

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR21LA220

## **ENGINE EXAM REPORT**

August 16, 2023

## **A. ACCIDENT**

Location: Paris, Idaho  
Date: May 29, 2021  
Airplane: Piper PA24 N6334P

## **B. SUMMARY**

The airplane was examined in the back yard of a residence. The wings had been removed, and wing root openings sealed with expanding foam. The windshield was cracked and open, as such the cabin was exposed to the elements (figure 1). According to the property owner, the airplane cabin had been occupied by younger family members multiple times during storage. As such, the cockpit controls at the time of the accident could not be evaluated.

The fuel selector valve appeared to be stiff, however due to exposure, it could not be determined if this condition was present at the time of the accident. Similarly, due to disassembly and storage, an accurate assessment of the fuel system could not be performed.

Examination of the engine did not reveal any anomalies that would have precluded normal operation.

## **C. DETAILS OF THE EXAMINATION**

### **1.0 Engine Examination**

Model: O-360-A1A  
Serial: L-1912-36

The engine appeared to have sustained minimal damage during the accident sequence (figure 2). Buckling was observed to the engine mount, and the engine was pointing slightly down.

All engine controls were continuous from their respective control arms through to the cabin controls. The throttle extension tube had broken away from its outer cable assembly and displayed oval signatures at the separation point consistent with bending due to impact (figure 3). The area at the break was also adjacent to the largest point of deformation of the lower engine mount.

The lower right section of the inlet air filter was coated in mud, and the associated induction air lines through to the inlet throat of the carburetor were free of

obstruction. The oil sump appeared to have been previously drained and contained no oil when viewed utilizing the dipstick.

The top spark plugs were removed and examined. Their electrodes remained mechanically undamaged, coated in light grey deposits, and displayed "normal" to "worn-out normal" wear signatures when compared with the Champion Spark Plugs AV-27 Check-A-Plug chart (figure 4). The exhaust pipes exhibited light grey deposits and were free of oil residue.

Visual inspection of the combustion chambers was accomplished through the spark plug bores utilizing a borescope; there was no evidence of catastrophic internal damage, and all combustion surfaces exhibited a combination of light grey deposits consistent with normal operation, along with rust consistent with long-term storage following the accident.

The rocker covers were removed, and all valve stems and springs were intact, and coated in a light sheen of oil. The crankshaft turned freely when rotated by hand utilizing the propeller. Mechanical continuity was established throughout the rotating group, valve train, and accessory section.

The carburetor, propeller governor, both magnetos, and the engine driven fuel pump were intact at their respective pads.

The magnetos were removed to facilitate inspection, and sparks were observed at each output lead when the input shafts were rotated by hand.

The fuel pump appeared relatively new. Disassembly revealed light corrosion consistent with long-term storage following the accident but were otherwise internally intact and free of damage (figure 5).

The carburetor fuel inlet screen was free of debris, and the carburetor appeared relatively new. The throttle butterfly valve could be moved freely at its input shaft. Disassembly revealed that it was equipped with the blue epoxy floats (figure 6). The float bowl was empty, and no debris was observed. There was no evidence of float-to-bowl contact, and the float height was about 0.2 inches, which was appropriate according to the Marvel Schebler overhaul manual. The throttle body-to-bowl gasket was intact, and there was no evidence of fuel leak. The float valve tip was still pliable, and there was no evidence of debris on its accompanying seat.

## **2.0 Propeller Examination**

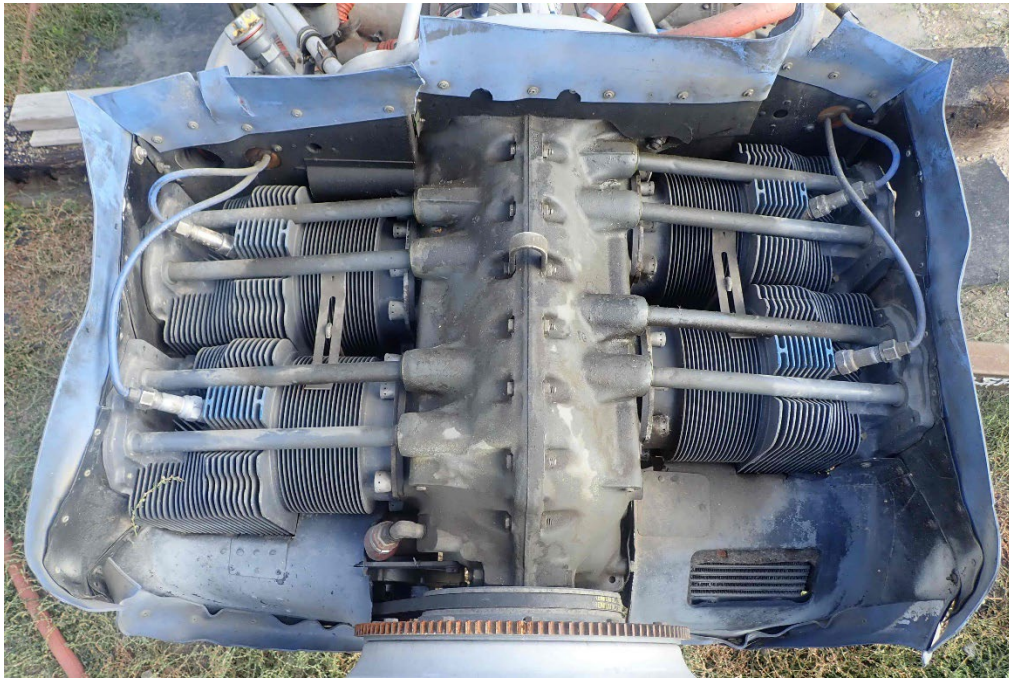
The propeller remained attached to the crankshaft. One blade was intact, straight, and undamaged (figure 7). The blade was bent about 20 ° aft, mid-span. Outboard of

the bend, the blade exhibited both chordwise and diagonal scratches along with dent and nicks to the tip (figure 8).

### 3.0 Examination Photos



**Figure 1 - Airplane at exam location**



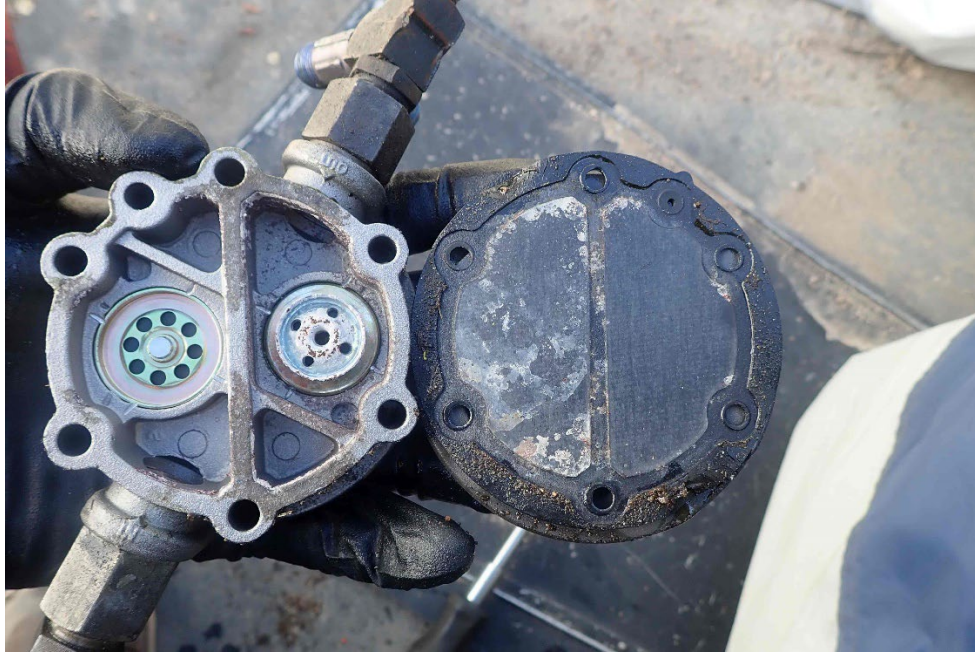
**Figure 2 - Engine**



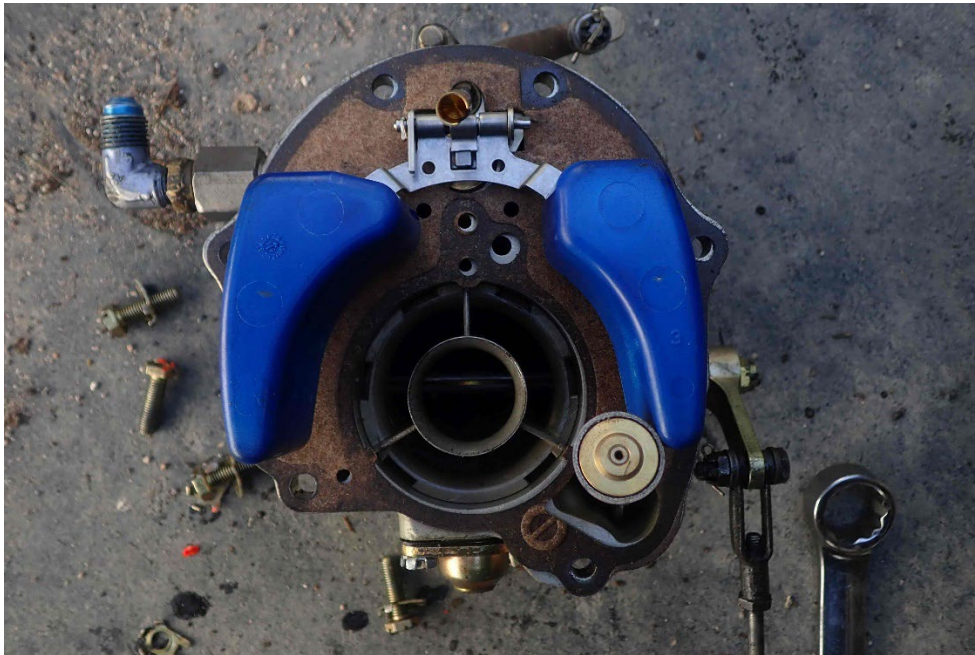
**Figure 3 - Throttle cable**



**Figure 4 - Top spark plugs**



**Figure 5 - Fuel pump cavity**



**Figure 6 - Carburetor floats**



**Figure 5 - Propeller blade 1**



**Figure 6 - Propeller blade 2**

Submitted by: Elliott Simpson