

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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## **AIRFRAME AND ENGINE EXAM**

May 1, 2025

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## **A. ACCIDENT**

Location: Cottonwood, California  
Date: April 29, 2025  
Time: 1534 Pacific daylight time  
Airplane: Champion, 7ECA, N6310N

## **B. AIRFRAME AND ENGINE EXAM**

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## **C. SUMMARY**

On April 29, 2025, about 1534 Pacific daylight time, a Champion, 7ECA, N6310N, was destroyed when it was involved in an accident near Cottonwood, California. The flight instructor and pilot receiving instruction were fatally injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 instructional flight.

## **D. DETAILS OF THE EXAMINATION**

### **1.0 Airframe Examination**

Examination of the fuselage revealed that it was thermal and impact damaged. The instrument panel was thermal and impact damaged with instruments separated. Flight controls were observed in both the forward and rear seat station. The forward flight control was fracture separated at the torque tube attachment point. The left main landing gear was separated from the fuselage. Damage to the left brake rotor, consistent with impact damage, was observed. The right main landing gear remained attached to the fuselage, was bent aft and thermally damaged.



**Figure 1: Front view of accident airplane during examination.**

The left wing separated from the fuselage near the wing root and was mostly destroyed by fire. The left wing aileron was mostly destroyed by fire. The flight control cables remained within the fragmented left wing and traced from the aileron attached points to the center fuselage. The left wing aluminum fuel tank was mostly destroyed by fire.



**Figure 2: View of left wing during examination.**

The right wing was separated from the fuselage near the wing root. Thermal and impact damage was observed throughout the wing. The right wing aileron remained attached to the wing, via its attached points. The right wing aluminum fuel tank separated from the wing and was mostly destroyed by fire.



**Figure 3: View of right wing during examination.**

The empennage remained attached to the fuselage and was thermal damaged throughout. The elevator remained attached to the horizontal stabilizer. The elevator flight control cables remained attached to their respective mounts, the control cables were traced to the cockpit and where attached to the flight control torque tube. The rudder was thermally damaged throughout. The rudder flight control cables remained attached to their respective mounts, the control cables were traced to cockpit, where they remained attached to the rudder pedals.

## **2.0 Engine Examination**

Engine Manufacturer: Lycoming  
Engine Model Number: O-235-C1  
Engine Serial Number: L-9043-15

The engine remained attached to the engine mount and fuselage. No damage was noted to the steel engine mount tubes. Thermal damage was observed throughout the engine from post impact fire.



**Figure 4: Side view of engine during examination.**

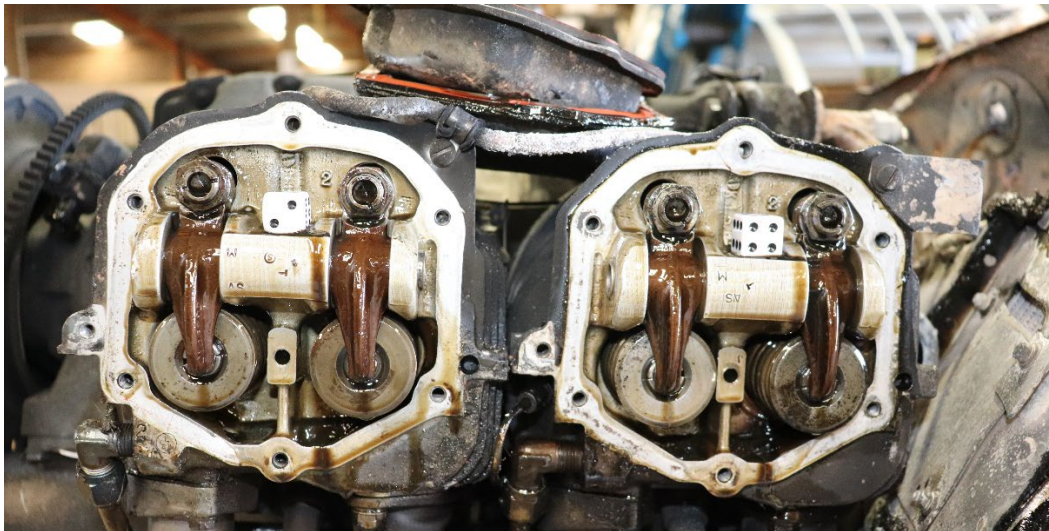
Continuity of the throttle and mixture controls was established from the cockpit controls to the carburetor. The throttle and mixture cable lines were attached and secure to their respective attachment points. Damage to the throttle and mixture cockpit controls prevented full movement.

The carburetor was removed from the engine and the mixture and throttle arms moved the available length. The carburetor was disassembled, no visible contamination was observed in the carburetor bowl and no anomalies were observed in the carburetor floats.

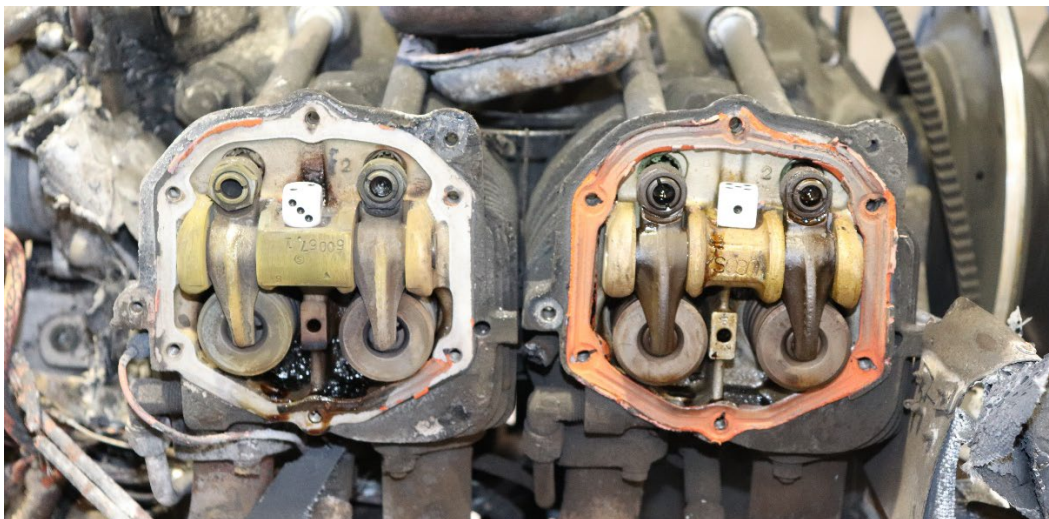


**Figure 5: Side view of carburetor during examination.**

The rocker box covers were removed. The intake and exhaust rocker arms were intact, and oil coated on all cylinders. All intake and exhaust valve springs were in place and visually appeared to be undamaged. The upper spark plugs were removed, and all four cylinders were examined internally using a lighted borescope. A normal amount of combustion deposits was observed within the combustion dome of each cylinder and piston face. All of the intake and exhaust valves were unremarkable. The crankshaft was rotated by hand using the propeller. Rotational continuity was established throughout the engine and valve train. Thumb compression and suction was obtained in proper order on all four cylinders.



**Figure 6: View of the No. 2 and 4 cylinder intake and exhaust valve springs.**



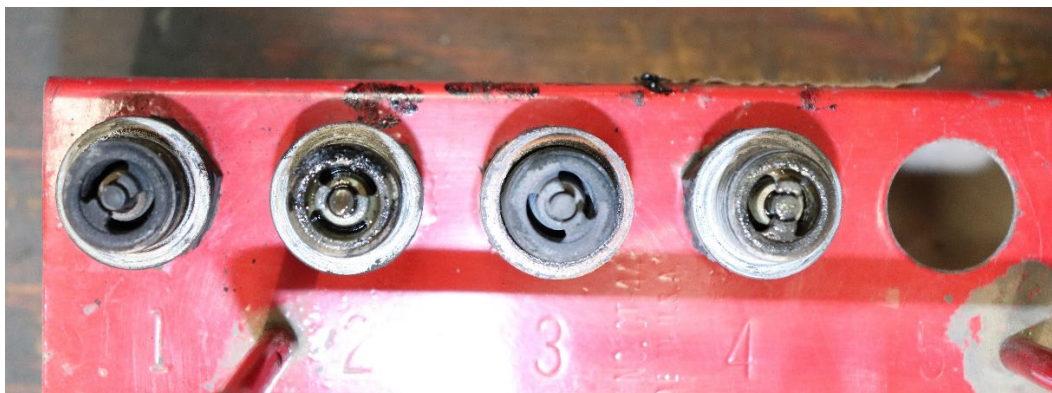
**Figure 7: View of the No. 1 and 3 cylinder intake and exhaust valve springs.**

The airplane was equipped with an electronic and a legacy magneto. Both remained attached to the engine accessory case and extensive thermal damaged was

observed. Due to thermal damage on both magnetos, a functional test could not be performed.

The exhaust system remained secure to the cylinders, bending and crushing was observed throughout the exhaust.

The top engine spark plugs were removed from the engine, and they were the massive electrode type. The sparkplugs exhibited gray deposits within the electrode area. All of spark plugs exhibited signatures consistent with WORN NORMAL when compared to the Champion Check-A-Plug chart. The No. 2 and 4 spark plugs were oil soaked, consistent with engine position at the accident location and post-accident recovery.



**Figure 8: View of top engine spark plugs.**

### **3.0 Propeller Examination**

Propeller Manufacturer: McCauley  
Propeller Model Number: ALM7246  
Propeller Serial Number: 50523

The airplane plane was equipped with a fixed pitch propeller. For the purposes of this report the propeller blades were labeled A & B. The propeller remained attached to the crankshaft. Propeller blade A exhibited damage to the propeller tip. Propeller blade B exhibited aft bending about mid span and the leading edge exhibited chipping, polishing, and chordwise striations.

Submitted by:

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