



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

July 25, 2017

AIRFRAME AND ENGINE EXAMINATION REPORT

WPR17FA089

This document contains 19 embedded images.

A. ACCIDENT

Location:	Paso Robles, California
Date:	April 23, 2017
Aircraft:	N6190; Appleby Nieuport 28
NTSB Investigator-in-Charge:	Albert Nixon

B. PARTICIPANTS

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C. SUMMARY

Examination of the recovered wreckage was conducted on July 25, 2017, at the facilities of Air Transport, Phoenix, Arizona, by the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) and two other NTSB investigators. The elevator cable that was discovered disconnected at the accident site was reconfirmed. The engine examination revealed ground impact damage that resulted in internal component damage and prevented rotation of the cylinders and crankcase. No additional anomalies that would preclude pre-impact normal operation were observed.

D. ENGINE EXAMINATION



Figure 1-Engine and Propeller Assembly.

The engine separated from the main wreckage and had impact damage to the engine mounting assembly. The oil tank was breached, and the filler neck was deformed. The oil cap was found with the main wreckage. The ring cowling was crushed rearward into the cylinder areas. The propeller assembly had impact damage to both blades and remained attached to the propeller mounting flange. The propeller mounting flange was partially separated from the crankcase.



Figure 2-Engine, Rear-side View.

The non-rotating plate was bent forward and made contact with the adjacent accessory gears. The air pump and fuel pump separated from the non-rotating plate and was found with the main wreckage. The magnetos remained attached to the non-rotating plate and both had impact damage. The fuel and oil lines had impact damage and the fitting remained intact and secure with the crankshaft.

The engine was supported by the crankshaft during the examination.



Figure 3-Engine, Front-side View.

The propeller assembly and ring cowling were removed, and dirt was found impacted in and around the cylinder base areas. The rocker actuators had impact damage, and several had bending consistent with crankcase rotation during ground impact. Several cylinders had impact damage to their cooling fins. Number 7, 8, and 9 cylinders were dislodged aft from their crankcase mounts.

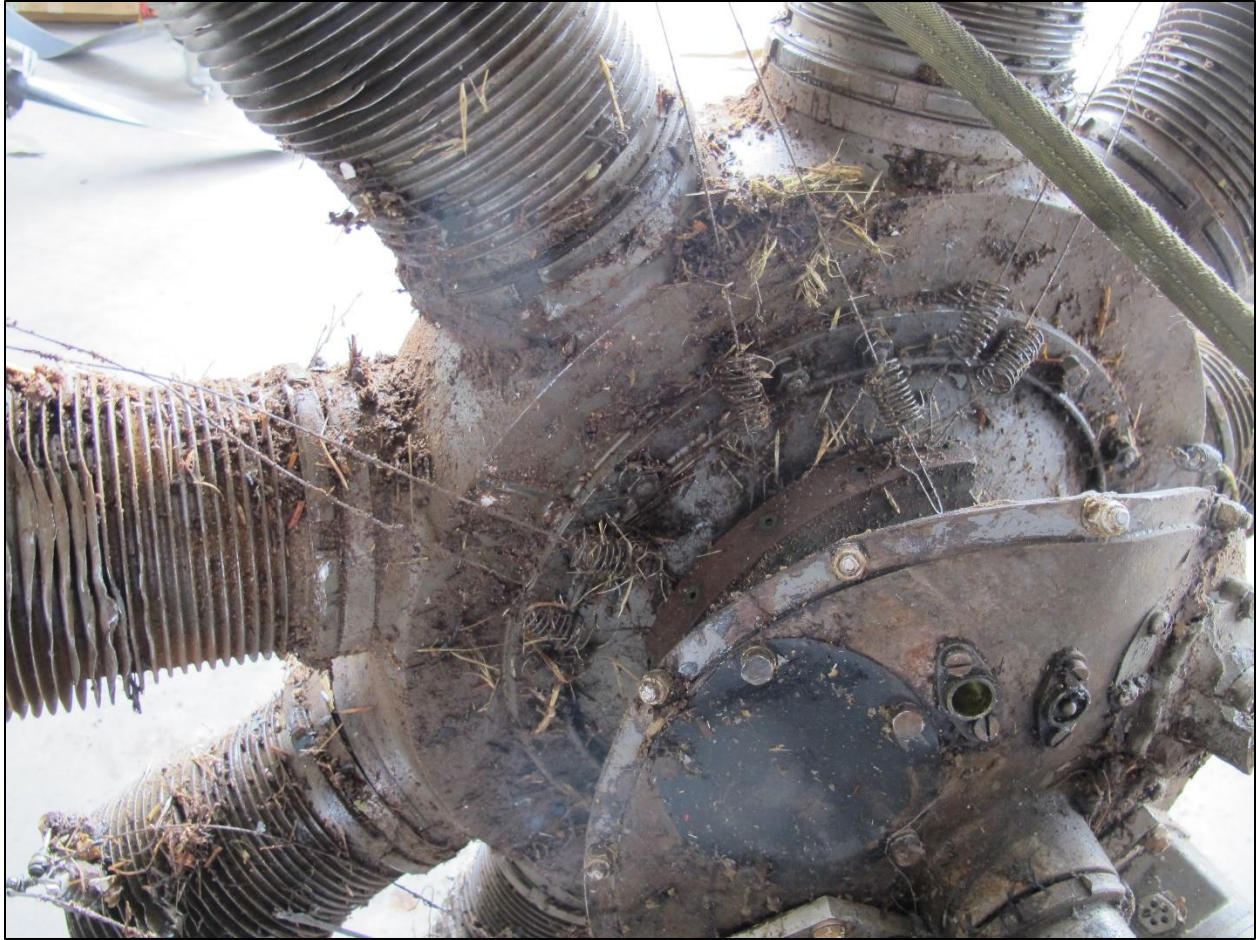


Figure 4-Bakelite Distributer Block.

The bakelite distributor block had impact damage and only a section remained attached to several ignition wires.



Figure 5-Crankcase End Plate and Planetary Timing Gears.

The crankcase end plate was removed from the crankcase and revealed the internal planetary timing gears and cam area. The valve plungers and cams were undamaged.



Figure 6-Valve Plunger Cam.

The valve plunger cam was removed from the engine and was undamaged.



Figure 7-Engine, Internal Components.

The valve plunger assembly was removed from the crankcase revealing the main bearings, crankshaft, connecting rods, and pistons.

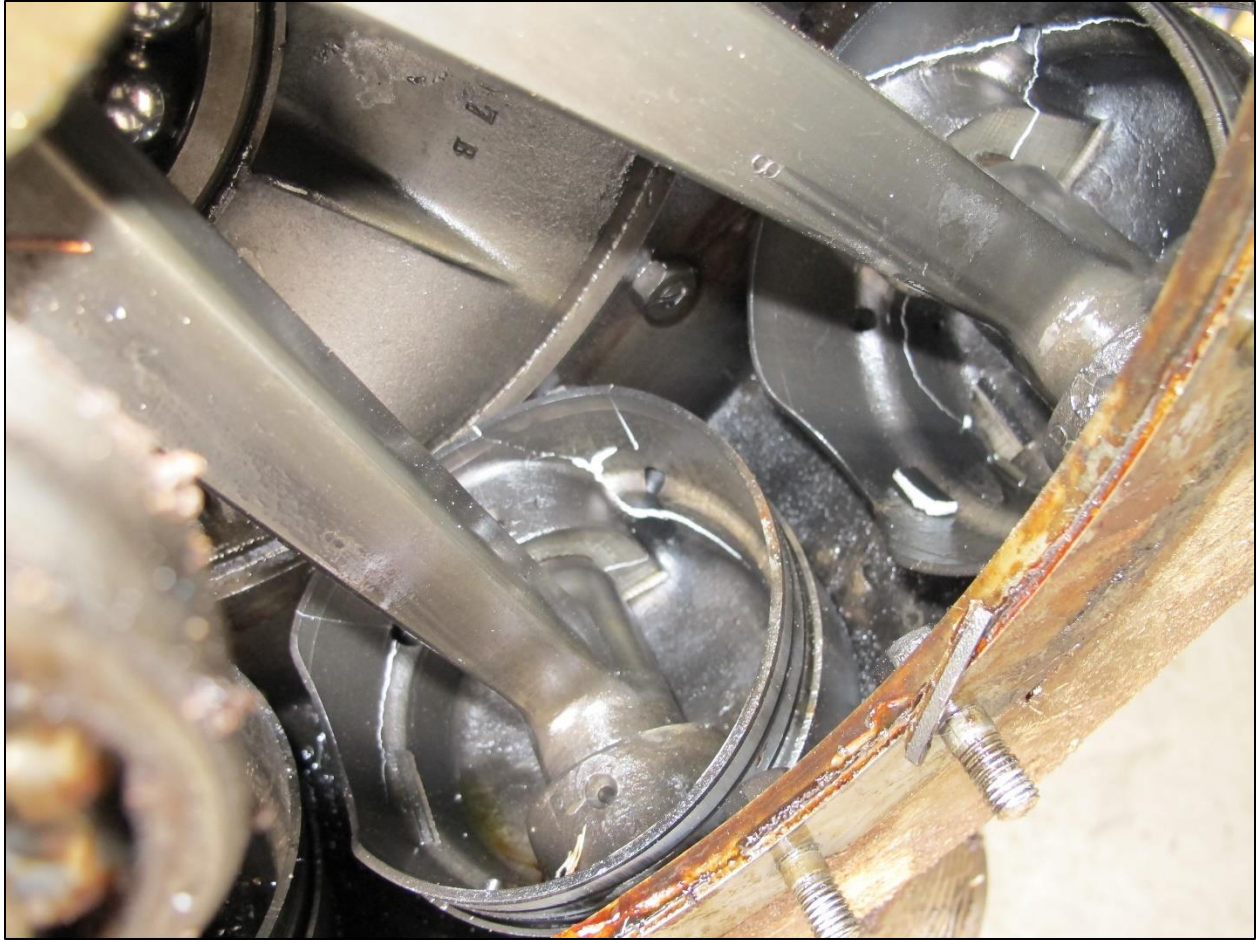


Figure 8-Piston Skirt Damage.

The number 1, 7, 8, and 9 piston skirts had impact damage. A thick layer of oily residue was found on the internal engine components.



Figure 9-Accessory Gears.

The accessory gears were undamaged and revealed rotational scoring on the non-rotating plate. The non-rotating plate had impact damage and was bent forward from its original position.

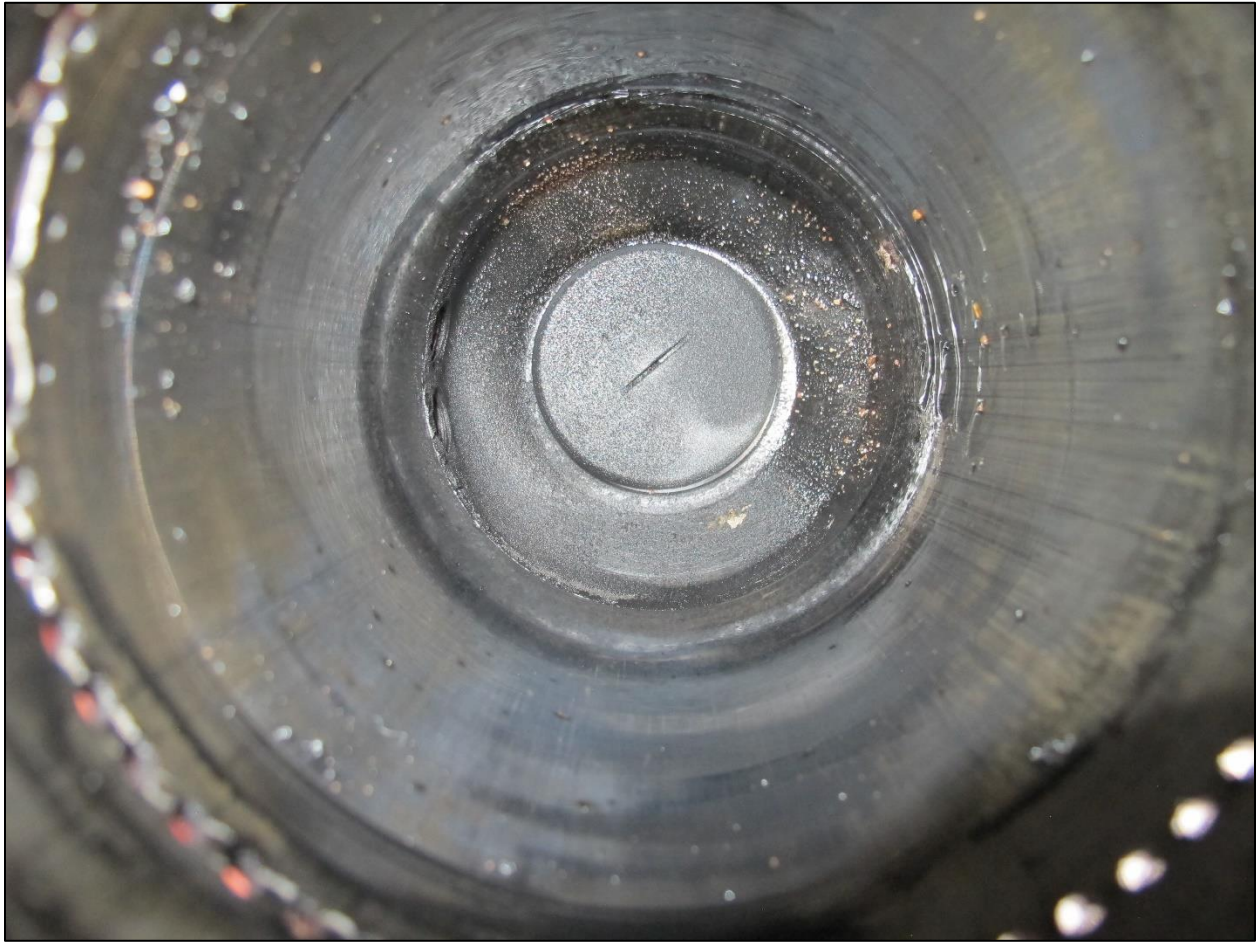


Figure 10-No. 8 Cylinder Bore and Combustion Chamber.

The number 8 cylinder was removed from the crankcase. The cylinder bore was undamaged, and the combustion chamber had an oily residue. The remaining cylinders were borescoped through the exhaust valve opening. All piston heads and combustion chambers were undamaged and had an oil residue.



Figure 11-Number 8 Piston Head.

The number 8 piston head surface. The surface is dark with sooty type deposits.



Figure 12-Spark Plugs.

The spark plugs were removed from the cylinders. The electrode areas had dark oily residue and (normal-worn out) wear conditions, when compared to a Champion AV-27 chart. Several spark plugs had impact damage.

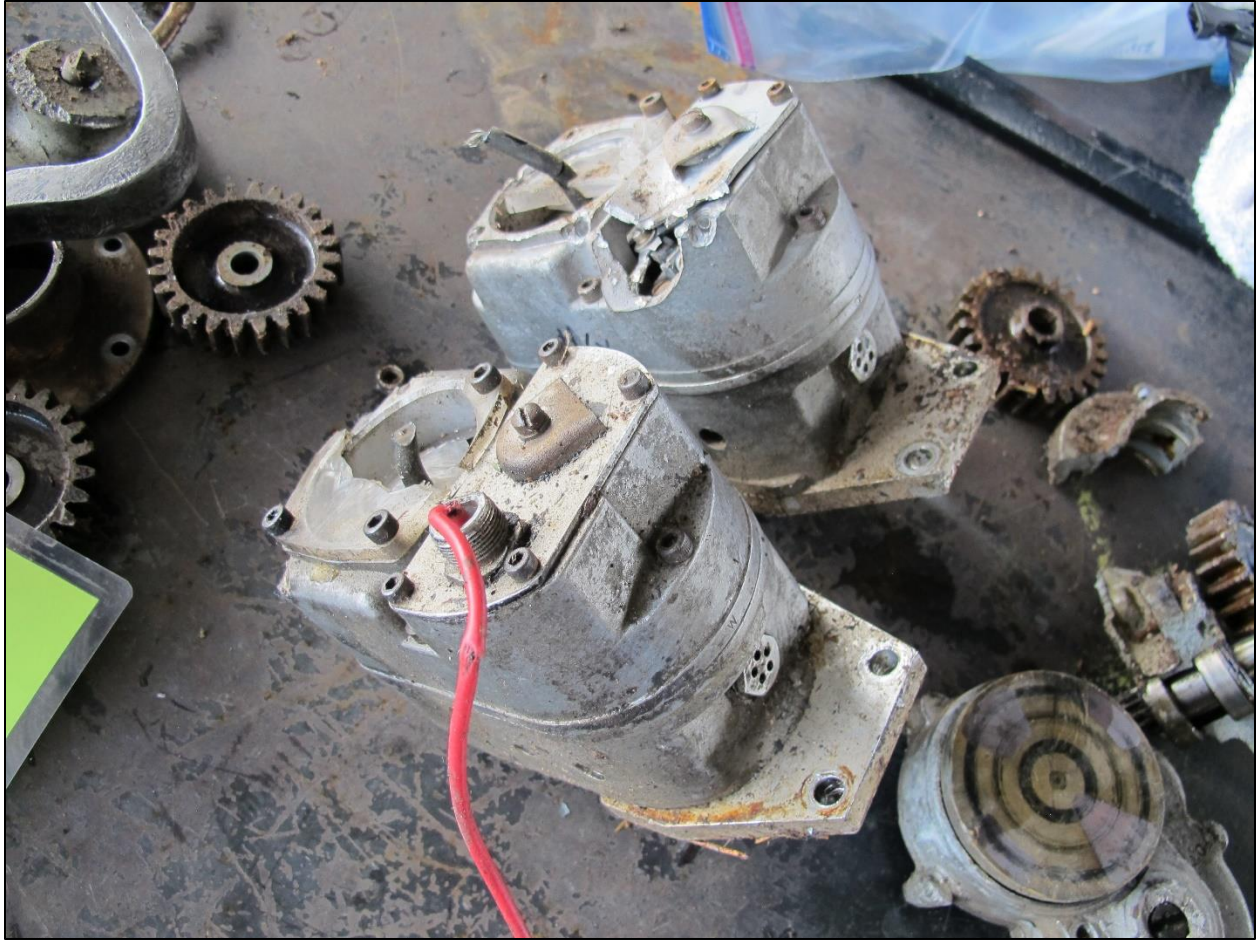


Figure 13-Magnetos.

The magnetos were removed from the engine and had impact damage. The magneto drive shafts rotated freely by hand and spark was obtained from the leads.



Figure 14-Blip Switch Drive Unit.

The blip switch drive unit separated from the engine and was found with the main wreckage. The drive's contact surface rotated freely by hand. The drive unit's contact assembly separated and was found in the main wreckage.



Figure 15-Blip Switch.

The blip switch and the blip switch drive unit contact assembly were found in the main wreckage.



Figure 16-Fuel Pump.

The fuel pump separated from the engine and had impact damage.



Figure 17-Inline Fuel Screen.

The inline fuel screen was removed from the fuel control valve and was free of debris.

E. AIRFRAME EXAMINATION



Figure 18 –Turnbuckle Assembly and Rod End.

Flight continuity was confirmed, except for continuity of the cable that operated the elevator in the trailing edge up direction, was not established. A rod end from that cable was found to have become disconnected from its turnbuckle connection. When the cable was moved from the rod end where the turnbuckle was supposed to be attached, the elevator moved trailing edge up. Both the cable rod end, and the turnbuckle it was supposed to be attached to, were observed to be in good condition. Further, the turnbuckle and separated cable rod end were observed with no safety-wire installed, nor with any remnants or marks from safety-wire.



Figure 19-Rear View of the Airplane's Tail and Fuselage.

Airplane's elevators and rudder remained attached.

Submitted by: Andrew Swick and Albert Nixon