

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23FA287

ENGINE EXAMINATION REPORT

August 2, 2023

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A. ACCIDENT

Location: Upland, California
Date: July 30, 2023
Time: 0640 Pacific Daylight Time
Airplane: Beech P35, N8572M

B. ENGINE EXAMINATION REPORT

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C. SUMMARY

On July 30, 2023, at 0640 Pacific daylight time, a Beech P35, N8572M, was destroyed in a postcrash fire when it was involved in an accident near Upland, California. The pilot and two passengers were fatally injured. The airplane was operated as a Title 14 *Federal Aviation Regulations Part 91* personal flight.



Figure 1. Accident Site Overview

D. DETAILS OF THE EXAMINATION

1.0 Engine Examination

Continental Engine: IO-470-N
Serial Number:CS-95688-3-N

Examination of the recovered engine revealed that the engine had separated from the engine mount. All six cylinders and most engine accessories remained attached to the engine; both magnetos separated from their respective engine mounts. The oil sump pan had fractured open exposing the internal components of the engine.

The rocker box covers were removed revealing intact intake and exhaust rocker arms that were oil coated. All intake and exhaust valve springs were in place and visually appeared to be undamaged.



Figure 2. Left Side View of the Engine



Figure 3. Right Side View of the Engine

Several unsuccessful attempts were made to rotate the engine by hand, with each attempt facilitated by the removal of cylinders.

A visual inspection of the cylinders revealed that all the cylinder walls were normal in appearance. Cylinder Nos 1, 2, 3, 4, and 6 valve faces showed normal combustion signatures; the No 5 cylinder had slightly less combustion signatures but was not abnormal in appearance.

All the piston faces had uniform combustion deposits; A copper-color was observed on the sides of the pistons and was consistent with oil coaking.



Figure 4. Nos 1, 3, 5 Cylinders



Figure 5. Nos 2, 4, 6 Cylinders

The engine case was further disassembled to access the crankshaft, camshaft, and rotating mass. A visual examination of the main bearings revealed that they were worn and pitted. The No 5 main bearing support on the right side was cracked. No determination could be made as to why the engine would not rotate - likely the cracked No 5 main bearing.

Fuel injector nozzles were removed, Nos 1, 2, 3, 4, and 6 were clear of debris. The No 5 fuel injector nozzle had sustained impact damage and was bent.

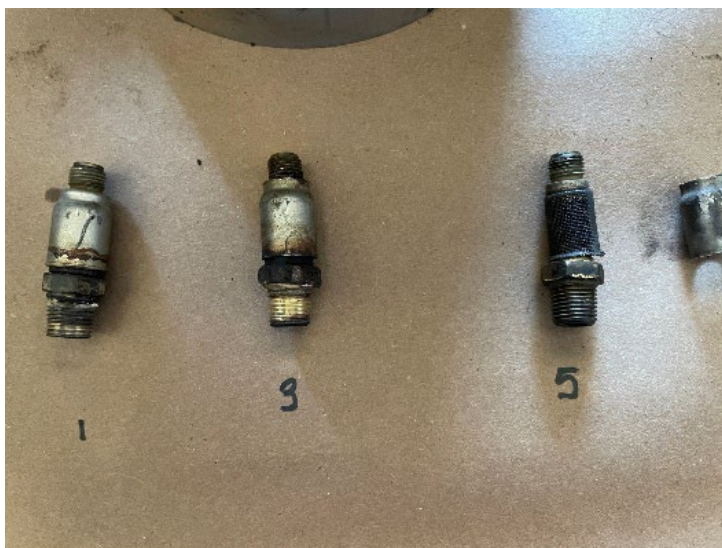


Figure 6. Fuel Injector Nozzles Nos 1, 3, 5



Figure 7. Fuel Injector Nozzles Nos 2, 4, 6

The engine driven fuel pump remained attached to the engine and was unremarkable. The fuel pump was removed and rotated by hand without binding. All fuel fittings removed were tight and the drive coupling was intact.

The fuel flow manifold valve was intact, undamaged, removed and disassembled. The screen was clear and free of debris. The spring and diaphragm were intact and undamaged.



Figure 8. Fuel Metering Assembly (Photo Courtesy of Textron Aviation)

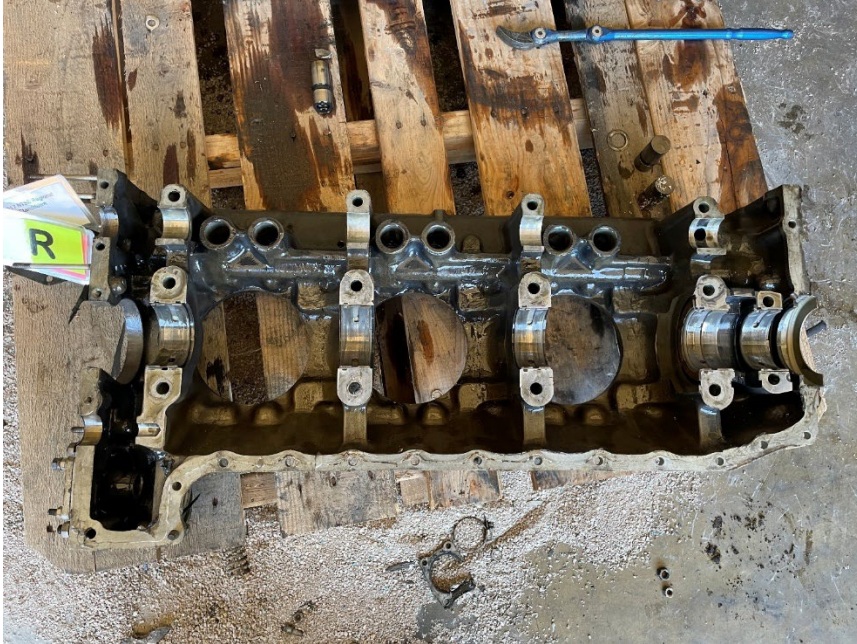


Figure 9. Right Side of Engine Case

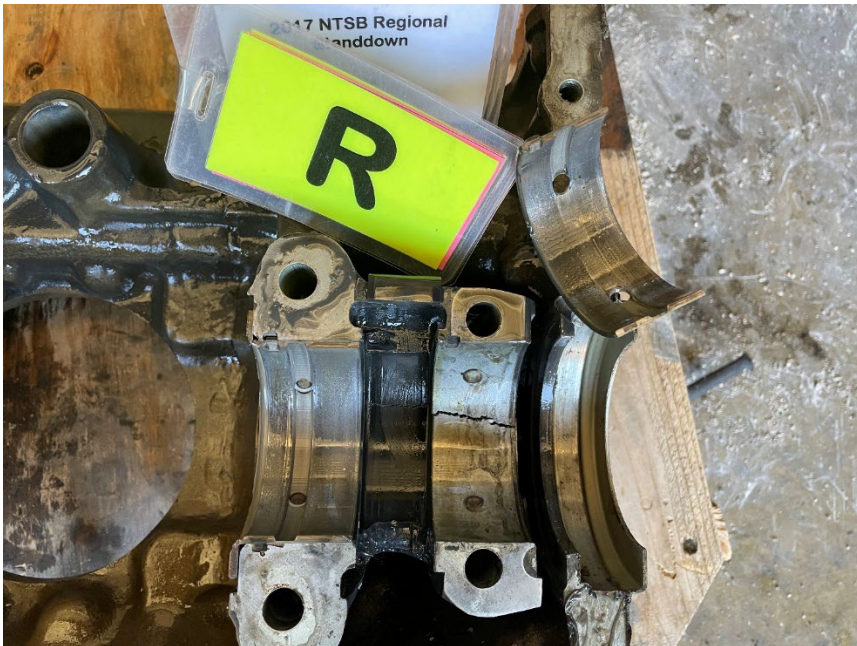


Figure 10. Broken Main Bearing

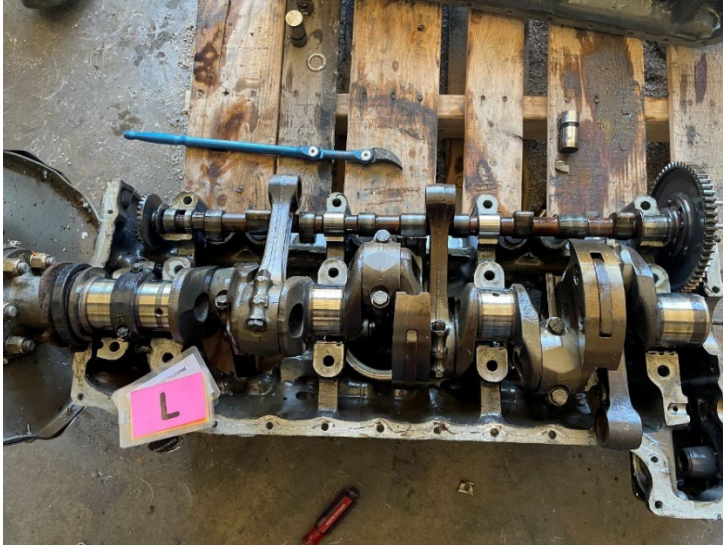


Figure 11. Left Side of Engine Case with Crankshaft and Camshaft

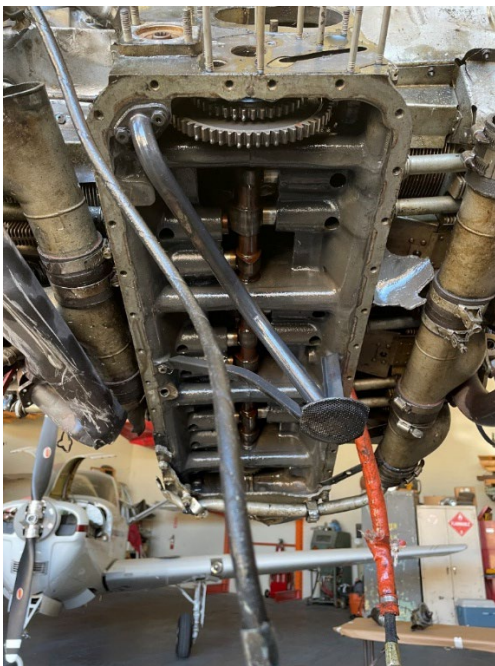


Figure 12. Bottom View of Engine

The connecting rods remained attached and connected to the crankshaft at the journals; rotated freely without binding.

Submitted by:

Tealeye Cornejo
Air Safety Investigator (Field)

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