



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

July 20, 2016

ENGINE EXAMINATION

WPR16FA144

This document contains 8 embedded photos.

A. ACCIDENT

Location: Logan, UT
Date: July 18, 2016
Aircraft: Diamond DA40F, Registration Number: N419FP, Serial #: 40.FC019
NTSB IIC: Maja Smith

B. EXAMINATION PARTICIPANTS:

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C. SUMMARY

The airplane wreckage was examined at the facilities of Precision Air Power, Woods Cross, Utah, on July 20, 2016, by representatives from Lycoming Engines, Diamond Aircraft and FAA under the supervision of the NTSB IIC. No evidence of preimpact mechanical malfunction was noted during the examination of the recovered airframe and engine.

D. DETAILS OF THE INVESTIGATION

1.0 Engine Examination



Photo 1. Engine

Examination of the recovered engine revealed that it remained attached to the engine mount structure. Visual examination of the engine revealed no external evidence of pre-impact catastrophic mechanical malfunction. All four cylinders and all engine accessories remained attached to the engine. The propeller remained attached to the propeller crankshaft flange. All engine accessories remained attached to the engine via their respective mounts. The top spark plugs and rocker arm covers were removed from the engine. The intake pipes exhibited signatures consistent with the impact damage. The exhaust pipe was attached but exhibited signatures consistent with the impact damage. Mechanical continuity was established throughout the engine and valve train engine to the rear accessory case. when it was manually rotated using a handtool . Thumb compression was obtained on all four cylinders in proper firing order. Equal movement of the intake and exhaust valve rocker arms was noted on all four cylinders.



Photo 2 – Cylinders

All four cylinders were examined internally using a lighted borescope. A normal amount of carbon deposits were observed on the tops of all four pistons. All intake and exhaust valves were intact . No evidence of foreign object ingestion was observed.



Photo 3 – Right and left magneto

The left and right magnetos were not attached to the engine. Both left and right magneto drive shafts were intact and the impulse coupling functioned normally during hand rotation of the drive shafts. The magneto produced a spark at all posts when the drive shaft was rotated by hand. The ignition harness was intact and undamaged.



Photo 4 – Top spark plugs

The top and bottom spark plugs remained secure to their respective cylinder location with the ignition harness lead attached. The top sparkplug electrodes were free of mechanical damage and were circular in shape.



Photo 5 – Oil pickup screen

The oil filter remained secured at the mounting pad. The oil screen was inspected and no particles were noted on the inside of the screen.



Photo 6 – Fuel pump

The fuel pump remained secured at the mounting pad. The fuel pump was disassembled and the diaphragm was intact.



Photo 7 - Carburetor

The carburetor was intact and undamaged. The throttle arm remained attached and moved freely by hand from stop to stop. The throttle plate was intact and undamaged. The mixture control arm lever was intact and remained attached to the carburetor. The mixture control arm moved

freely by hand from stop to stop. The carburetor was disassembled and examined. The single-piece venturi was intact and undamaged. Both metal floats were attached to the carburetor; one metal float exhibited signatures of hydraulic crushing, the other one was intact and undamaged. The carburetor float bowl was found to be free of debris. The carburetor fuel screen was intact and free of debris.

2.0 Propeller Examination



Photo 8 - Propeller

The propeller remained attached to the propeller crankshaft flange. One blade was found relatively straight and the other blade was bent aft. Both blades had leading edge polishing and cord wise scaring.

Submitted by: Maja Smith