



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

MAGNETO EXAMINATION

WPR17LA140

This document contains 5 embedded photos.

A. INCIDENT

Location: Bella Vista, California
Date: July 2, 2017
Aircraft: Robinson R44, N488AS
NTSB IIC: Elliott Simpson

B. EXAMINATION PARTICIPANTS:

Elliott Simpson
Aviation Accident Investigator
National Transportation Safety Board
Western Pacific Regional Office
Federal Way, Washington

Thom Webster
Investigator
Robinson Helicopter Company
Torrance, California

Hannah Warren
Engineer
Robinson Helicopter Company
Torrance, California

C. SUMMARY

Examination of the two magnetos and engine components was performed on October 16, 2017, at the facilities of Robinson Helicopter Company, Torrance, California.

D. DETAILS OF THE INVESTIGATION

1.0 Examination

Left Magneto
Part No: 10-600616-9
Type: S6LSC-200 1/16
Serial No: E08EA122

The external case of the magneto appeared undamaged (Photo 1). The points cover had already been removed prior to the examination, and all the spade connectors had been disconnected.

Both the points and retard points moved with rotation of the input shaft, and appropriate point gaps were observed. Green-colored deposits (Photo 2) were on the points contact surfaces and the E-gap was measured at 0.013 in (nominal 0.018 +/- 0.006 in).

The points cover was re-attached and the magneto was installed in a test stand and run at speeds of between 150 and 1,400 rpm. None of the output leads produced a spark.

Both sets of points were removed, and the green-colored deposits were removed with sand paper. The points were then re-installed and gapped, and again run at varying speeds, but this time intermittent sparks were observed at a speed range of 150 through to 600 rpm. After about 30 seconds, all sparks ceased at all speeds.

A new set of retard and primary points were then installed, and once in the test stand, the magneto was run at speeds through to 1,400 rpm. Consistent sparks were observed between 120 and 800 rpm, with higher speeds resulting in erratic sparks.

The magneto was then disassembled, and orange-colored corrosion was present on the copper coil contact stem (Photo 3). The carbon brush of the timing wheel moved with sprung resistance when pressed, and grooves were noted on its contact surface (Photo 4). The gear was then removed and the wiper arm exhibited black deposits similar to carbon dust to its transfer surface (Photo 5). No play was observed in gear bearing. The deposits were removed and the unit re-assembled and tested in the test stand, with no improvement in results.

Right Magneto

Part No: 10-600646-201

Type: S6LSC-204T 1/16

Serial No: E08EA114

The external case of the magneto appeared undamaged. The points cover had already been removed prior to the examination, and all the points spade connectors had been disconnected.

Both the points and retard points moved with rotation of the input shaft, and appropriate point gaps were observed. The points and inner surfaces of the point cavity were coated in oil, which was presumed to be preservative oil.

The points E-gap was measured at 0.016 in (nominal 0.018 +/- 0.006 in). The tachometer points gap was measured at 0.012 in (nominal 0.019 +/- 0.003 in).

Once in the test stand, the magneto was run at speeds through from 0 to 1,378 rpm. The coming-in speed was 150 rpm, and sparks were observed at the test stands output leads in firing order.

The resistance of the tachometer points was then measured, and was 0.5 ohms when closed, and infinite when open.

1.1 Examination Photos



Photo 1 –Left Magneto



Photo 2 – Primary Points



Photo 3 – Coil Contact



Photo 4 – Carbon Brush

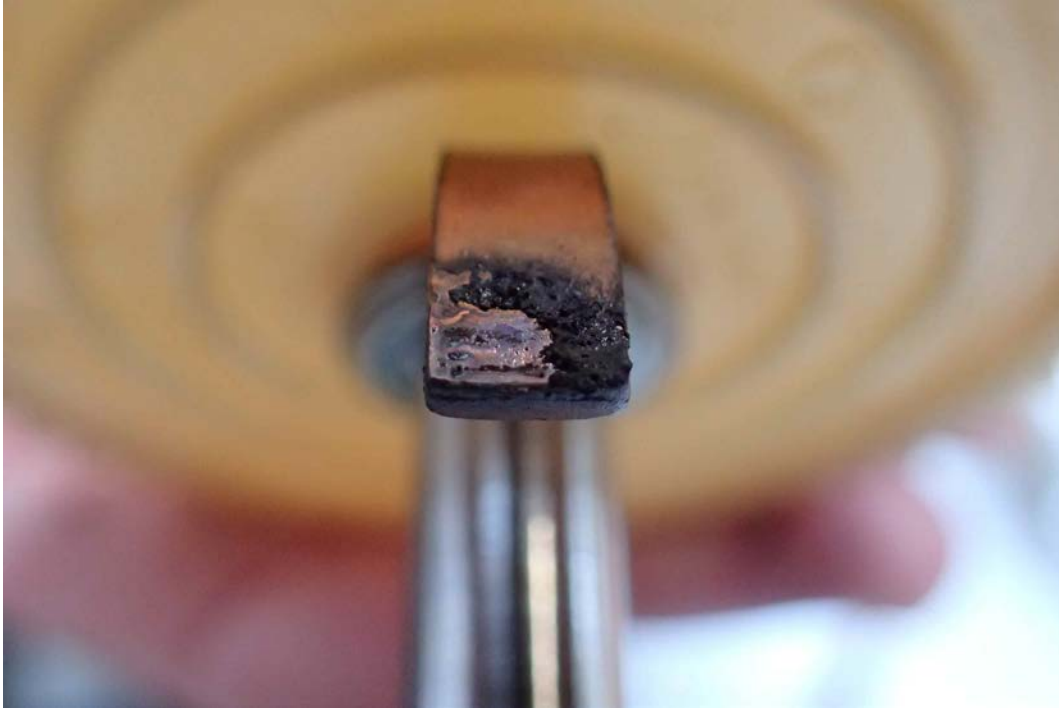


Photo 5 – Gear Wiper Arm

Submitted by: Eliott Simpson