

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR21FA353

RECOVERED AIRFRAME AND ENGINE EXAMINATION

February 16, 2023

A. ACCIDENT

Location: Billings, Montana
Date: September 26, 2021
Time: 1922 mountain daylight time
Airplane: N354M, Beech S35

B. RECOVERED AIRFRAME AND ENGINE EXAMINATION

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C. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

Examination of the airframe revealed that the rudder control continuity was established from the controls to the cockpit bellcrank. The elevator control was obtained to the cockpit area, however, the bellcrank and bellcrank cable end was not located.

2.0 Engine Examination

Examination of the recovered engine revealed that it was separated from the fuselage to facilitate wreckage recovery. All engine accessories appeared to remain attached to their respective mounts. The right, bottom, and aft sides of the engine exhibited thermal damage. The fuel pump, top spark plugs, 12 ignition leads, and rocker box covers were removed. The engine was rotated by hand using the propeller. Thumb compression was obtained on all six cylinders. Rotational continuity was established throughout the engine and valve train. Equal movement of all intake and exhaust rocker arms was observed. All intake and exhaust rocker arms were oil coated.

The left and right magnetos were intact, however, exhibited some thermal damage. Both magnetos were removed, and the ignition harnesses were cut about 1 inch from the ignition harness cap. When the drive shaft was rotated by hand on both magnetos, spark was produced on each remaining portion of ignition lead.

The top spark plugs were removed. The top 1, 4, and 6 spark plugs were oil soaked. No. 1 and 3 exhibited light grey deposits within the electrode area. No. 5 exhibited black deposits within the electrode area. All 6 spark plugs exhibited normal signatures.

The ignition harness was thermally and impact damaged.

The throttle body and fuel control unit remained in place, however, exhibited thermal damage. The throttle cable and mixture cable remained attached to their respective control arms. The throttle and mixture control arms would not rotate by hand. The throttle plate was observed in an almost closed position. The fuel control unit fuel screen was removed and exhibited thermal damage, however, was free of debris.

The fuel manifold valve remained attached to the engine and all 6 injector lines were intact. The fuel manifold valve was disassembled. The spring and diaphragm were intact. The screen was free of debris, however, did exhibit some thermal damage and was partially melted to the fuel manifold valve housing.

All 6 fuel injectors were free of debris.

The fuel pump was removed from the engine and exhibited thermally damaged. The fuel pump drive shaft was intact. The fuel pump drive shaft would not rotate by hand. The fuel pump was disassembled, and corrosion was observed throughout the internal areas. The vane and rotor assemblies were intact.

The induction system was impact and thermally damaged.

The exhaust system was intact but exhibited impact and thermal damage. No evidence of blockages was observed.

Submitted by:

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