



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

June 11, 2019

ENGINE EXAMINATION SUMMARY

WPR19LA167

This document contains 8 embedded images.

A. ACCIDENT

Location: Deer Valley, Arizona
Date: June 11, 2019
Aircraft: N576CM; Mooney M20V
NTSB Investigator-in-Charge: Andrew Swick

On June 11, 2019, about 1451 mountain standard time, a Mooney M20V airplane, N576CM, collided with a streetlight poles and a Jersey barrier during a forced landing, near Deer Valley Airport (DVT) Deer Valley, Arizona. The private pilot was seriously injured. The airplane was recently purchased by the pilot. The airplane was registered and operated by the pilot under the provisions of 14 *Code of Federal Regulations Part 91* as a personal flight. Visual meteorological conditions prevailed and a flight plan was not filed. The flight departed Scottsdale Airport (SDL) and was destined for Carson Airport (CXP), Carson City, Nevada.

According to an ATC recording, about 7 minutes after departure, the pilot reported a “rough running engine” and subsequently declared an emergency. The pilot turned to the southwest as instructed by ATC and lined up for the approach to runway 19 at Glendale Municipal Airport (GEU), Glendale, Arizona, about 12 miles to south of his position. At about 4,700 ft msl the pilot decided that he was not going to reach GEU and turned left towards Deer Valley Airport (DVT), Deer Valley, Arizona, about 8 miles to the east.

Preliminary radar revealed that after departing from SDL to the northwest, the radar track reached an altitude of 9,100 ft msl, about 8 miles northwest of DVT. The track then turned south and descended to about 4,700 ft msl before turning to the east. The track continued on its eastern track before it ended near the accident site, about 2 miles west of DVT.

According to a witness that helped extricate the pilot from the wreckage, he stated he saw the airplane as it approached the street and avoided high tension wires on the south side of the street, by banking to the left. The airplane then impacted a light pole, separating the right wing, and somersaulting across the south side of the street, impacting a street barrier, sliding about 50 ft before coming to rest inverted. Postimpact fire ensued, and the witness approached the airplane to help with extricating the pilot.

B. PARTICIPANTS

Andrew Swick-NTSB IIC
Jack Vanover-NTSB (onsite)
Thomas Dickerson-FAA IIC
Robert Collier-Mooney Aircraft
Chris Lang-Continental Motors Group
Philip Grice-Continental Motors Group

C. SUMMARY

On June 12, 2019, the engine was separated from the main wreckage. The engine was documented and prepared for shipment. The propeller was removed from the engine in preparation of a manufacturer's examination.

D. ENGINE EXAMINATION AT THE MANUFACTURER

The sealed engine crate was opened on February 5, 2020, at the Analytical Department at Continental Aerospace Technologies, Mobile, Alabama. The engine support structure had impact damage and was removed from the engine.



Figure 1-Engine assembly after crate was opened.

The exhaust assembly was crushed in areas near the turbochargers. The turbocharger driveshaft rotated freely by hand. The induction assembly had thermal damage to several induction tubes. The standby alternator separated from the accessory section and had thermal damage.



Figure 2-Engine assembly, left lower view.

The magnetos remained attached to the engine and had thermal damage to the ignition leads. The right magneto housing had thermal damage, revealing internal surfaces. The left magneto housing had thermal discoloration and was setup on a test bench. The distributor and ignition leads were replaced, and no spark was attained. The left magneto was disassembled, revealed thermal damage to the internal components.

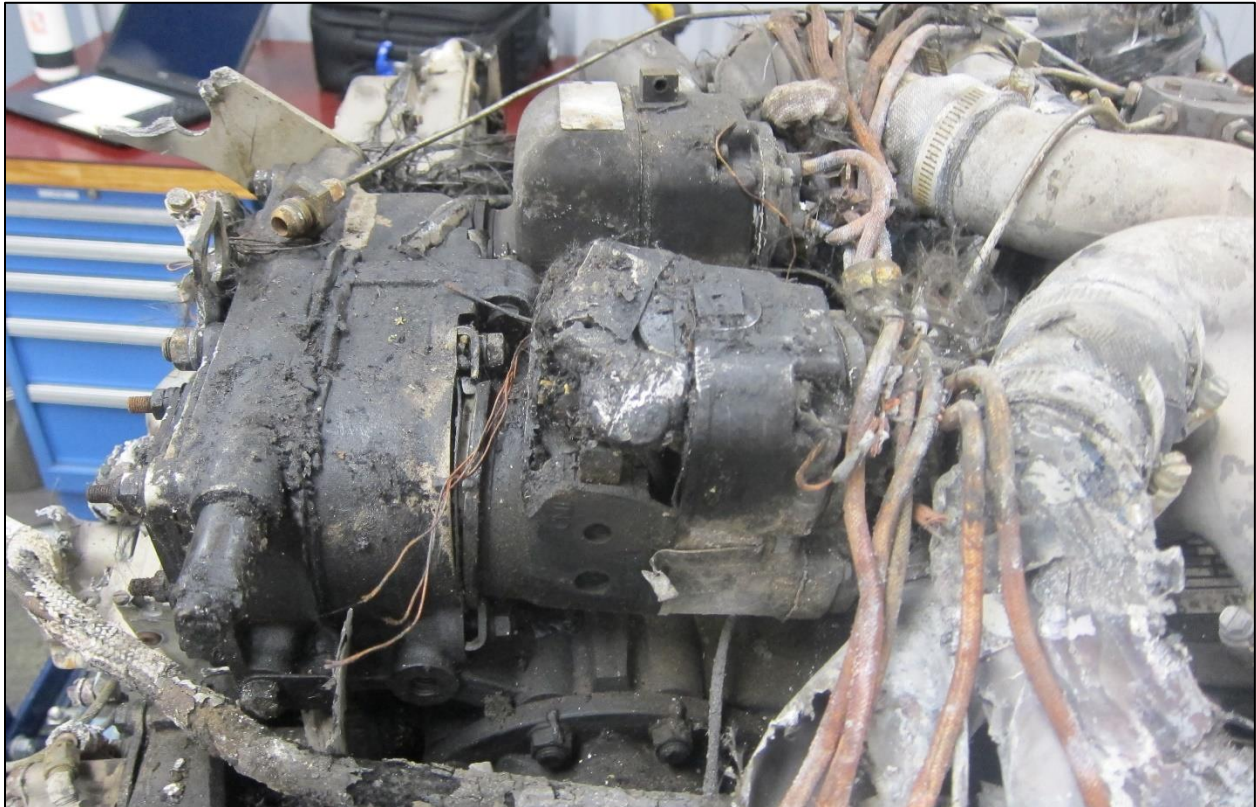


Figure 3-Magneto assemblies installed on the engine.

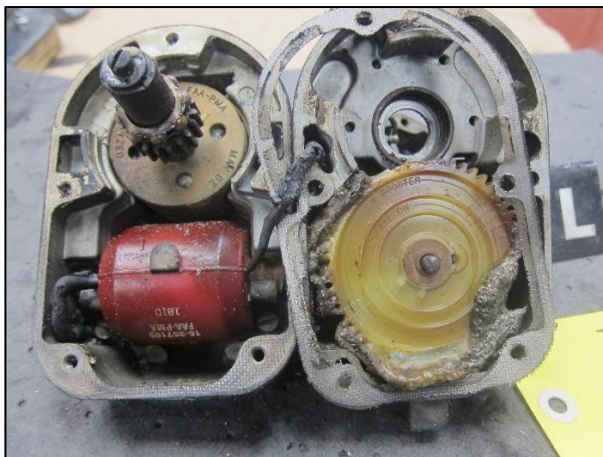


Figure 4-Left magneto disassembled.



Figure 5-Right magneto disassembled.

The fuel pump had thermal damage and was removed from the accessory section and disassembled. The fuel pump drive coupling was intact.



Figure 6-Engine driven fuel pump installed on the engine.

The propeller governor had thermal discoloration and was undamaged. The propeller governor was removed for the test run.



Figure 7-Propeller governor.

The oil sump had thermal damage and the oil sump valve separated from the sump and found in the sump area. Damaged parts were installed on the engine in preparation for the test run: exhaust assembly, induction plenum, inner coolers, oil sump, fuel pump, magnetos, ignition leads and various hydraulic lines. The engine test run resulted in a mostly successful run program, except at idle.

Due to time restraints the engine was further tested for the idle problem at a future date.



Figure 8-Engine installed on a test stand.

Submitted by: Andrew Swick