



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

February 6, 2019

AIRFRAME AND ENGINE EXAMINATION

WPR19LA070

This document contains 8 embedded photos.

A. ACCIDENT

Location: Roll, AZ
Date: January 19, 2019
Aircraft: CCX-2000, N57FX, Serial #: CCX-2000-0005
NTSB IIC: Josh Cawthra

B. EXAMINATION PARTICIPANTS:

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C. SUMMARY

On January 19, 2019, about 1400 mountain standard time, a Hill Group LLC. CCX-2000 airplane, N57FX, was substantially damaged when it was involved in an accident near Roll, Arizona. The pilot was not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

D. DETAILS OF THE INVESTIGATION

1.0 Engine Information

The experimental amateur-built airplane was equipped with a CubCrafters (Aero Sport Power) CC-363i four-cylinder reciprocating engine (serial # CC363I-1002) rated at 186 horsepower. The engine total time since new was about 77.3 hours. Logbook records showed an oil change, to include filter, at 56.2 hours on November 21, 2018.

1.1 Examination Details

The engine remained attached to the airframe and was subsequently removed to facilitate the examination and disassembly.

The engine was seized, and manual rotation via the crankshaft flange was not possible. The cylinders, overhead components and accessories were in place and no external damage was noted. Internal examination of the piston cylinders, utilizing a lighted borescope, revealed that the valves were in place and no mechanical damage was observed. Normal, gray colored combustion deposits were observed on the piston and associated valve faces. The oil sump, associated oil lines and filter were in place and no leaks or damage were noted. The oil filler cap and fill tube were intact, and no anomalies were noted. The oil dip-stick showed approximately 7 quarts. The fuel delivery servo, fuel pumps, manifold and supply lines were in place; nominal damage was noted to the fuel servo adaptor flange and the snaffle valve was fractured. The dual electronic ignition system was in place and no damage was noted. The exhaust system was in place and secure. The distal end of the exhaust pipe was bent. The sparkplugs were removed and exhibited normal color and wear; no mechanical damage was noted. All airframe to engine controls and components were in place and no anomalies were noted.

The following findings were noted when the engine was disassembled:

- The accessory gears were in place, properly clocked and undamaged
- The pistons and associated piston pins, connecting rods, rod-end caps and bearings were in place and remained attached to the crankshaft. The number four connecting rod was seized to the crankshaft. The remaining connecting rods moved freely about their respective journals.
- Mechanical scoring and striations were noted on the skirt area of all four pistons. The associated piston rings remained in place. Normal combustion deposits were noted on all four piston faces.
- The camshaft was in place and nominal damage was observed to the shaft and lobes.
- A significant amount of metallic debris was noted through the engine, oil filter, oil sump and finger screen.
- The crankshaft (serial number TA06B000322) was fractured (full-thickness) aft of the number three connecting rod journal, adjacent to the counter weights. Both counterweights were in place and remained attached to the crankshaft.

2.0 Examination Photos



Figure 1 - Engine and Airframe



Figure 2 - Engine and Airframe Time



Figure 3 Engine CC-363i



Figure 4 Oil Sump

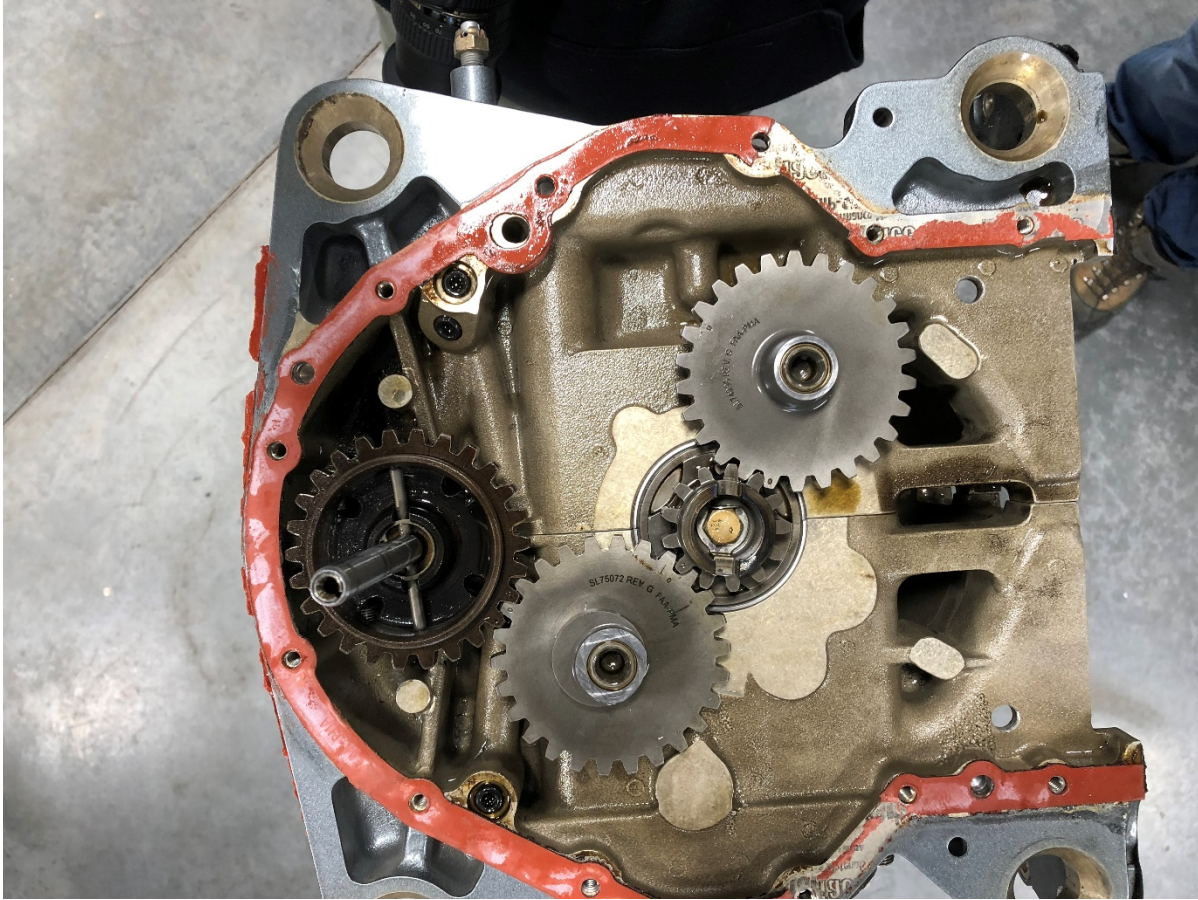


Figure 5 Accessory Gears



Figure 6 Fractured Crankshaft FWD Section



Figure 7 Fractured Crankshaft AFT Section

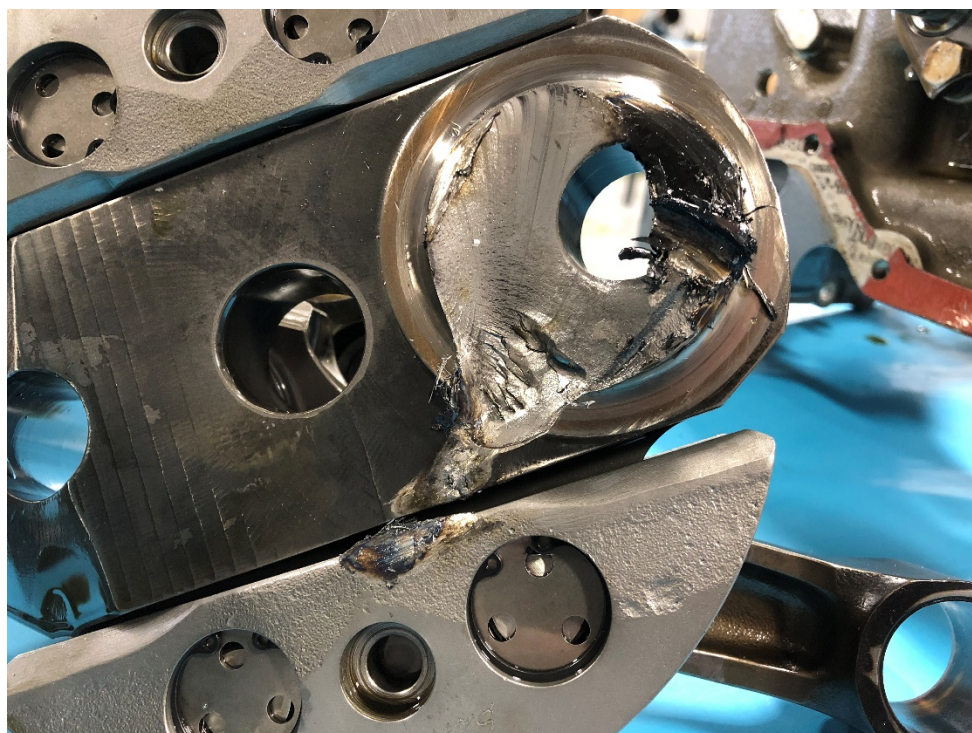


Figure 8 Fracture Surface

Submitted by: Dennis Hogenson