

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA329

## **ENGINE TEST RUN REPORT**

Factual Report

November 21, 2023

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## **A. ACCIDENT**

Location: Kanab, Utah  
Date: August 30, 2023  
Time: 0942 MDT  
Airplane: Piper PA-28-180

## **B. PARTICIPANTS**

IIC Scott Johnson  
NTSB AS-WPR  
Phoenix, Arizona

Investigator Andrew Swick  
NTSB AS-WPR  
Phoenix, Arizona

## **C. SUMMARY**

The examination of the airframe and engine revealed no evidence of preexisting malfunctions or failures that would have precluded normal operation.

The engine was setup and ran successfully at various RPM settings. The engine test run revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. A full power engine run could not be accomplished due to throttle and mixture control damage consistent with the accident sequence.



**Figure 1-Engine test run rig.**

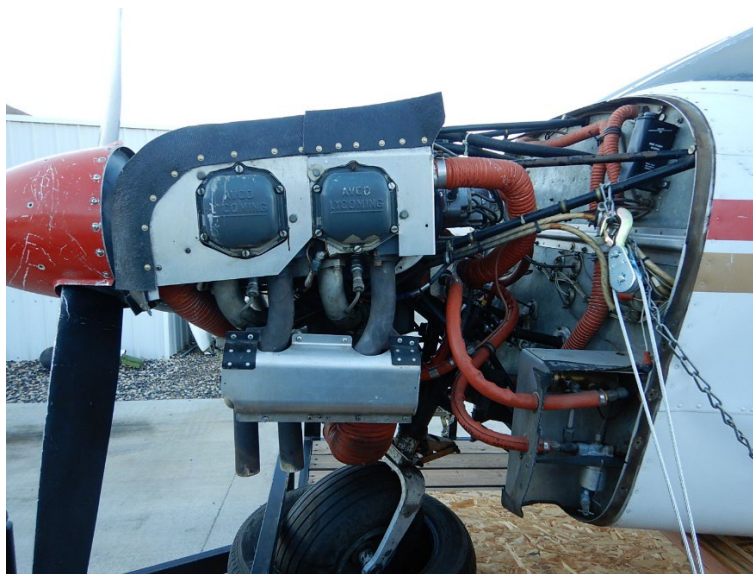
## **D. ENGINE EXAMINATION**

The wings and horizontal stabilizers were removed from the airplane during the recovery process. The engine remained attached to the fuselage and was secured to a trailer in preparation for a test run. The nose landing gear support structure and engine mount had impact damage. The upper and lower cowling were removed, and a header tank was attached to the fuel lines in the cabin area. The oil dip stick indicated about 6 quarts of dark oil. The upper spark plugs were removed, and the electrodes had normal wear conditions. The electrode areas had a light amount of combustion deposits.



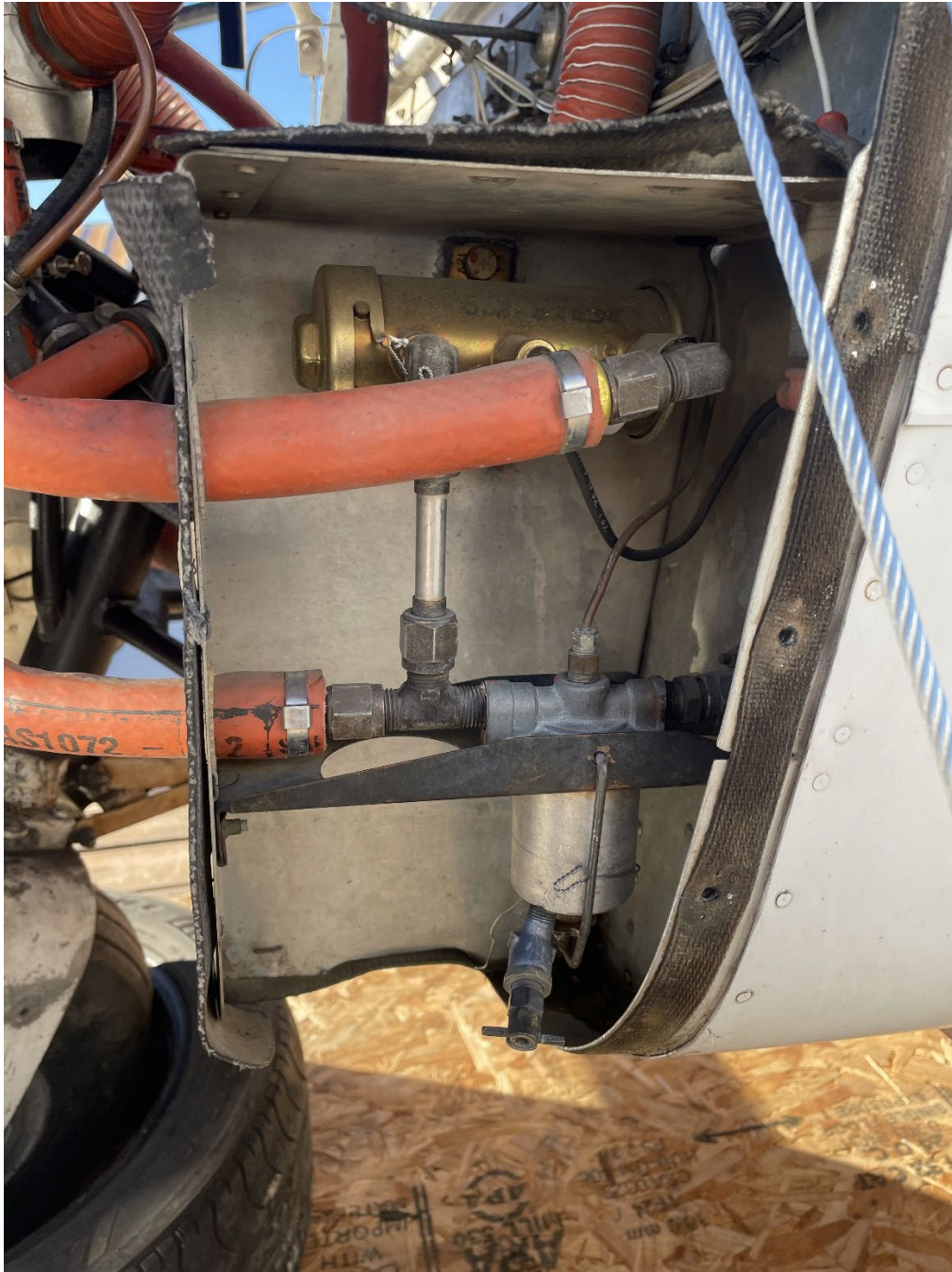
**Figure 2-Upper sparkplugs.**

The cylinders were examined with a lighted boroscope and the combustion chambers were undamaged and had normal amounts of combustion deposits. During the examination the crankshaft was rotated, and valve and piston movement was noted. Cylinder thumb compression was attained during crankshaft rotation.



**Figure 3-Engine test run setup.**

The fuel strainer was drained and had about 2 ounces of blue fuel. No contaminants were noted. The fuel strainer was disassembled, and the screen was undamaged and clear of debris. The carburetor inlet filter screen was removed and was clear of debris. Fuel was present in the fuel supply lines to the carburetor.



**Figure 4-Fuel strainer and fuel boost pump.**

The throttle cable and mixture cable control continuity was established. The throttle cable had excessive resistance and full throttle position could not be established. The throttle cable attachment on the damaged engine support structure was not in its original position. The throttle cable near the attachment was bent consistent with impact damage. The full mixture position could not be established. The mixture cable was bent near the damaged engine support structure consistent with impact damage.



**Figure 5-Throttle and mixture cable attachments and damaged engine support structure.**

The engine started with little hesitation and the fuel boost pump was shut off after engine start. The engine continued to idle smoothly at about 1,000 RPM for about 5 minutes. During this time, oil temperature increased slightly, and oil pressure continued to rise to about 60 psi. The fuel selector valve was moved from the left position to the right position during the engine run and functioned normally. Engine RPM was then increased to about 1,500 and a magneto check was conducted. The magneto check revealed no more than a 25 RPM drop on each magneto. The mixture lever was brought to idle cutoff position and the engine shut down normally.

A full power engine run could not be accomplished due to throttle and mixture control damage consistent with the accident sequence.



**Figure 6-Engine operating during test run.**

Submitted by:

Scott Johnson  
Air Safety Investigator