aircraft Services, Belgrade, Montana. The postaccident examination of the airframe and engine revealed no mechanical failures or malfunctions that would preclude normal operation.

DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

The airframe sustained impact damage to the fuselage and cabin area. The top of the cabin was separated. The left side of the fuselage was bent inward. Impact damage was evident to both wings and the horizontal stabilizers. The horizontal stabilizers and wings were cut during the recovery. The engine and propeller assembly were separated from the main wreckage.



Figure 1-Wreckage layout, rear left side view.

Flight control continuity was established from the rudder and elevators to the cockpit. The ailerons continuity was established through cuts and overload separations of cables. The rudder was attached at all its respective attach points. The fracture surfaces were consistent with overload. The elevator trim indicator was near neutral and indicated just below the takeoff setting in the cockpit.

Both wings were separated from the fuselage. The right wing had a circular impact about mid-span. The left wing had leading edge damage. The wing fuel tank caps were removed and undamaged. The cap seals were intact and undamaged.

The rudder was attached and relatively intact. The vertical stabilizer had impact damage on the forward bottom portion.

The left main landing gear had separated. The right main landing gear and nose gear remained attached.

In the cockpit, the ignition switch was off, and the key removed. The mixture and propeller controls were about 1/4 inch out. The throttle lever was missing. The engine tachometer indicated 2267.75 hours. The fuel pump was off. The pitot heat was off. The nav lights were off. The beacon light was off. The landing lights were in a position between off and on. The carb heat was off. The altimeter indicated 4,585 ft with 30.06 selected. The primer was closed and locked and the vertical speed indicator displayed a -100 fpm descent.

The fuel selector was in the both position. The fuel selector valve was removed, and the valve selection was confirmed to be in the appropriately selected detent, and operated normally, by blowing low pressure air through the valve. The fuel strainer was separated from the firewall. The strainer screen was observed to be clear of contaminants.

The flaps were determined to be retracted from flap actuator.

Engine Examination



Figure 2: Engine and propeller as viewed from the front.

The engine was separated from the fuselage engine mount assembly and was relatively undamaged except for the bottom portion. No catastrophic damage was noted. The rocker covers were removed, and no evidence of heat distress was observed, and the areas were appropriately lubricated. Internal valve train continuity was established by hand rotation of the propeller valve train. Thumb compression was observed on all cylinders in proper firing order. The spark plugs were removed, and electrodes were undamaged and exhibited coloration consistent with normal wear.

The carburetor was secure on its mounted pad and sustained impacted damage to the bottom portion. The carburetor was removed from the engine and disassembled. The examination of the carburetor revealed no anomalies noted. The fuel bowl was clear of contamination and contained a residue amount of fuel. The fuel tested negative for water. The fuel inlet screen was clear of contaminants. The mixture cable remained attached to the firewall and the arm at the carburetor

indicated Full Rich. The throttle rod end remained attached to the carburetor but was separated about 4 inches from the attach point. The setting appeared to be between 3/4 to full.

The magnetos were secured on their mounts. Magnetos were removed and hand rotation of drive produce spark at all leads during rotation.

The air inlet was free of obstructions. The carburetor heat was closed. All fuel lines were secure at their respective fuel system components. Fluid residue consistent with aviation fuel was present in the fuel lines.

The fuel pump remained attached to it respective mounting pad with the fuel lines in place. The fuel pump was removed and actuated and created suction. The fuel pump was disassembled, and the diaphragm was intact, and the fuel pump was free of visible contaminants.

The oil quantity indicated about 2 quarts. Oil was seen leaking onsite. The oil pressure screen was removed and was clear of contaminants.

The vacuum pump drive was observed to rotate during engine rotation.

The propeller remained attached to the engine. One blade had a slight aft twist about 3/4 the length of the blade. The other blade was bent aft and twisted near the tip. Both blades exhibited chordwise scoring and leading edge gouges. The spinner dome was crushed with torsional deformation.

Submitted by: Albert Nixon