



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

September 8, 2019

AIRFRAME AND ENGINE EXAMINATION

WPR19FA250

A. ACCIDENT

Location: Henefer, UT
Date: September 4, 2019
Aircraft: Registration Number: N94262, Cessna C210L
NTSB IIC: Albert Nixon

B. EXAMINATION PARTICIPANTS:

Albert Nixon
Senior Aviation Accident Investigator
National Transportation Safety Board
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Kevin Harvey
Aviation Safety Inspector
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Continental Motors Inc.
Mobile, AL

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Textron Aviation
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C. SUMMARY

Examination of the airplane's airframe and engine was conducted on September 8, 2019, at a private facility near Henefer, Utah. No anomalies or evidence of preimpact mechanical failure or malfunction were noted during the examination of the recovered airframe and engine.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Examination of the airplane revealed that the wings were removed for recovery. The engine was partially attached by cables and tubing that was cut during the recovery.



Figure 1: Right wing as viewed from the right side.

Flight control continuity was established from the ailerons to the wing root. In addition, aileron continuity was established from the cabin to the cockpit controls. Rudder and elevator continuity were established to the flight controls.

The flaps were confirmed retracted with the actuator. The landing gear was confirmed retracted with the actuators. Both wing fuel tanks screens were examined and clear of contaminants.

In the cabin, the ignition was selected to both, the landing gear lever was up, the flap lever was damaged, and its position could not be determined from the lever. The trim wheel was damaged and unable to determine a reading.

The vertical stabilizer and the rudder were examined all were intact and no anomalies. The horizontal stabilizers were relatively intact. The elevators were attached, and no anomalies were noted except the right elevator counterweight was partially separated and dangling downward.

The left seat's lap belt buckle was latched but was cut by rescue personnel. The shoulder harness was not latched to the lap belt. The right seat was removed from the airplane by rescue personnel. The right seat's lap belt was cut by rescue personnel. The shoulder harness was not

latched to the lap belt. Only 1 seat was observed in the rear cabin. A secondary seat stop was installed on the left seat. Both seat rails sustained impact damage.

The left control yoke remained attached to the control tube. The right control had separated from the control tube and was found in the wreckage broken in numerous sections.

The throttle lever was bent and was about $\frac{3}{4}$ open and the mixture was $\frac{3}{4}$ in, the propeller lever was all the way in, however, all the levers were jammed from impact damage.

The turn bank indicator indicated left bank and the ball was left. The altimeter indicated 950 ft with 30.30 set. The airspeed indicator and engine rpm gauge, indicated 0. The heading indicator was at a 130° heading. The vertical speed indicator was -500 ft. The autopilot instrument displayed an inoperative sticker.

The ELT was removed and was a Narco Avionics ELT 10 model, TS0 C91 compliant.

The fuel selector handle was broken but indicated the left fuel tank selected. The fuel selector case was removed and examined. The valve was determined to be selected to the left tank and no obstructions were observed. A small amount of residual fuel was present. The fuel strainer gasket screen and bowl were clear of contaminants.

A damaged cooler bag (contents empty) and portable cooling system was found in the cabin.

2.0 Engine Examination

Examination of the Continental IO-520FcL engine, revealed that the engine sustained impact damage on the bottom side, rear, and left rocker cover. All the engine mounts were fractured. The crankcase sustained impact on the front. All rocker covers were removed, and examination revealed that all intake and exhaust rocker arms, shafts, and valve springs, were intact with no anomalies observed. The crankshaft was able to be rotated by hand and rotational continuity was established throughout the engine and valve train all cylinders. All cylinders displayed appropriate compression and suction. Spark was observed on all the ignition leads during the rotation. The top spark plugs were removed, and the spark plugs electrodes exhibited “grey color and normal wear” signatures when compared to the Champion Check-A-Plug comparison chart.

A borescope inspection of the cylinders revealed evidence of normal operational conditions. However, the nos. 4 and 5 cylinders had a semi-circular impression on the piston face consistent with a valve strike. The no. 4 cylinder had combustion deposits in the indentation that was consistent with engine operation since the strike. The no. 5 cylinder had no significant combustion deposits in the indentation. No obstruction to valve movement was observed and the valve moved normally.



Figure 2: Engine as viewed from the left side.

The engine starter and throttle and metering assembly had separated but were located in the wreckage and examined and no anomalies were observed, and the inlet screen was clear of contaminants. The engine accessories mounted to the rear of the engine were intact, with the exception of the starter adapter, which sustained impact damage. The left and right magnetos remained attached.

The oil pump and oil cooler were intact. The oil filter and oil sump sustained impact damage. The oil filter was opened, and examination of the filter revealed no metal contamination.

The engine driven fuel pump was removed and examined. The drive coupling was intact and when rotated by hand, the drive shaft rotated freely. A small amount of residue fuel was present. The manifold valve was intact, and no fuel leaks were noted. The valve was disassembled, a small amount of fuel was present, and no anomalies were noted.

All the fuel lines were intact however, the fuel flow transducer mounting was bent. The fuel injectors were examined, and no anomalies were noted.

The three-bladed propeller was examined. The propeller tips were missing from all the blades. One blade was loose at the hub. One blade was turned 180° but had ceased and bent towards the

camber side and exhibited substantial chordwise scratches and gouges. One blade had a large section of the tip separated with gouges and a slight twist. Another blade exhibited twisting near the fracture, forward bending, and chordwise scratches. 3 pieces of blade tips that were located in the ground disturbance of the wreckage, displayed curling and twisting.

The examination of the engine revealed no evidence of pre-impact mechanical anomalies or malfunctions that would have precluded normal operation.

Submitted by: Albert Nixon