

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR24LA146

ENGINE EXAMINATION

June 4, 2024

A. ACCIDENT

Location: Lake Havasu City, Arizona
Date: May 9, 2024
Airplane: Sterling Robert 4P, N78GP

B. ENGINE EXAMINATION

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C. SUMMARY

The examination was conducted in a hangar at Lake Havasu City Airport on May 30, 2024. There was no evidence of catastrophic engine failure, and no anomalies observed to the fuel system that would have precluded normal operation. The fuel servo and flow divider valve were removed for further inspection.

D. DETAILS OF THE EXAMINATION

1.0 Fuel System

Engine Model Number: O-540-B2B5
Engine Serial Number: L-12867-40

The engine was originally fitted with a carburetor but had been retrofitted with a fuel injection system manufactured by Airflow Performance. Logbooks did not indicate the specific date the conversion was completed.

All four of the airplanes fuel tanks had already been removed prior to the examination (figure 1). According to the owner, about 20 gallons of fuel were removed during recovery, and this fuel was observed with the wreckage in four 5 gallon buckets (figure 1). The fuel had the color and odor of 100 low-lead aviation gasoline.

The airplane had been laid on its right side, with both wings folded downwards (figure 2) such that the cabin could not be accessed through the doors, therefore access was accomplished through the windscreen.

The airplane was equipped with a JPI 900 engine data monitor. The unit was powered up using an external power supply while still installed in the instrument panel, and the unit's entire data inventory was downloaded. The data for the accident flight is included as an appendix to this report.

The engine appeared essentially undamaged, with no evidence of catastrophic internal failure (figure 3). The engine exhaust pipes exhibited light cream deposits and no evidence of oil residue (figure 4).

The mixture, throttle, and propeller governor controls were continuous from the cabin controls through to their respective control arms within the engine compartment. The throttle was in the full aft position, and the associated valve within the fuel servo throttle body was closed. The mixture control was about $\frac{3}{4}$ inch just short of full forward. The propeller governor control was in the full forward position.

The fuel selector valve was in the OFF position, and the fuel "bypass" valve, located underneath the instrument panel was in the OFF position (figure 7).

All fuel lines from the firewall through to each individual fuel injector were intact and tight at their respective fittings, and there was no evidence of fuel leak. The fuel strainer was empty, and its filter was clear. All fuel lines were progressively opened at their fittings, and all appeared to contain residual quantities of fuel, which was free of water when tested with water detecting paste. There were no blockages observed, and the fuel line from the firewall through to the wing roots were clear.

The fuel selector valve detents were firm, and the valve appeared operational, allowing air passage through to each respective wing root at the left and right position, and blocking when the valve was switched to OFF.

The fuel flow meter, located between the servo and the flow divider did not contain any obstructions, and its impellor could be heard to spin when blown.

The engine-driven fuel pump was disassembled in place, and fuel was observed within its cavity. The outer diaphragm was intact and pliable, and the valves appeared intact. The pump appeared relatively new (figures 5,6).

The engine intake air filter was intact, and free of debris. There was no obstruction to the induction system.

The fuel servo and flow divider valve were both removed for further inspection.

2.0 Photos



Figure 1 - Fuel tanks.



Figure 2 - Airplane as examined.

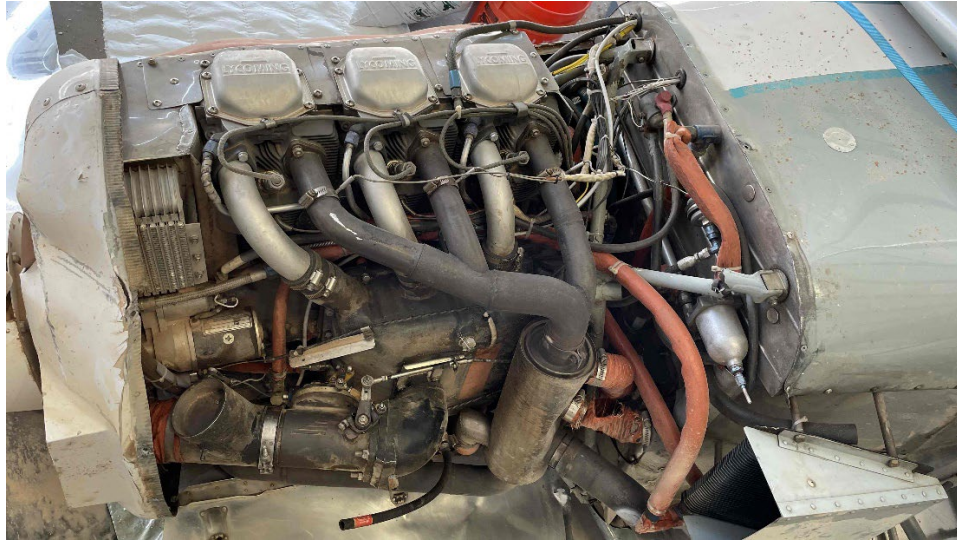


Figure 3 - Engine.

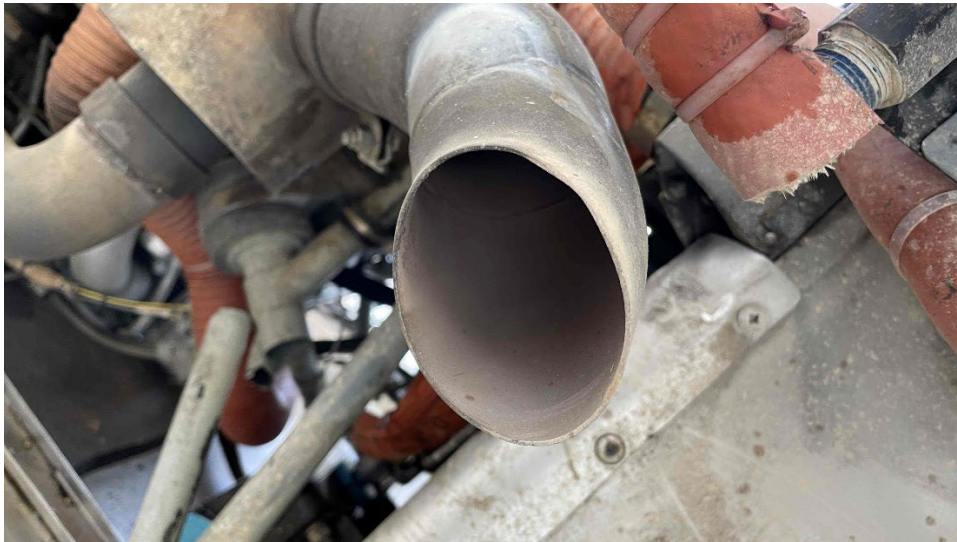


Figure 4 - Exhaust pipe outlet.



Figure 5 - Engine-driven fuel pump valves.

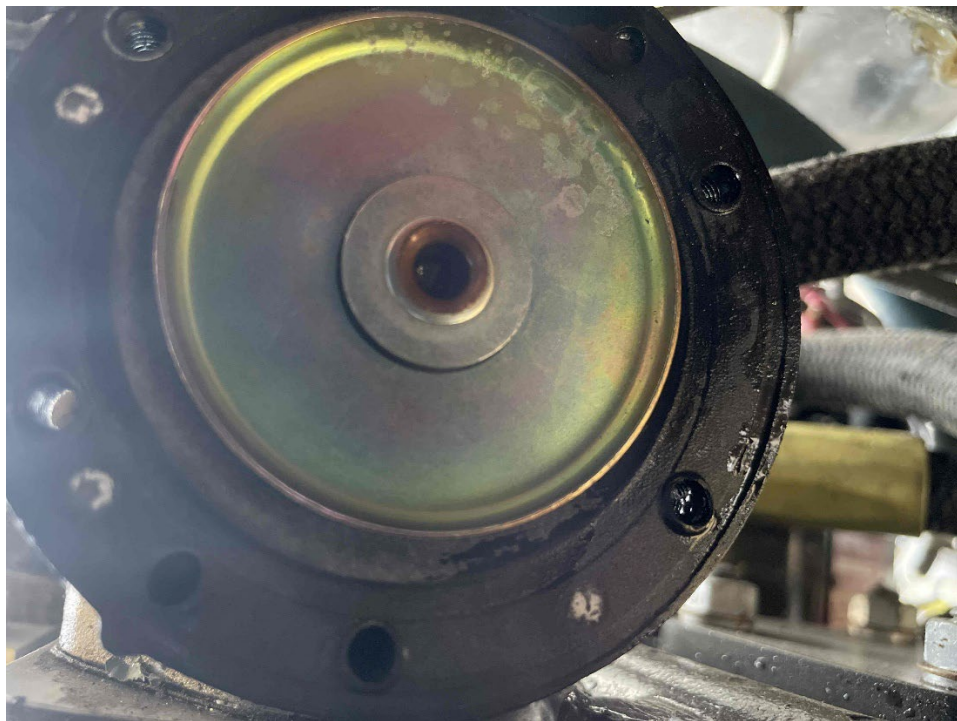


Figure 6 - Engine-driven fuel pump outer diaphragm.

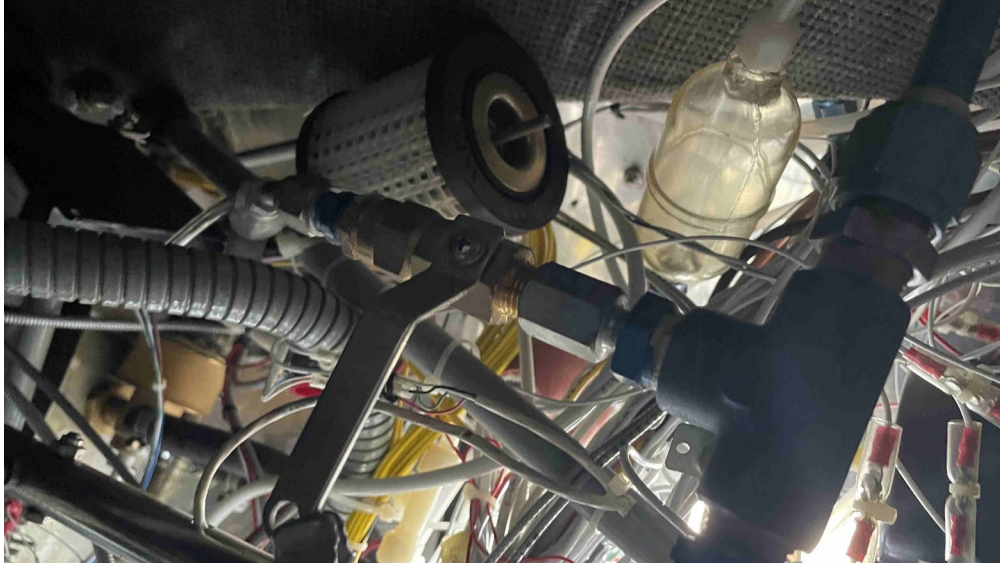


Figure 7 - Bypass valve

Submitted by:

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