



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

April 10, 2018

ENGINE EXAMINATION REPORT

WPR18LA018

This document contains 2 embedded photos

A. ACCIDENT

Location: Blythe, California
Date: October 3, 2017
Aircraft: Cirrus SR22, N418CP, Serial #: 3262
NTSB IIC: Albert Nixon

B. EXAMINATION PARTICIPANTS:

Albert Nixon
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C. SUMMARY

Examination of the recovered engine was conducted on April 10, 2018, at the facilities of Air Transport, Phoenix, Arizona. Evidence of preaccident mechanical failure was noted during the examination of the recovered engine consistent with lubrication distress.

D. DETAILS OF THE INVESTIGATION

1.0 Engine and Components Examination

Examination of the Continental IO-550N engine, serial number 691904, revealed that it remained attached to the airframe by the engine mounts and no external damage was observed to the cylinders. The engine accessories remained attached to the engine via their respective mounts. A small hole was observed at the topside of the engine crankcase that was consistent with an internal engine failure.



Figure 1: Airplane set up for examination (left front side).

The crankshaft was rotated by hand utilizing the propeller and rotational continuity was established with the crankshaft but with noticeable resistance. A lighted borescope examination through the hole in the crankcase revealed that one of the crankshaft journals was visible and was noted to have sustained thermal damage consistent with lubrication distress. Additionally, the no. 3 and no. 4 connecting rods were determined to be separated from their respective journals.

All six cylinders remained attached to the engine and were undamaged. A borescope inspection of the cylinder combustion chambers revealed evidence of normal operational conditions. The ignition harness remained attached and no anomalies were noted. The bottom sparkplugs were removed, and all sparkplug electrodes exhibited normal wear signatures when compared to the Champion Check-A-Plug comparison chart.

The fuel pump, manifold valve, fuel nozzles, and throttle metering unit were examined, and no anomalies were noted.

The oil sump was attached and intact and the quick drain remained secured and was in the closed

position. The oil gage indicated 2 quarts of oil. The oil sump was drained and partially removed. Metal debris and bearing material were found in the oil sump. The bearing material exhibited thermal damage consistent with lubrication distress. The oil filter remained securely attached and no signs of oil leaks were observed around the filter. The oil filter was removed, and examination of the filter pleats revealed metallic debris. The oil cooler was attached and intact and no anomalies were noted.

The right turbocharger remained attached to the engine. The turbocharger compressor section was examined; the blades rotated freely by hand, and no anomalies were noted. The b-nut fitting on the inlet oil line to the right turbocharger check valve was loose and was able to be manually rotated. A large amount of oil residue was noted in the vicinity of the loose b-nut fitting. Additionally, the right side of the bottom of the engine cowling displayed significantly more oil residue staining than the left side. The b-nut fitting was removed for examination. The examination of the b-nut threads revealed no anomalies. No other noticeable oil leaks were noted on the engine. Examination of the left turbocharger revealed no anomalies.



Figure 2: Loose b-nut fitting (right side).

The three-bladed variable pitch propeller remained attached to the crankshaft flange. All three

propeller blades were attached; one blade was fractured about 2-3 inches from the tip and the other two blades were damaged about 6 inches from the tip.

The examination revealed that the engine exhibited damage that was consistent with lubrication distress. The examination of the engine revealed no additional evidence of mechanical malfunctions or failures that would have precluded normal operation.

Submitted by: Albert Nixon