



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Alaska Region

November 9, 2021

AIRFRAME / ENGINE EXAMINATION SUMMARY

ANC21LA061

This document contains 6 embedded photos.

A. ACCIDENT

Location: Skwentna, Alaska
Date: July 16, 2021
Aircraft: Cessna 172, N7137T
NTSB Investigator-in-Charge: Eric Swenson

B. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

A postaccident engine run of the Continental O-300D by the Federal Aviation Administration was completed on July 29, 2021, at the Big Lake Airport, Big Lake, Alaska. A local A&P mechanic was retained to help with the examination. The engine was noted to run rough. There was significant oil leaking and the engine was likely “burning” significant oil based on the exhaust indications. During start up the oil pressure immediately reached 35 psi. The engine was run-up to 1700 RPM, and it was “not smooth” but was otherwise normal. The magneto check and the carburetor heat check were normal.

2.0 Engine Examination

Continental O-300D engine, S/N 16054-D72-D-R

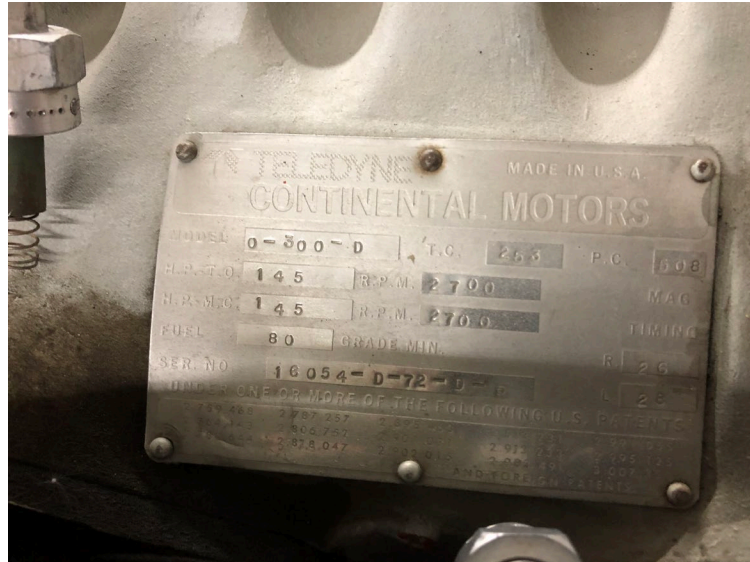


Figure 1: View of the engine data

A local A&P mechanic (Dan Ellis) was retained from Ellis Aviation to help with the examination. The upper spark plugs were removed, and the crankshaft was rotated by hand utilizing the propeller. Rotational continuity was established. Compression was obtained on all cylinders utilizing a compression tester with the exception of cylinder number (No.) 2. The No. 4 cylinder also had lower compression. The No. 2 and No. 4 cylinders were removed. The upper (top) portion of the No. 2 piston face and all three upper compression rings were damaged. Scuffing was observed throughout the sides of the piston.



Figure 2: Cylinder No. 2 Piston



Figure 3: Cylinder No. 2 Piston



Figure 4: Cylinder No. 2

The exhaust on the left side of the engine had improper bolts installed on the muffler with one nut missing (only the left side was removed). Cylinder No. 2 had an improper gasket installed on the exhaust flange. Cylinder No. 2 exhaust was in contact with Cylinder No. 4 intake tube with indications of heat transfer.



Figure 5: Exhaust from Cylinder No.2 (Right) in contact with intake tube from Cylinder No. 4 (Left)



Figure 6: Stock exhaust gasket found on Cylinder No. 4 (Left): Larger exhaust gasket found on Cylinder No. 2 (Right)

The magneto timing was found set properly.

The upper spark plugs indicated a rich mixture with carbon fouling.

The signatures found in the removal of the No. 2 cylinder were consistent with detonation and/or preignition.

The internal components of the engine that could be viewed visually appeared intact.

Compression Test Results:

No.1: 79/80
No.2: 0/80
No.3: 79/80
No.4: 55/80
No.5: 65/80
No.6: 78/80

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