



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

January 14, 2020

AIRFRAME AND ENGINE EXAMINATION

WPR19FA154

This document contains 14 embedded photos.

A. ACCIDENT

Location: Grover, UT
Date: May 24, 2019
Aircraft: Cirrus SR22, Registration N809SR, Serial #2129
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

Samantha Link
Aviation Accident Investigator
National Transportation Safety Board
505 South 336th Street, Suite 540
Federal Way, WA 98003

Kurt Gibson
Air Safety Investigator
Continental Motors
2039 South Broad street
Mobile, AL 36615

Brad Miller
Manager Air Safety
Cirrus Aircraft
4515 Taylor Cir
Duluth, MN 55811

Eric Gutierrez
Air Safety Investigator
National Transportation Safety Board
505 South 336th Street, Suite 540
Federal Way, WA 98003

C. SUMMARY

Examination of the airframe and engine was conducted on January 14, 2020 at the facilities of Air Transport in Phoenix, Arizona. No anomalies were noted during the examination.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

- The fuel strainer was not attached at the firewall and was unable to be located; however, the fuel line leading to it was present.
 - The fuel system was heavily fragmented throughout.
 - The fuel selector valve was fracture separated and unable to be located.
- The airframe was laid out for further examination and additional photographs were taken of the flight control components.
- A portion of the airplane's key was found in the ignition switch.
 - The switch was found in the "both" position.

1.1 Airframe photos



Figure 1: Ignition Switch



Figure 2: Firewall



Figure 3: Empennage and Aft Fuselage

2.0 Engine Examination

- The propeller hub was removed from the engine
- The propeller flange was bent at about a 10-degree angle and several cracks were noted on the outside of the crankshaft.
- The starter adapter was removed from the engine
- The upper spark plugs were removed
- The engine rotated when manipulated by hand. Grinding was noted at the aft crankshaft gear.
 - The oil sump was noted to be crushed upward into the gear and organic debris was noted in that area.
- All cylinders exhibited various degrees of impact related damage.
 - The rocker arms were fracture separated from the number 1, 3, 5, and 6 cylinder heads.
- The rocker covers were removed from the number 2 and 4 cylinders
 - When the engine was rotated by hand the valves moved accordingly
 - The number 4 intake valve moved very little. Further examination revealed the push rod exhibited impact related damage near the crankcase.
 - Thumb compression was established on both the number 2 and 4 cylinders.

- The 2, 4, 6 cylinders were borescoped and all of the cylinders showed minor signs of corrosion consistent with the engine being in storage.
- The number 1, 3, and 5 cylinders were removed from the engine
 - The piston heads exhibited light colored deposits consistent with normal operations and were removed from the engine
 - The cylinder walls were consistent with normal operations.
 - Organic debris was present within the cylinders.
 - The connecting rods moved freely when manipulated by hand.
 - The connecting rods for cylinders 2, 4, and 6 were visually inspected and appeared consistent with normal operations.
 - The camshaft was intact and slight organic debris was noted throughout.
 - The camshaft lobes remained oval and were consistent with normal operations.
 - The internal engine core was overall lubricated and consisted with normal operations
- The oil pump was removed and disassembled
 - All components were intact and consistent with normal operations
 - Some organic debris was noted within the pump
 - One score mark was noted on the housing, but there was no damage elsewhere.

2.1 Engine Photos



Figure 4: Right Side of Engine



Figure 5: Front of Engine



Figure 6: Left Side of Engine



Figure 7: The Propeller Flange

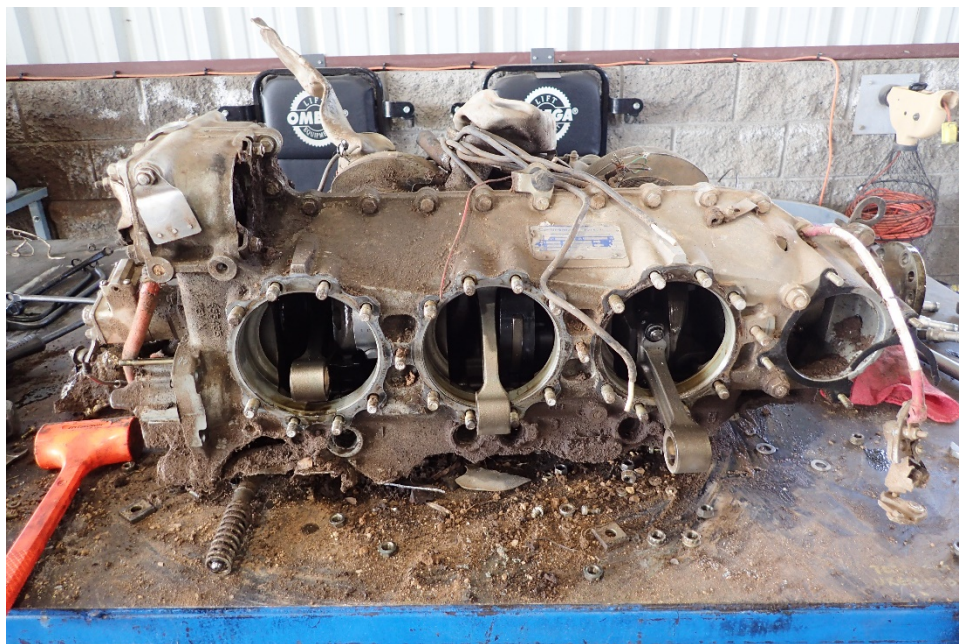


Figure 8: Right Side Crankcase



Figure 9: Crankshaft Gear

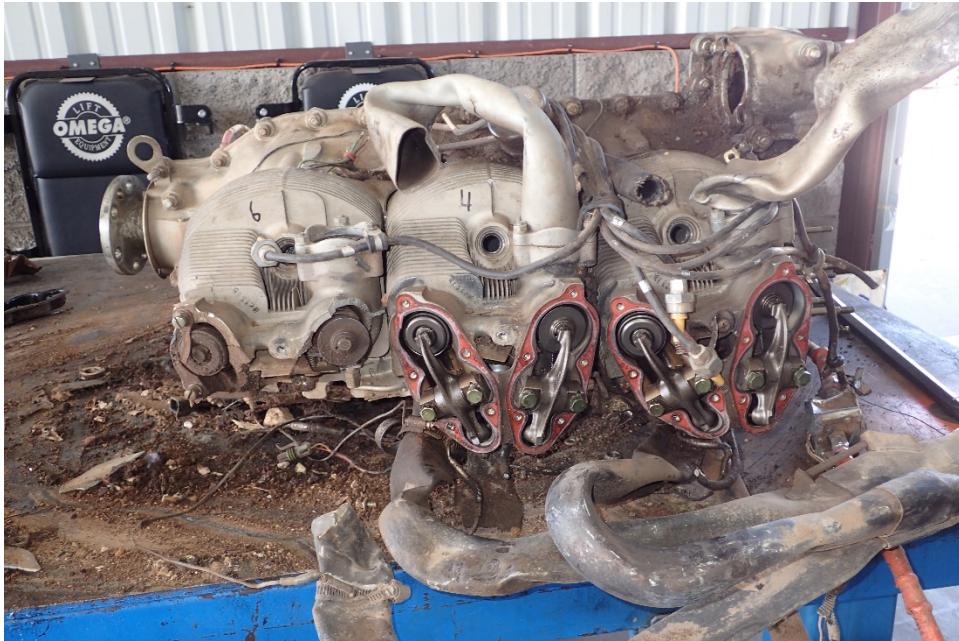


Figure 10: Left Side Cylinders



Figure 11: The Oil Pump



Figure 12: Propeller Blade Labeled "A"



Figure 13: Propeller Blade Labeled "B"



Figure 14: Propeller Blade Labeled "C"

END.

Submitted by: Samantha Link