



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

August 8, 2017

ENGINE EXAMINATION

WPR17FA161

This document contains 10 embedded photos.

A. ACCIDENT

Location: Apple Valley, CA
Date: July 22, 2017
Aircraft: Applegate Panzl S331E, Registration #331ST, Serial #001
NTSB IIC: Samantha Link

B. EXAMINATION PARTICIPANTS:

Samantha Link
Aviation Accident Investigator
National Transportation Safety Board
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C. SUMMARY

Examination of the engine was conducted on August 8, 2017 at the facilities of SouthWest Aircraft Transportation & Recovery, Chino, California. No anomalies were noted during the examination.

D. DETAILS OF THE INVESTIGATION

1.0 Engine Examination

- No visible evidence of catastrophic mechanical malfunction or preimpact fire
- The engine remained attached to the impact damaged engine mounts
- The engine sustained significant crush damage at the oil sump, exhaust system, and induction system
 - Exhaust system exhibited ductile bending
- Several push rod tubes were displaced due to impact energy
- The fuel injection servo was separated

- Magnetos:
 - Right magneto was displaced from mounting pad
 - Left magneto remained securely clamped at its mounting pad
 - Both magnetos were fragmented and could not be functionally tested
- Propeller Assembly
 - The propeller governor was displaced from mounting bad, control remained securely attached at control arm
 - The propeller hub remained attached to the crankshaft flange
 - The three wood/composite propeller blades were all destroyed, at or close to the propeller hub
 - Propeller hub serial: MTV-9-B-C/08302
- Engine driven fuel pump was displaced from accessory case
- The fuel flow divider remained secured at its mounting bracket, the flow divider was disassembled
 - No visible contaminates
 - Diaphragm remained intact
- All 6 fuel injection nozzles were clear of debris and were unobstructed
- Top spark plugs were removed. The electrodes remained mechanically undamaged and exhibited varying coloring
- Bottom spark plugs were not removed.
- The starter was displaced from the mounting pad
- The ignition harness was destroyed
- The oil suction screen was removed and clear of debris
- Oil pump rotated freely by hand
- No evidence of oil contamination
- Rocker covers were removed
 - Rocker assemblies and valves remained intact
- The engine was boroscoped
 - The combustion chambers were free of mechanical damage
 - Valves intact and undamaged
 - No evidence of detonation or for foreign object ingestion
- Mechanical continuity was established by rotation of propeller hub by hand
 - Thumb compression was obtained
 - Valves moved appropriately
 - Engine to magneto timing could not be obtained
- Accessory housing was removed
 - Crankshaft gear, bolt, and dowel remained secured and intact

- o The accessory gears were undamaged

1.1 Photos



Figure 1: Right side of Engine



Figure 2: Left Side of engine



Figure 3: Propeller Assembly

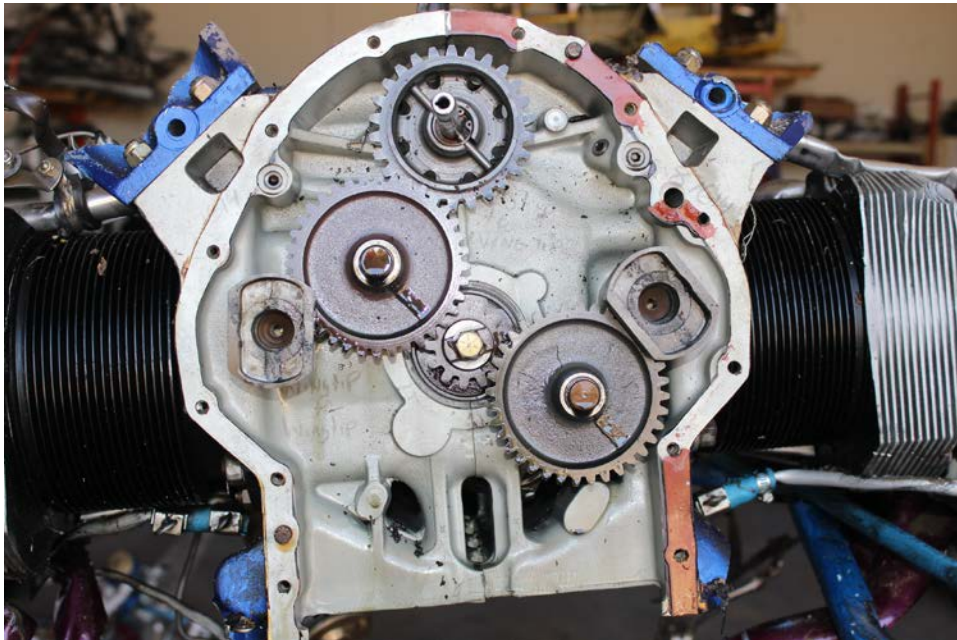


Figure 4: Aft Side of Engine



Figure 5: Top Spark Plugs

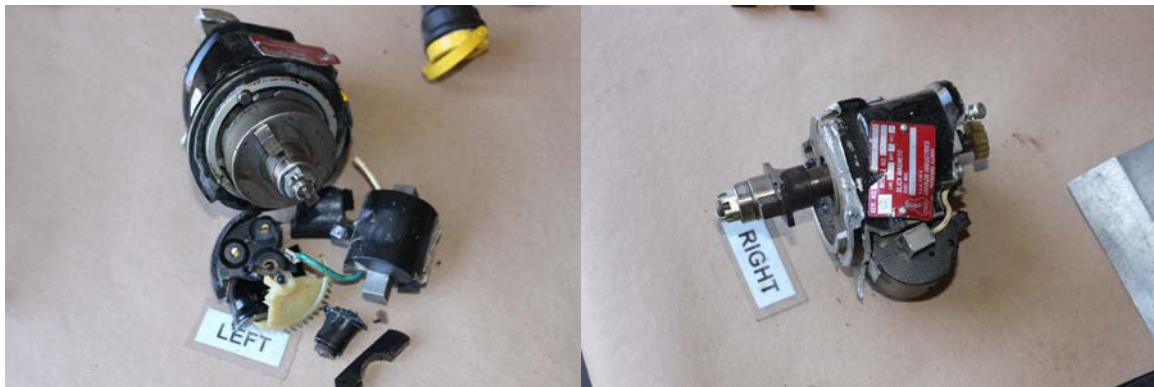


Figure 6: Magnetos

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Figure 7: Throttle Body



Figure 8: Fuel Flow Divider



Figure 9: Right Side of Engine



Figure 10: Left Side of Engine

END.

Submitted by: Samantha Link