



MEMORANDUM FOR RECORD

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Eastern Region

Date: November 20, 2017

Subject: Examination and Testing of Magnetos and Ignition Harnesses
NTSB Accident Number: ERA17LA092

During the wreckage examination only three of the six sparkplugs powered by the left magneto produced a spark during crankshaft rotation, and only five of the six sparkplugs powered by the right magneto produced a spark during crankshaft rotation.

Examination and testing of the magnetos and ignition harnesses from N979BA resulted in the following observations:

The magnetos appeared to have been exposed to heat and extinguishing agent during the firefighting efforts and during examination and testing it was discovered that:

- On the left magneto, Lead 1B had corrosion at the cap end and corresponding block tower. Ignition lead 3B was corroded at the spark plug end of the lead. The P-lead shielding ground attach point screw was still in place with a broken ring terminal secured under it. Lead 2T appeared to have a piece of tape affixed to it that was heat damaged. There were several places on the ignition leads that appeared to be zip tie impressions that may have been too tight. The impulse coupling was rotated by hand and appeared to function normally, and it was properly cotter pinned. There were marks on the housing base consistent with movement of the magneto while being held by the mounting lugs.
- On the right magneto, there was visible impact damage. The upper housing was displaced several 1,000ths of an inch and there were marks on the opposite side that were consistent with something striking the housing. It was found that the ignition leads had what appeared to be corrosion or possible arcing at leads 2B, 4B and 6B at the cap ends of the ignition leads. The corresponding block towers showed the corrosion as well. The magneto appeared to still have the yellow tamper witness putty installed in the housing attach screw hole from manufacture. Lead 1T appeared to have a piece of tape affixed to it that was heat damaged. There were several places on the ignition leads that appeared to be zip tie impressions that may have been too tight. The impulse coupling was rotated by

hand and appeared to function normally, and it was properly cotter pinned. There were marks on the housing base consistent with movement of the magneto while being held by mounting lugs.

Bench testing of the magnetos also revealed that when run, the magnetos at first did not spark or would fire intermittently. After a few seconds both magnetos reacted the same, and once they started sparking, they continued to produce spark through all RPM ranges. Afterwards when the magnetos were disassembled to inspect the interior, both magnetos exhibited signs of corrosion similar to the other corroded magneto components which most likely formed due to the heat and postaccident firefighting actions. The ignition harnesses used on the engine during the accident were not used during the bench test.

Testing of the ignition harnesses used during the accident revealed that in each test, the lead associated with the No.1 cylinder top sparkplug was inoperative. Closer examination of the lead revealed a cut in both insulation layers and pinching damage of the lead in the area below the No.1 fuel injector line.