



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

February 20, 2019

AIRFRAME / ENGINE EXAMINATION SUMMARY

WPR19FA075

This document contains **13** embedded photos.

A. ACCIDENT

Location: Oceanside, CA
Date: January 28, 2019
Aircraft: Piper PA-28-151, N37RV
NTSB Investigator-in-Charge: Tealeye Cornejo

B. EXAMINATION PARTICIPANTS:

Tealeye Cornejo
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Williamsport, PA 17701

C. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

The airplane was laid out for further examination and exhibited crush and damage deformation throughout the entire fuselage. The right wing had been cut for recovery purposes. The left wing had separated due to impact forces. Pitch trim was in a slightly neutral/nose down attitude. The ELT remained secured in its container and attached to the airframe. The battery was removed from the container and had a 2020 expiration date. When activated for a field test, it did not work. General condition of the airplane – salt/corrosion.

The front seats remained attached to the seat rails and to the cabin floor. The left seat was deformed; the seat lap belt remained latched and was cut. The front right seat was deformed, and the bottom of the seat was crushed aft. The seat lap belt was unbuckled and cut. The cuts were attributed to rescue personnel.



Photo 1: View of the right wing



Photo 2:



Photo 3: Right side view of airframe



Photo 4: Rear View of Airframe

2.0 Engine Examination

Lycoming
O-320-E3D
L-40079-27A
150HP/2700

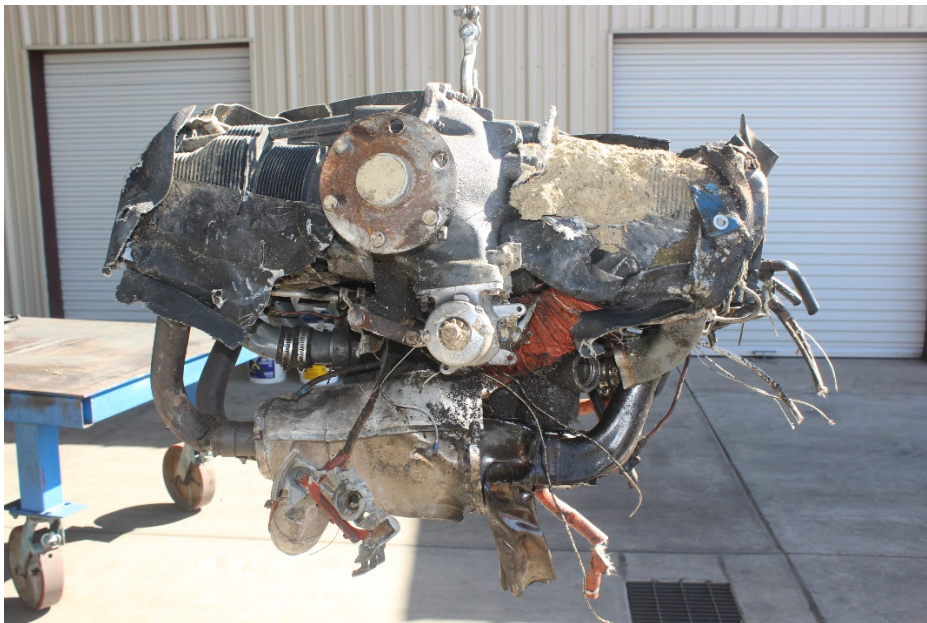


Photo 5: Front view of Engine



Photo 6: Rear View of Engine

Cursory Engine Glance Revealed

- Fly wheel from drive shaft
- Left magneto sustained impact damage
- Oil filter sustained impact damage
- Oil suction screen was clean
- Oil sump case housing sustained impact damage -Vacuum pump sustained impact damage -Alternator sustained impact damage -Engine mounts damaged

Parts Removed

*Magnetos were taken off. The right mag turned and sparked, but the left mag turned but didn't spark and the gear was fractured. The vanes were about 1/16 of an inch shorter than when new (7/8)

*Fuel pump -the diaphragm is intact and no evidence of obstruction to flow, although the pump housing sustained impact damage.

*Oil filter -Sustained impact damage. When opened, the screen was clean and free of inhabitants.

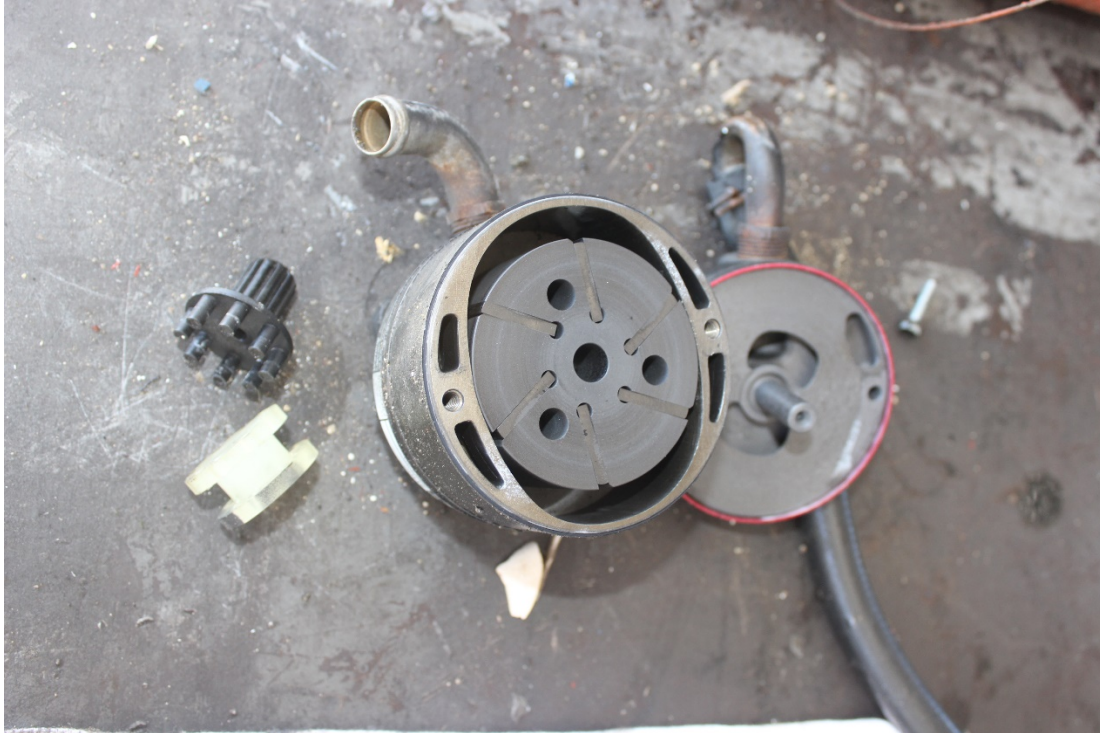


Photo 7: Vacuum pump

*Vacuum pump- drive is intact but it binds at a certain point in rotation. When opened, there was no part separation and movement was unimpeded.



Photo 8: Spark Plugs

*Spark plugs -1/3 good condition and no anomalies. But oil was found in 2/4 with no deformation -Static oil signs suspected (No oil found on #2 and #4 exhaust pipes).

*Rocker covers- Unremarkable

*Engine drive shaft turns through when turned from the accessory housing All cylinders had compression. Exhaust rockers were operable and moved flush with the case, yet the intake rockers did not move flush with the case.

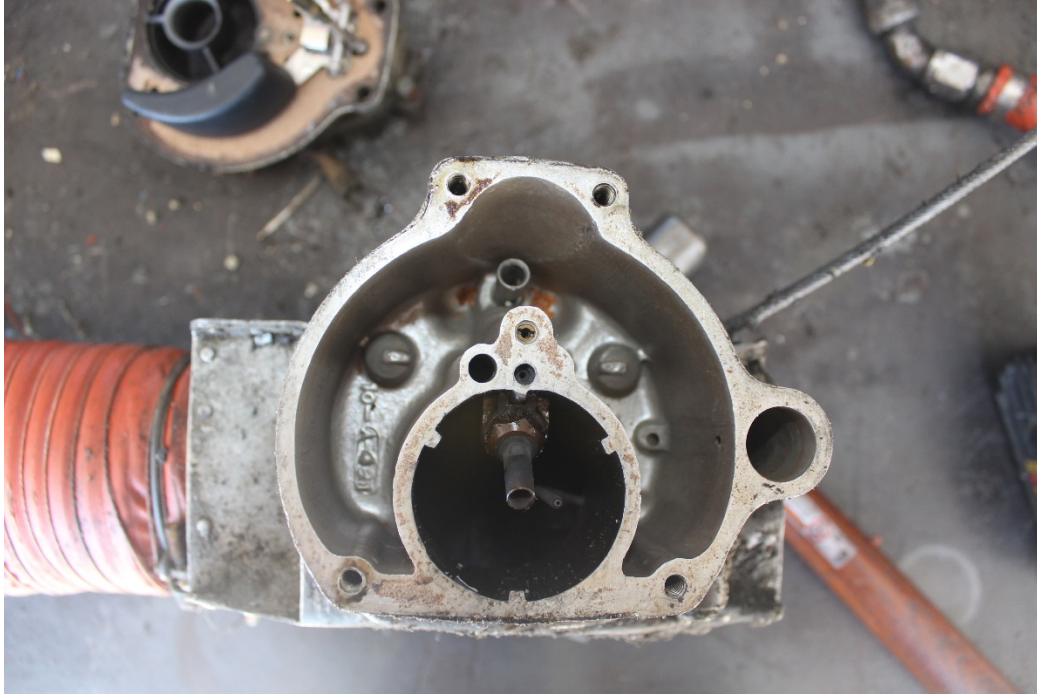


Photo 9: Carburetor bowl



Photo 10: Carburetor floats

*Carburetor air box sustained impact damage and the Carburetor was showed signs of overload and was fractured at the mounting flange, and the mounting flange is secure to the engine. When opened, the composite floats and

assembly were intact; the float bowl was free of contamination; the finger screen was clean and free of contamination; main jet is open.

Cylinders: 1 and 3= Good; 2 and 4 has an area of the valves and cylinders that contained oil deposits (indicative of static seepage)

Pistons and piston heads: Unremarkable

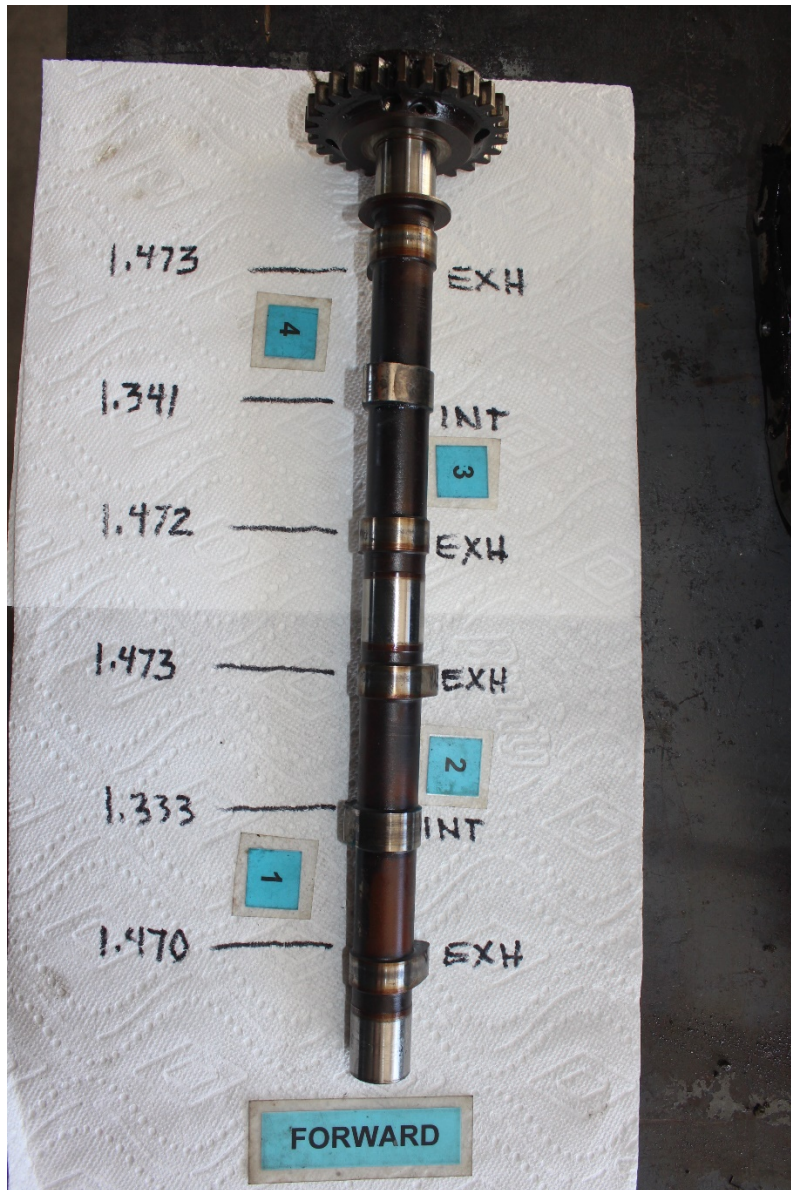


PHOTO 11: Camshaft



Photo 12: No 3 Exhaust and Intake tappets

Cam shaft exhaust valves were normal in operation and appearance. However, the intake cam lobes were rounded in appearance and the tappets exhibited abnormal corrosion on the #2 and #4 tappets. The #1 and #3 tappets exhibited a normal round wear pattern, but #2 and #4 tappets were severely corroded, to a point that the round wear pattern was unnoticeable. Surface rust and corrosion were found on each of cam shaft tappets. The bearings exhibited extreme erosion and scratches.

Fuel Injected Engines might exhibit EGT, CHT, and Fuel Flow degradation indicators.

The metal two-bladed propeller exhibited torsional twist the length of blades, as well as leading edge gouging and chordwise striations.



Photo 13: View of the propeller blades

Submitted by: Tealeye Cornejo