



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

October 1, 2020

SUMMARY OF ENGINE EXAMINATION

(WPR18LA033)

This document contains 4 embedded photos.

A. ACCIDENT

Location:	Nipton, California
Date:	November 16, 2017
Aircraft:	Piper PA-28-201T
NTSB Investigator-in-Charge	Thomas Little

B. EXAMINATION PARTICIPANTS

Thomas Little
Senior Aviation Accident Investigator
National Transportation Safety Board
Federal Way, Washington

Chris Lang
Air Safety Investigator
Continental Motors
Mobile, Alabama

C. SUMMARY

On November 16, 2017, about 1800 Pacific standard time, a Piper PA-28R-201T, N5966V, was substantially damaged following an emergency landing as a result of a total loss of engine power near Nipton, California. The commercial pilot and the sole passenger were not injured. Instrument meteorological conditions (IFR) prevailed at altitude, while visual meteorological conditions prevailed at the accident site. The cross-country flight was being operated in accordance with 14 Code of Federal Regulations Part 91, and an IFR flight plan was filed and active at the time of the accident. The flight departed North Las Vegas Airport (VGT), Las Vegas, Nevada, about 1655, with an intended destination of Brackett Field (POC), La Verne, California.

In a telephone interview with the National Transportation Safety Board investigator-in-charge shortly after the accident, the pilot reported that while in cruise flight at 10,000 feet he noticed the JPI indicator revealed that the #5 cylinder had spiked. This was followed shortly thereafter by the engine running rough, and then a total loss of engine power. The pilot subsequently made an emergency landing to the west on interstate highway I15, about 20 miles north of Baker, California. During the landing roll the airplane exited the right side of the highway and into some soft dirt. An onsite damage assessment by Federal Aviation Administration inspectors assigned to the Las Vegas Flight Standards District Office revealed that the airplane's right wing spar was substantially damaged.

The airplane was recovered to a secured storage facility in Phoenix, Arizona for further examination.

D. ENGINE EXAMINATION NOTES

The following engine examination notes are a compilation of notes generated by the NTSB IIC and the Continental Motors field representative. The examination was performed at the facilities of Air Transport, Phoenix, Arizona, on January 17, 2018.

1.0 General

The engine was overhauled by Performance Engines on November 3, 2006. On October 24, 2013 all six cylinders were replaced with factory new cylinders at 1,032.88 hours since major overhaul.

Detonation in the cylinder combustion chambers was noted in cylinders 1, 3 and 5. Cylinder 5 displayed the most significant signs of detonation and mechanical damage.

2.0 External Inspection of Engine

The engine remained attached to the airframe and did not exhibit any damage. The propeller remained attached to the crankshaft propeller flange. All three blades were bent aft at mid-span and exhibited chordwise scratches.

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Figure 1 -overhead view of engine as received

3.0 Internal Inspection of Engine

The fuel manifold valve was disassembled, and the screen was free of debris. The plunger and diaphragm was intact the retaining nut was secure. An odor consistent with 100LL fuel was observed in the manifold valve.

The fuel supply line to the engine driven fuel pump was disassembled and a small amount of 100LL fuel was observed draining from the line.

The top spark plugs were removed and all except the number 5 spark plug exhibited dark colored combustion deposits. The number five spark plug exhibited a molten metal like substance around the electrode.



Figure 2 - top spark plugs

The crankshaft was rotated by hand using the propeller. Continuity to the accessory section was confirmed and spark was produced on all six top spark plug leads. Thumb compression was obtained on all cylinders except cylinder number 5.

The cylinders were examined with a lighted bore scope. The number 2-4-6-cylinder combustion chambers exhibited normal operating signatures. Cylinder 5 exhibited signs of detonation / preignition with material missing from around the circumference of the piston face. The number 5 cylinder exhaust and intake valves also showed signs of mechanical damage. Cylinders 1 and 3 exhibited minor signs of detonation.



Figure 3 - number 5 cylinder piston



Figure 4 - number 5 cylinder intake and exhaust valves