



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

August 5, 2020

MAGNETO AND SPARK PLUG EXAMINATION

CEN20LA145

This document contains 2 embedded photos.

A. ACCIDENT

Location: Sidney, Iowa
Date: April 10, 2020
Aircraft: Beechcraft N35, N1258Z
NTSB Investigator-in-Charge: Shaun Williams

B. DETAILS OF THE INVESTIGATION

1.0 Magneto Examination

The left and right magnetos were received intact with the ignition harness caps still installed. The upper and lower spark plugs were also received intact.



Figure 1: Left and right magnetos, and spark plugs, as received.

A P-Lead adapter was installed in the “switch” port of the right magneto and the right magneto was secured using a work bench vise. Utilizing a hand drill, the magneto drive shaft was rotated at various speeds. Spark was observed on all ignition harness leads. A P-Lead adapter was installed in the “switch” port of the left magneto and the left magneto was secured using a work bench vise. Utilizing a hand drill, the magneto drive shaft was rotated at various speeds. Spark was observed on all ignition harness leads.

Utilizing one ignition lead from the right magneto, one spark plug was attached at a time, and the magneto drive shaft was rotated using a hand drill. Spark was produced across all spark plug electrodes with varying degree of differences.

2.0 Spark Plug Examination

Spark plugs were intact and appeared undamaged. Each spark plug was labeled (except for 1 top), for correct cylinder location. The spark plug gaps were measured using feeler gauges along with being compared to Champion AV-27 Check-A-Plug Chart for general condition. The findings of each spark plug gap measurement along with electrode condition is noted in the below table.

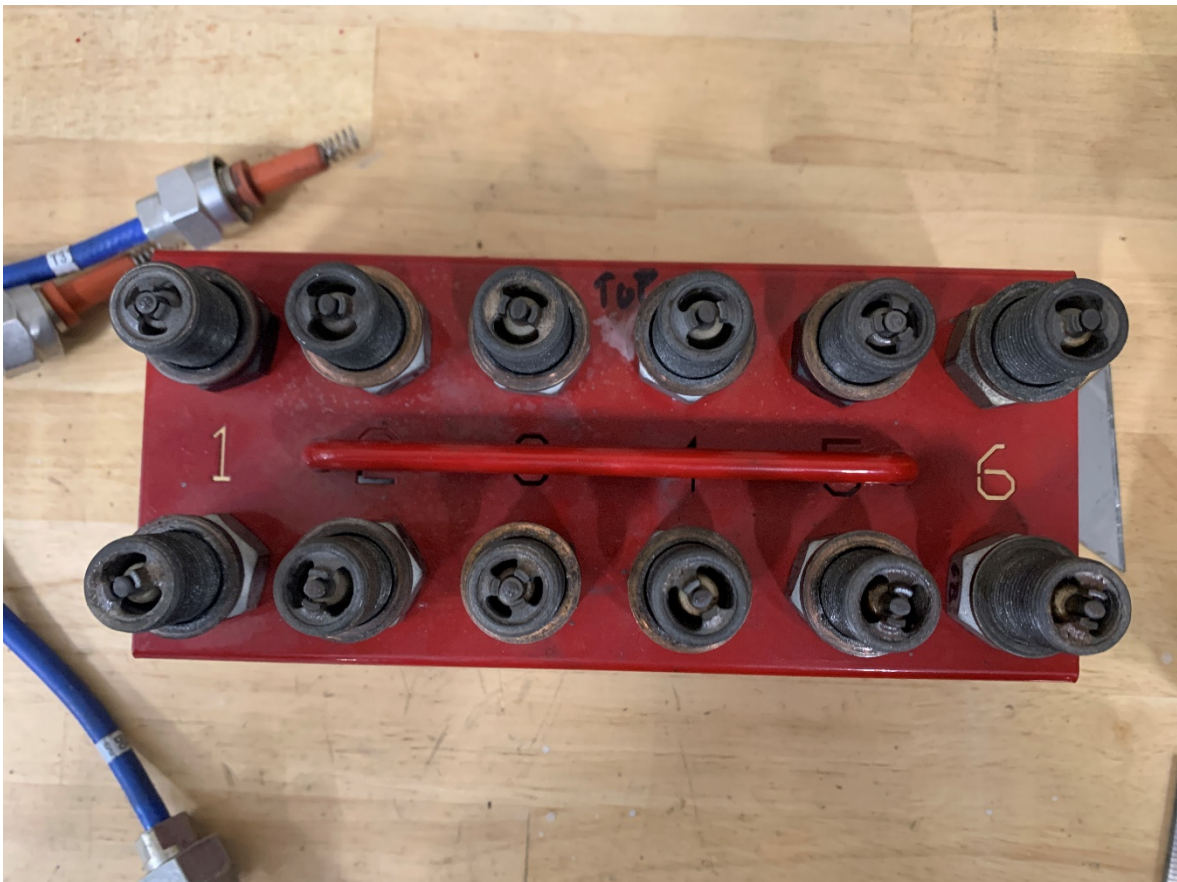


Figure 2: Upper and lower spark plugs as received.

Position:	1 Top	2 Top	3 Top	4 Top	5 Top	6 Top
Type:	BG 341-1	Champion RHB32E	Champion RHB32E	Champion RHB32E	BG 341-1	Champion RHB32E
Gap:	.015 Yes .018: No	.018: Yes .020: No	.020: Yes .025: Yes	.020: Yes .025: No	.015: Yes .018: No	.015: Yes .018: No
Condition:		Worn Out – Normal	Worn Out - Normal	Worn Out - Normal		Normal
Position:	1 Bottom	2 Bottom	3 Bottom	4 Bottom	5 Bottom	6 Bottom
Type:	Champion RHB32E	Champion RHB32E	BG 341-1	Champion RHB32E	Champion RHB32E	Champion RHB32E
Gap:	.018: Yes .020: No	.020: Yes .025: No	.015: Yes .018: No	.020: Yes .025: No	.020: Yes .025: No	.020: Yes .025: No
Condition:	Worn Out - Normal	Worn Out - Severe		Worn Out - Severe	Worn Out - Severe	Worn Out - Normal

Table 1: Spark plug gap measurements, type, and general condition of electrode notes.

Per Champion Aerospace LLC Aviation Catalog, AV-14, revision date January 2010, the spark plug gap range for an RHB32E spark plug is between .016” and .021”. Information obtained from BG Spark Plug’s website (<http://bgservice.com/50.html>) showed that the BG Spark Plug 341-1 standard gap is .014”.

Submitted by: Joshua Cawthra