

National Transportation Safety Board

Office of Aviation Safety

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AIRFRAME AND ENGINE EXAMINATION REPORT

December 17, 2023

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A. ACCIDENT

Location: Independence, Oregon
Date: December 16, 2024
Time: 1623 Pacific standard time
Airplane: Cessna 172G / N3992L

B. AIRFRAME AND ENGINE EXAMINATION REPORT

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C. DETAILS OF THE EXAMINATION

On December 16, 2023, about 1654 Pacific standard time, a Cessna 172G, N3992L, was substantially damaged when it was involved in an accident near Independence, Oregon. The pilot and two passengers were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

On December 17, 2023, the IIC and the Party Members from Textron travelled to the accident site to conduct the field examination of the wreckage. During the examination, no preaccident mechanical malfunctions or failures were observed with the airframe or engine that would have precluded normal operation.

1.0 Accident Site

See the Site Survey Report.

2.0 Airframe Examination

2.1 Fuselage

The airplane came to rest inverted in a flat open field. The fuselage, from aft of the firewall to about mid-section of the aft fuselage, was destroyed by a postaccident fire. The only part that remained was the section just forward of the empennage and the upper section between the wings. The engine cowling area was fractured into multiple sections.



Figure 1. N3992L at the accident site, front view.



Figure 2. Front, left-side view.



Figure 3. Left-side view.

2.2 Empennage

The aft section of the fuselage was thermally damaged. The thermal damage ended to about the area of the vertical stabilizer dorsal fin. The empennage remained attached to the aft section of the fuselage. The vertical stabilizer came to rest on the ground and exhibited impact damage to the leading edge and displacement to the left. The vertical stabilizer also exhibited dents and sheet metal wrinkling. The rudder remained attached to the vertical stabilizer at its attachment points and exhibited the same left displacement and wrinkling of the sheet metal.

The right horizontal stabilizer and elevator remained attached to the fuselage, came to rest on the ground and exhibited substantial damage at the outboard section nearest the tip in the form of downward bending. The left horizontal stabilizer and elevator remained attached to the fuselage and exhibited substantial damage to the elevator in the form of an upward bend mid-span.



Figure 4. Empennage right-side view.

2.3 Wings

The left and right wings remained attached to the upper section of the fuselage. The left wing was thermally damaged from the root of the wing outboard to about mid-flap. The remainder of the wing was not thermally damaged. The wing strut remained attached to the underside of the wing but separated from the thermally damaged fuselage mount. The left flap remained attached to the wing at all attachment points and was thermally damaged from the inboard section nearest the fuselage to about mid-span. The flap appeared to be up. The left aileron remained attached to the wing at all attachment points and exhibited minor damage from the underside. The composite tip separated from the wing. The landing light assembly remained attached to the leading edge of the wing. The pitot tube remained attached to the underside of the left wing.



Figure 5. Left wing, bottom view.



Figure 6. Left wing, top view.

The right wing remained attached to the upper section of the fuselage. A large amount of the fuselage ash covered the right wing at the root. The right wing was thermally damaged from the root outboard to about the wing strut mount. The wing strut remained attached to the underside of the wing but separated from the thermally damaged fuselage mount. The right flap remained attached to the wing at all attachment points. A section of the fractured wooden power distribution line support pole came to rest on the right flap. The flap appeared to be up. The right aileron remained attached to the right wing at all the attachment points and exhibited impact marks consistent with contact from the fallen pole.



Figure 7. Right wing, bottom view.

2.4 Landing Gear

The tricycle landing gear was impact and thermally damaged. The right and left main landing gear separated from the thermally damaged underside of the fuselage but retained sheet metal and mounting hardware to indicate that they were attached at the impact. The nose gear remained attached to the fire wall and exhibited minor damage. The composite wheel cover remained secured to the nose wheel assembly.



Figure 7. Left and right main landing gear.



Figure 8. Nose wheel.

2.5 Cockpit

The cockpit, in its entirety, was destroyed by the fire. No instrument, radio, or seat fabric remained. The transponder face was found outside of the wreckage and indicated 1200 code. No other instrument was found that provided useful data.



Figure 9. Cockpit area.

2.6 Survivability

The postaccident fire consumed the entire living space.

2.7 Fuel/Fuel System

The fuel system was mostly destroyed by fire. The carburetor was fractured away from the intake plenum. The brass floats remained and were damaged. The bowl separated from the engine but was found in the wreckage. The flight instructor had a copy of the last fuel received, which he believed was a top-off of the tanks. The airplane had two wing tanks and no other tank. Both tanks were breached and thermally damaged. The left fuel tank cap remained secured. The rubber seal was in place, intact and pliable.

2.8 Other Systems

The airplane was ADS-B equipped, and that data was available; however, no other equipment on board the airplane was recovered. Two cell phones were found but

both were thermally damaged beyond a recoverable state. Two iPads were found but both were damaged beyond a recoverable state.

3.0 Engine Examination

The engine was a Continental O-300D reciprocating six-cylinder engine. The engine was found about 25 ft north of the wreckage. The propeller spinner had been pressed flat against the hub. The number 5 cylinder was pressed aft against the number 3 cylinder. Near the engine there was a large depression in the soft ground. The engine starter and battery were embedded into the depression.

The engine was placed on the underside of the left wing for examination. The engine turned freely. The top sparkplugs were removed and appeared normal. The cylinders were checked for compression. All but the number 5 and number 3 cylinders had compression and vacuum. The number 3 cylinder had no compression and very little vacuum. The number 5 cylinder had no compression nor vacuum. The number 5 push rods were damaged and bent. The valve train continuity was confirmed by the movement of the rocker arms. A borescope examination was conducted of all cylinders, piston tops, and valves. No significant observations were noted.



Figure 10. Engine set on the left wing for examination.



Figure 11. Engine right-side view.

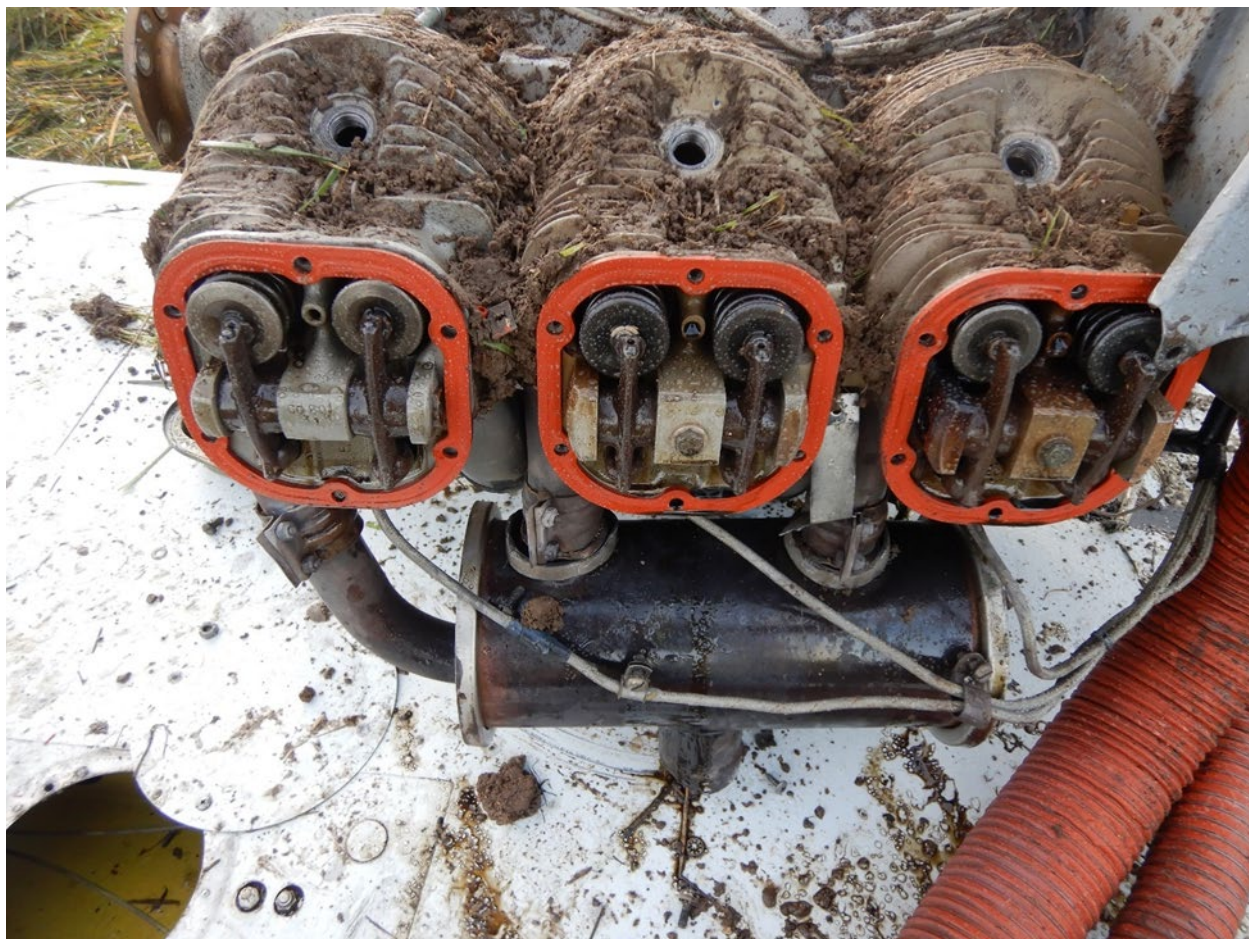


Figure 12. Engine, left-side view.



Figure 13. Borescope of the number 5-cylinder.

All rocker arm pockets were oil wet, with normal appearance. Oil dripped continuously from the engine while it was examined.

The magnetos were removed, and the leads were cut. Both magnetos exhibited sparks from the ends of all the leads. The leads were continuous from the caps to the spark plugs prior to being cut.

4.0 Propeller Examination

The propeller remained attached to the propeller hub. The fixed pitch two-bladed propeller was damaged. One blade (Blade #1) was bent chordwise about 60° aft and exhibited few chordwise striations. The tip was intact, and the blade exhibited gouges along the leading edge. The other blade (Blade #2) exhibited a near-90° bend but exhibited no gouges on the leading edge.



Figure 14. Propeller blade number 1.



Figure 15. Propeller blade number 2.

Submitted by:

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IIC