



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

February 23, 2018

ENGINE EXAMINATION

WPR17LA208

This document contains 7 embedded photos.

A. ACCIDENT

Location: El Cajon, CA
Date: September 17, 2017
Aircraft: Piper 28-161, Registration N2587X, Serial #28-8516083
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

Samantha Link
Aviation Accident Investigator
National Transportation Safety Board
505 South 336th Street, Suite 540
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C. SUMMARY

Examination of the engine was conducted on February 23, 2018 at the facilities of Southwest Aircraft Transportation and Recovery in Chino, California. No anomalies were noted during the examination.

D. DETAILS OF THE INVESTIGATION

1.0 Engine Examination

- Initial examination of the engine revealed no obvious visual anomalies
- The fuel selector was found positioned on the left fuel tank
- The gascolator bowl was removed and no fuel was present
 - Screen was clear of debris
- The throttle and mixture levers were manipulated in the cockpit and corresponding motion was noted at the carburetor arms.
 - Both moved freely from stop to stop
 - Both the mixture and throttle levers in the cockpit were found in the full forward position
- An engine run was unable to be completed because the oil filter was fracture separated from the engine.
 - The oil filter was removed and cut open
 - Oil was present within the filter
 - No contaminates or debris was noted

- The upper spark plugs were removed from the engine and were consistent with normal operations per the Champion check-a-plug chart.
 - All gaps were similar
 - No damage
- The rocker valve covers were removed from the engine
 - The rockers were oily and no discoloration was noted.
- The engine was rotated by hand and the engine rotated smoothly
 - Spark was obtained on all cylinders in proper firing order
 - Thumb compression was obtained on all cylinders except for the #2 cylinder
- The engine was borescoped and all cylinders exhibited normal operating signatures.
 - It appeared the intake valve on the #2 Cylinder was very slightly not seated properly, however, the rest of the cylinder exhibited normal operating signatures
 - Further examination of the engine revealed damage to the outside of the #2 cylinder, with a crack along the rocker arm boss. In addition, the lower portion of the boss was bent inward and was resting against the valve arm.
- The lower spark plugs were removed from the engine and were consistent with normal operations per the Champion check-a-plug chart.
- The fuel pump screen was examined and was clear of debris
- The exhaust system was mostly intact; however, the lower muffler section was bent aft against the carburetor.
- The carburetor was removed from the engine and disassembled
 - The fuel screen was clear of debris with no fuel present
 - The carburetor bowl was clear of debris and containments
 - No fuel was present
 - No fuel was present in the accelerator pump well
 - The floats were intact and undamaged; no fuel was present within the floats
 - The needle valve moved freely
- Air was blown from the gascolator to the wing routes and all lines were clear of blockages and debris
 - No fuel was observed
- Air was blown from the electric driven fuel pump to the carburetor inlet and all lines were clear of blockages and debris
 - No fuel was observed

1.1 Engine Photos



Figure 1: Impact damage to the front of Airplane



Figure 2: Impact damage to the forward section of Cylinder 2

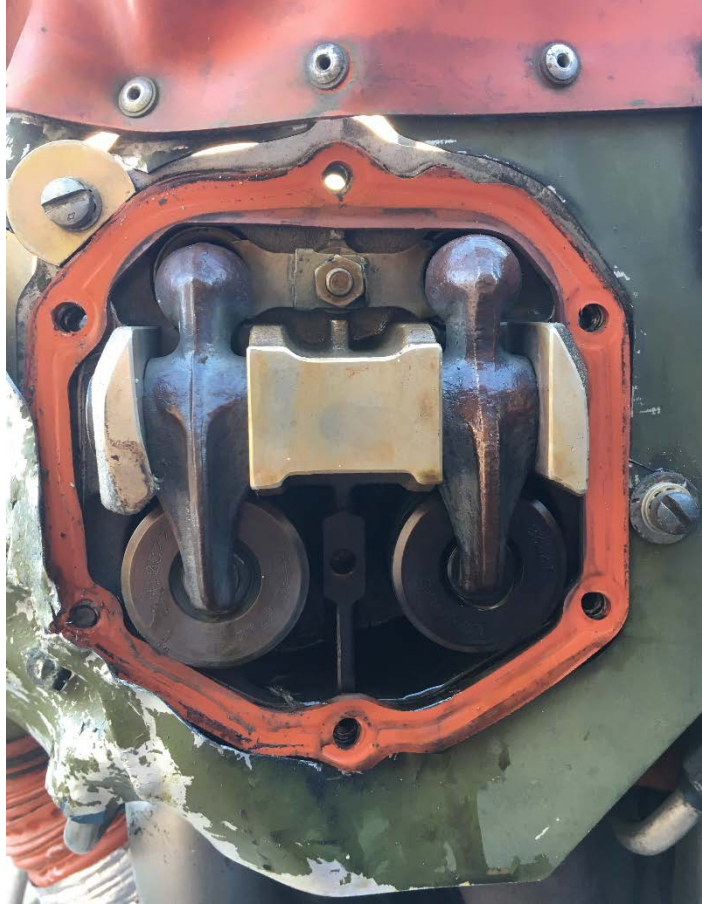


Figure 3: Impact damage to the intake valve of Cylinder #2



Figure 4: Spark Plugs



Figure 5: Oil Filter



Figure 6: Carburetor



Figure 7: Gascolator

END.

Submitted by: Samantha Link