NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

July 6, 2016

AIRFRAME AND ENGINE EXAMINATION

WPR16FA131

This document contains 2 embedded photos.

A. ACCIDENT

Location:	Coeur d'Alene, Idaho
Date:	June 25, 2016
Aircraft:	Cessna A185F, N4585F Serial 1851092
NTSB IIC:	Albert Nixon

B. EXAMINATION PARTICIPANTS:

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C. SUMMARY

Examination of the recovered airframe and engine was conducted on July 6, 2016, at the facilities of Air Transport, Phoenix, Arizona. The examination of the airframe and engine revealed no evidence of pre-impact mechanical anomalies or malfunctions that would have precluded normal operation.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

Flight control continuity was established to all flight control surfaces. The elevator trim indicator was observed in the takeoff range. The elevator trim actuator was set to about -3° of trim.

Fuel supply line continuity was established on the right side of the fuel system from the wing root to the fuel strainer, by blowing air through the lines. The fuel strainer and fuel strainer bowl were clear of debris. Continuity to the left side fuel system was not established because of impact damage to the fuel line in the left door post. The fuel selector handle was in the both position and the fuel selector valve corresponded to this position. The left fuel tank was breached.

Figure 1: Airplane Wreckage viewed from the Right Side.

A review of the flight instruments revealed that the master switch was set to the off position, the ignition switch was set to the both position, and the boost pump switch was set to the emergency position and exhibited no signs of fuel leakage.

The left wing was separated in half about mid-span. The leading edge of the right wing exhibited indentations from multiple tree strikes. Recovered fragments of the windscreen showed no signs of oil leakage or a bird strike. Throttle control continuity was established.

The cowl flap selector set to half open. The engine tach hours indicated 3,799.4 hours.

2.0 Engine Examination

Examination of the Continental IO-520-F-C-D (9) engine, revealed that all engine components and accessories were present, and the engine remained partially attached to the airframe. All rocker covers were removed, and the cylinder overhead areas were lubricated and unremarkable. A hole in the No. 2 rocker box cover was observed. Fragments of the cover were observed inside the rocker box cover, consistent with external impact to the cover. The crankshaft was rotated by hand, utilizing the propeller, and rotational continuity was established throughout the engine. Accessory section, and valve train. During crankshaft rotation, thumb compression and suction were attained on all cylinders. A borescope inspection of the cylinders revealed evidence of normal operational conditions

The two-bladed propeller remained attached to the crankshaft propeller flange with the blades attached. The propeller flange was bent from impact. One blade was bent aft about 90°, about mid-span and the other blade was bent aft on the outboard tip from about 2-3 inches.

Figure 2: Airplane Engine viewed from the Left Side.

A hole was observed in the oil sump next to drain plug, in the left rear portion. The damage was consistent with impact forces that pushed the engine rearward into the airframe firewall.

The top sparkplugs were removed, and all spark plug electrodes were dark in color and exhibited normal to normal worn out wear signatures when compared to the Champion Check-A-Plug comparison chart, with the exception of the No. 2 spark plug, which appeared to be normal in color. The Nos. 2 and 4, top spark plugs rotated freely with little force. The Nos. 3 and 5, top spark plug leads were frayed, consistent with impact damage. The Nos. 4 and 6, top sparkplug leads were taped. Spark was observed on top Nos. 2, 4, and 6, ignition leads connected to the right magneto (impulse coupled). The Nos. 1, 3, and 5, connected to the left magneto (not impulse coupled), did not obtain spark. However, the Nos. 1, 3, and 5, top ignition leads were observed to have sustained impact damage and were nearly separated.

The fuel manifold lines were attached at all cylinder fuel injectors locations. The engine driven fuel pump was removed and examined. The fuel pump shear drive coupler was intact. When rotated by hand, the fuel pump drive shaft rotated freely. The fuel pressure adjustment screw had separated, and impact damage was observed in this area of the fuel pump.

The examination of the engine revealed no evidence of pre-impact mechanical anomalies or malfunctions that would have precluded normal operation. The engine was prepared for shipment to the manufacturer for a planned engine run.

Submitted by: Gregory Collins