



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

July 11, 2018

ENGINE EXAMINATION

CEN18LA159

A. ACCIDENT EXAM

Location: Continental Motors, Inc
Date: Week of July 9, 2018
Aircraft/Case: CEN18LA159
NTSB IIC: Tim Sorenson

B. ENGINE EXAMINATION PARTICIPANTS:

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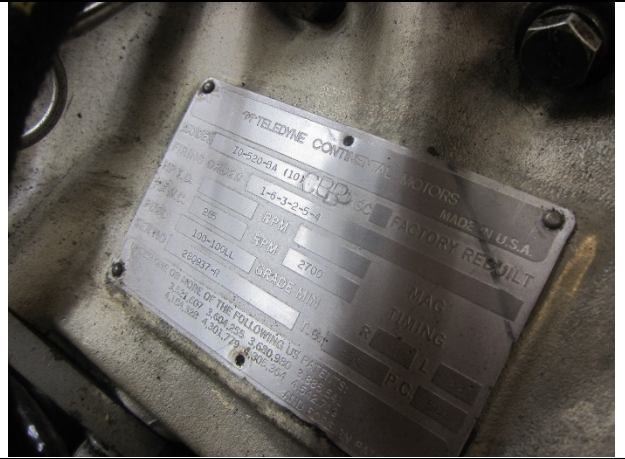
C. SUMMARY

The airplane was in cruise flight at 7,000 ft msl, when the pilot heard an unusual noise from the engine. Shortly afterward, the engine lost power. He subsequently executed a forced landing to an open field. A visual inspection of the engine noted a small hole in the engine case, just above the number one cylinder.

The engine was separated from the airframe and shipped to Continental Motors, Inc for examination/engine run. The engine is a six-cylinder Continental IO-520 engine.

D. DETAILS OF THE INVESTIGATION

1.1 Exam Photos



The engine crate as shipped to CMI. The engine datatag was changed from IO-520-BA (10) to IO-520-BB (10).



The engine prior to disassembly



The engine was stripped of components, so the engine could be disassembled.

A hole, above the number one cylinder is clearly visible.

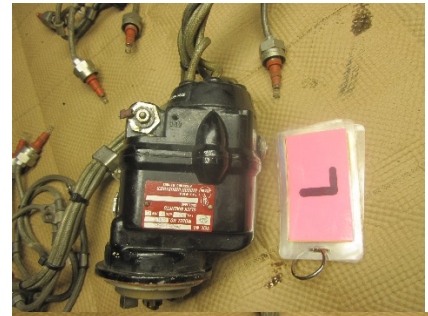
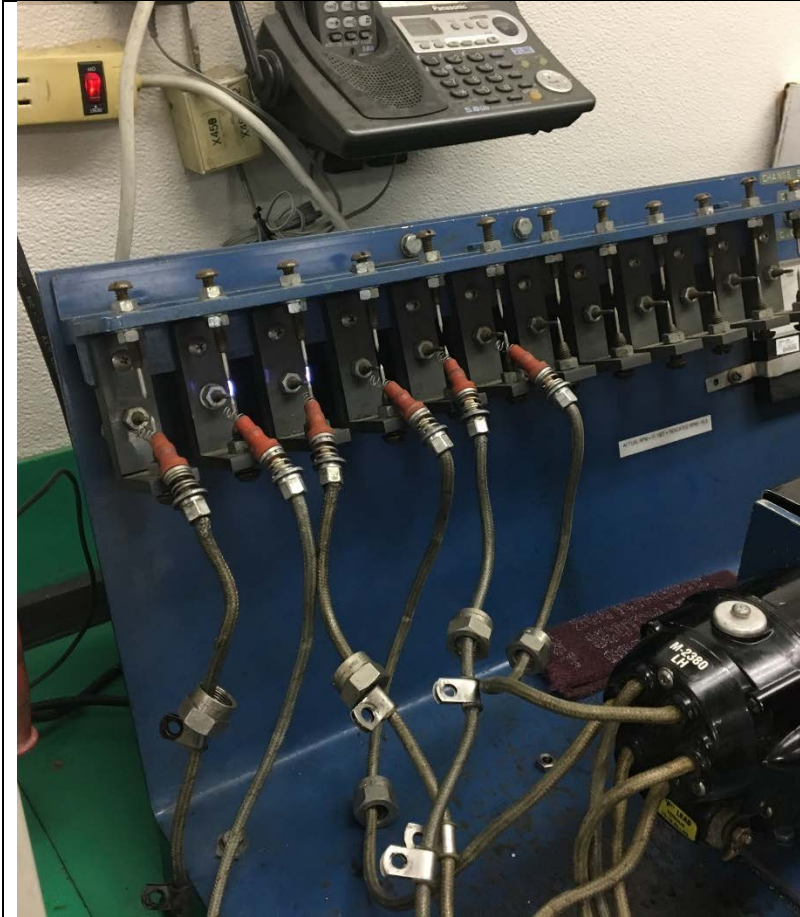


The various engine components were examined.

The vacuum pump disassembled, no abnormalities were noted.



The fuel pump was separated from the engine, the drive shaft had sheared; the end of the shaft was smeared. No other anomalies were observed.



Both left and right magnetos, were bench tested; no abnormalities were noted



The top set of sparkplugs were removed from the engine. The number five cylinder sparkplug, had massive electrodes as opposed to the fine wire sparkplugs on the other cylinders.

The plugs exhibited normal combustion signatures.



Prior to cylinder removal, the cylinder bolts and case through bolts were checked for torque values.
(see attached sheet for torque values)



No anomalies were noted with the cylinder valve train.



The oil filter was cut open: metal was present in the filter element

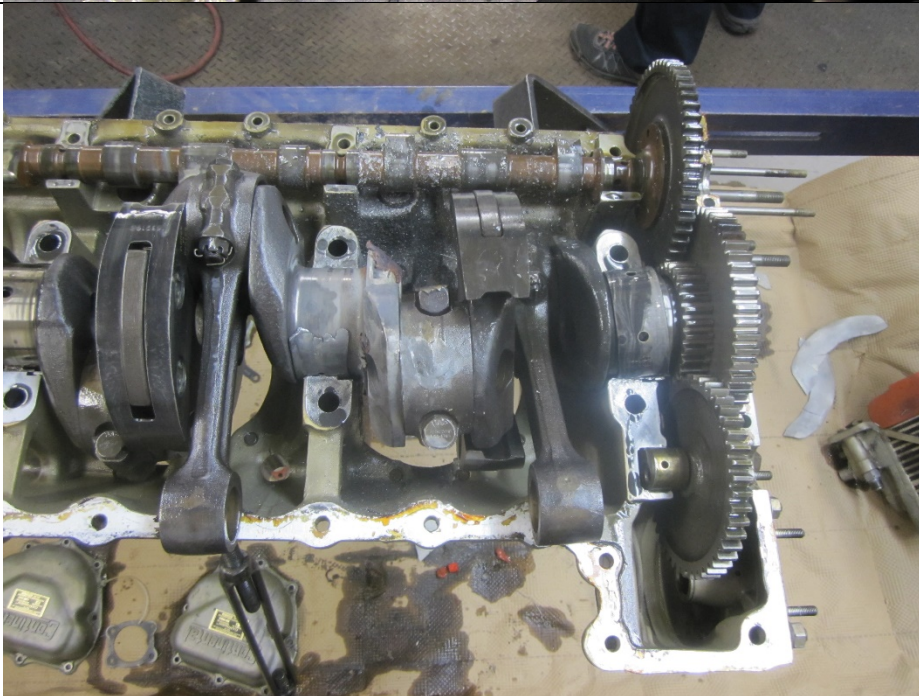


The engine oil sump also contained metal pieces.



The oil pump had indication of hard object passage.

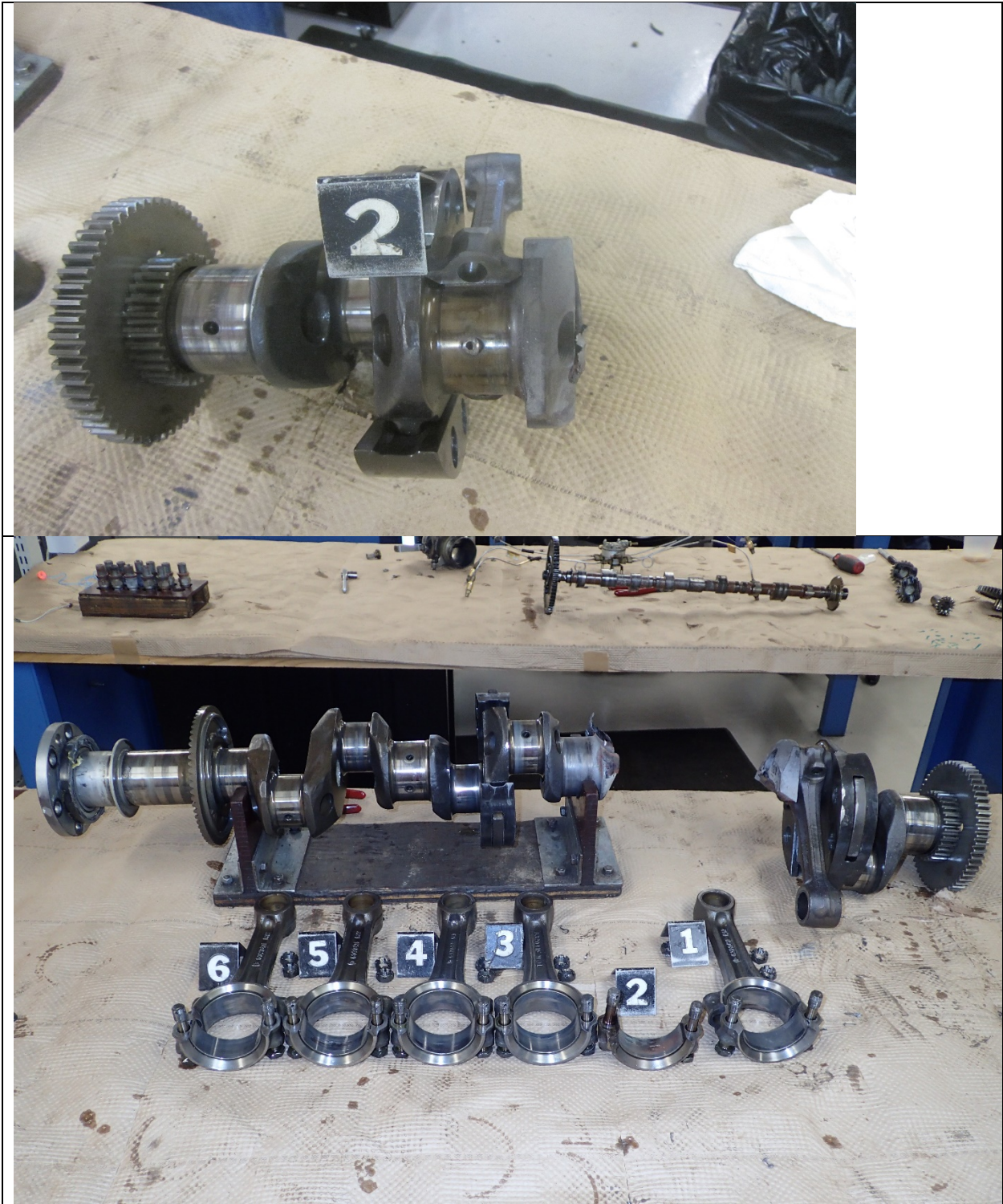
Otherwise no anomalies were noted with the oil pump, camshaft, or accessory section.



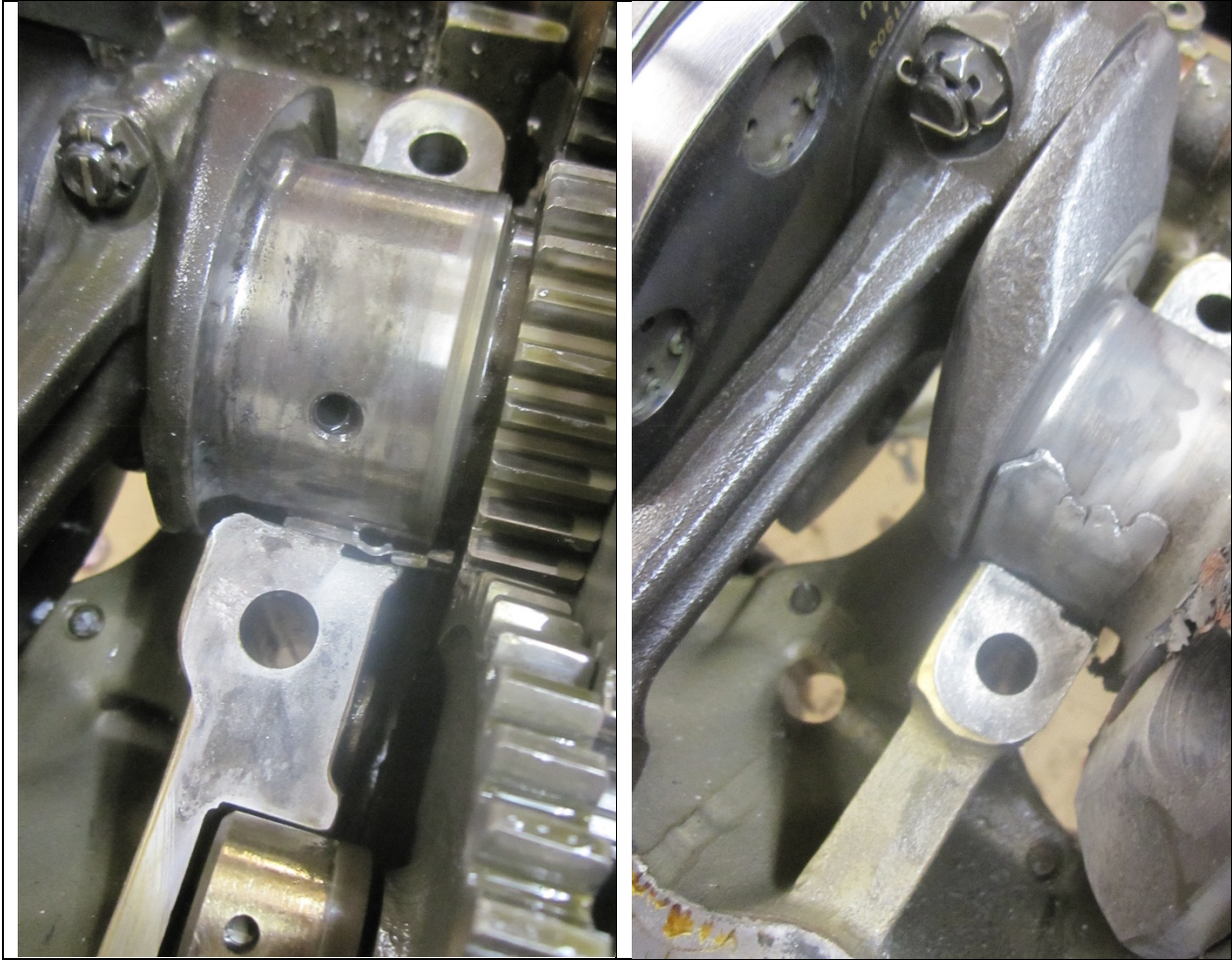
The case halves were separated

The crankshaft was broken into two pieces.

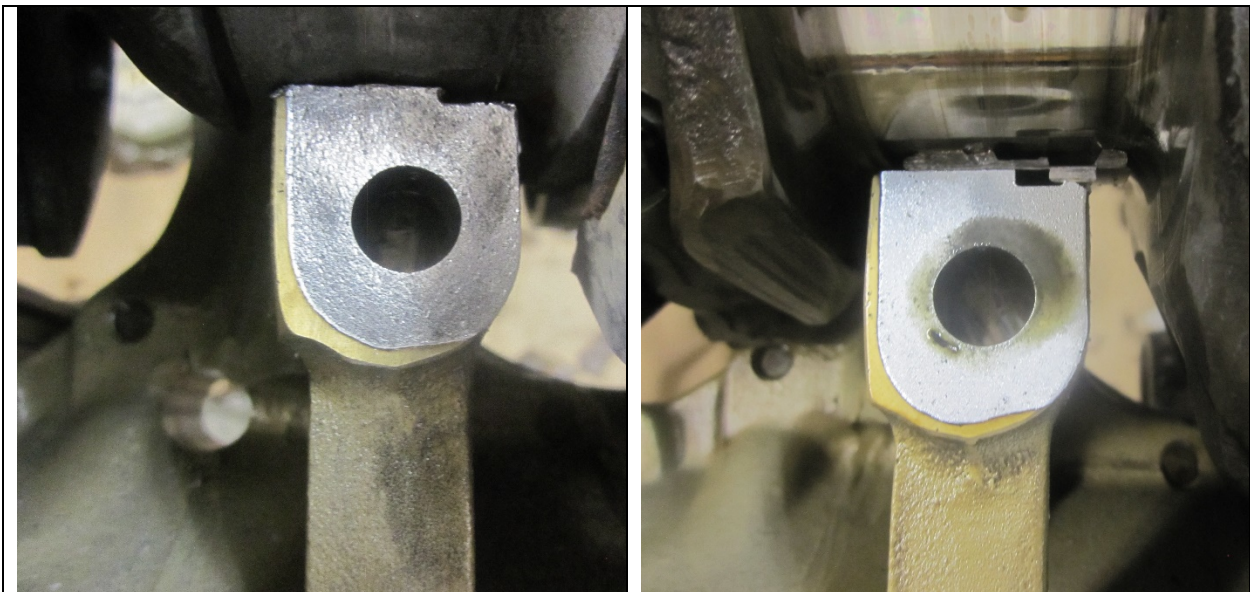
The crankshaft displayed signatures consistent with the lack of lubrication.



The number two connecting rod remained seized to the crankshaft.



Main journal bearings, movement and damage



Evidence of case fretting