



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

Oct 16, 2018

ENGINE EXAMINATION

CEN18LA382

A. ACCIDENT EXAM

Date: Oct 1 & 9, 2018
Aircraft/Case: CEN18LA382
NTSB IIC: Arnold Scott

B. ENGINE EXAMINATION PARTICIPANTS:

Craig Hatch
NTSB Air Safety Investigator

Todd Prince
DEA Accident Investigator/Pilot

John Butler
Lycoming Aircraft Engines

Bill Pritchard
DEA Aviation Safety Officer/Pilot Sup.

Ricardo Asensio
Textron/Cessna

Kurt Larson
DEA Maintenance Quality Assurance

Jennifer Barclay
Textron/Cessna

Matt Rigsby
FAA

C. SUMMARY

The pilot and two other crew members were on a training flight and was making an approach to the Sugarland Airport's runway 17. About mile and half from the airport, and without warning, the engine lost power. The pilot conducted a forced landing to a street, during the landing the airplane impacted two automobiles, electrical wire, and terrain. The rear passenger received serious injury and the airplane was substantially damaged. The airplane had flown for approximately 1.2 hours.

The airplane was recovered to secure facility for examination. At the time of the accident, it was reported that the airplane had 30-gals/ 32-gals fuel in the left and right tanks.

The airplane was transported to a secure facility in Fort Worth, Texas for examination. An initial examination was conducted on October 1. The engine was separated from the airframe by maintenance personnel. The engine was disassembled/examined on 9 Oct. 2018. The engine is a version of the six-cylinder Lycoming IO-540 engine.

D. DETAILS OF THE INVESTIGATION

1.1 Exam Photos



Overall condition of the engine.

A visual inspection of the exterior of the engine did not identify any abnormalities.



The propeller was rotated by hand; the prop was free to move; However, the engine would not rotate; coming to hard stop.



The sparkplugs were removed. Damage to the sparkplugs were noted on the number one and two cylinder plugs.



The engine was separated from the airframe, and then disassembled.



A borescope was used, and it appeared that the intake valve for the number one cylinder had failed.



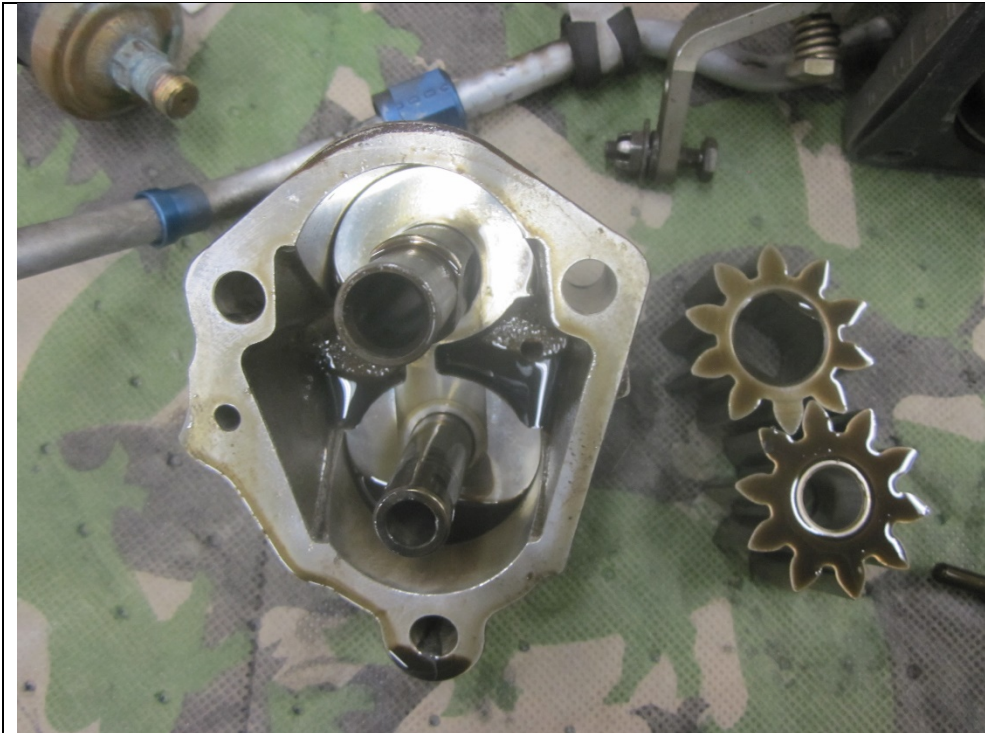
Fractured pieces of the intake valve, exited the #1 cylinder, and into the intake plenum.



Valve stem from the #1 cylinder, setting at the #4 cylinder intake



Heavily damaged #1 piston. The other pistons, had either impact marks, or pieces of valve stuck in the top of them.



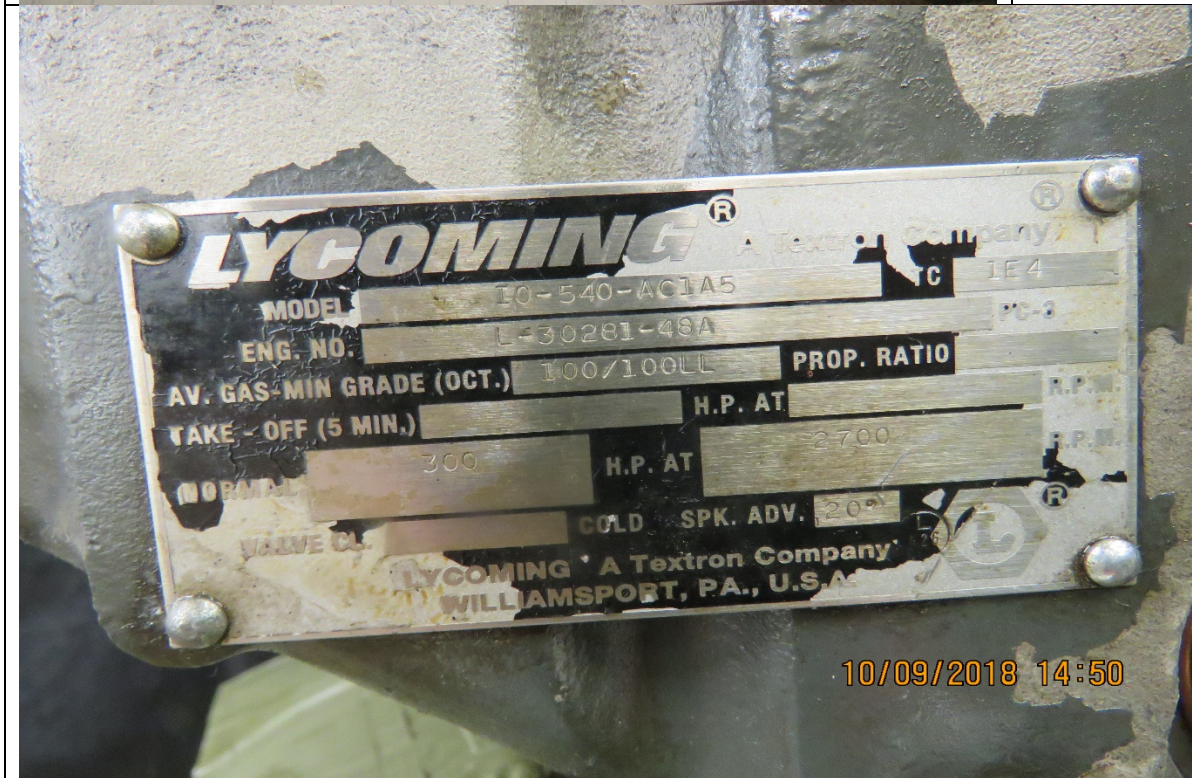
Oil pump, no sign of metal passage was noted.



Crankshaft and bearings, all appeared normal.



Hydraulic lifters (both exhaust and intake were visually examined)



The #1 cylinder, including the broken intake valve was retained for material lab analysis.