

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA177

AIRFRAME AND ENGINE EXAMINATION REPORT

August 20, 2024

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A. ACCIDENT

Location: Pasco, Washington
Date: 5/3/2023
Time: 1835 (L)
Airplane: Cessna 210M / N177CF

B. AIRFRAME AND ENGINE EXAMINATION REPORT

IIC	Fabian Salazar National Transportation Safety Board Federal Way, Washington
NTSB	Joshua Cawthra National Transportation Safety Board Federal Way, Washington
FAA	David Hartsen Federal Aviation Administration Spokane, Washington
Subject Matter Expert	Edward Laing Aircraft Engines Specialists Chandler, Arizona

SUMMARY

On May 3, 2023, about 1835 Pacific daylight time, a Cessna 210M, N777CF, was substantially damaged when it was involved in an accident near Pasco, Washington. The pilot was not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

On June 6, 2023, the engine was examined by employees of Bergstrom Aircraft Inc. under to supervision of the Federal Aviation Administration (FAA). Anomalies were found with both magnetos, and they were removed and shipped to Aircraft Engines Specialists, Chandler, Arizona for further examination. Examination revealed the magnetos operated normally. The magnetos were returned to the owner who, took it upon himself to have the magnetos examined by Aircraft Magneto Service, Stevensville, Montana. This second shop confirmed the magnetos operated normally. The magnetos were reinstalled on the engine. A test run of the engine resulted in short run times before experiencing a total loss of power. Examination revealed the fuel line to the fuel servo outlet fitting was loosely attached which allowed fuel to escape the line and starve the engine of fuel.

C. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The airframe exhibited substantial damage to the wings near, but not including, the tip, and the right-side horizontal stabilizer near the root. All other components of the airframe appeared normal and without damage.

The IIC did not travel on the first engine examination. Bergstrom Aircraft Services, Pasco, Washington was contracted to examine the engine, under the supervision of the FAA. The initial examination, conducted on July 6, 2023, revealed the following:

- Removed cowling. Checked continuity of "P" leads. Found both "P" leads grounded. Removed ignition switch. Ignition switch checks good.
- Found both magnetos grounded.
- Removed both magnetos and found both capacitors damaged.
- Consulted with Aircraft Magneto Service.
- Magnetos were taken by Dave Hartsen (FAA) for evaluation.
- Removed the cap of one magneto. Points exhibited a whitish substance.
- Examination revealed that both magneto capacitors exhibited tears in the rubber insulation at the base of the capacitor studs.

The magnetos were recovered by the FAA and were then shipped to Aircraft Engines Services (AES), Chandler, Arizona for further examination.

1.1 Follow Up Magneto examinations.

The IIC travelled to AES to provide overwatch of the magneto examination. The magnetos were removed from storage and photographed. The caps and leads were not shipped with the magnetos. Both magnetos were in good condition with no impact damage.



Figure 1. Magneto F16HA264R



Figure 2. Magneto F16GA384R

- Both magnetos exhibited correct timing.
- Both magnetos performed normally when installed onto a magneto test bench.
- Both magnetos were operated at speeds from 400 to 2,500 RPM.

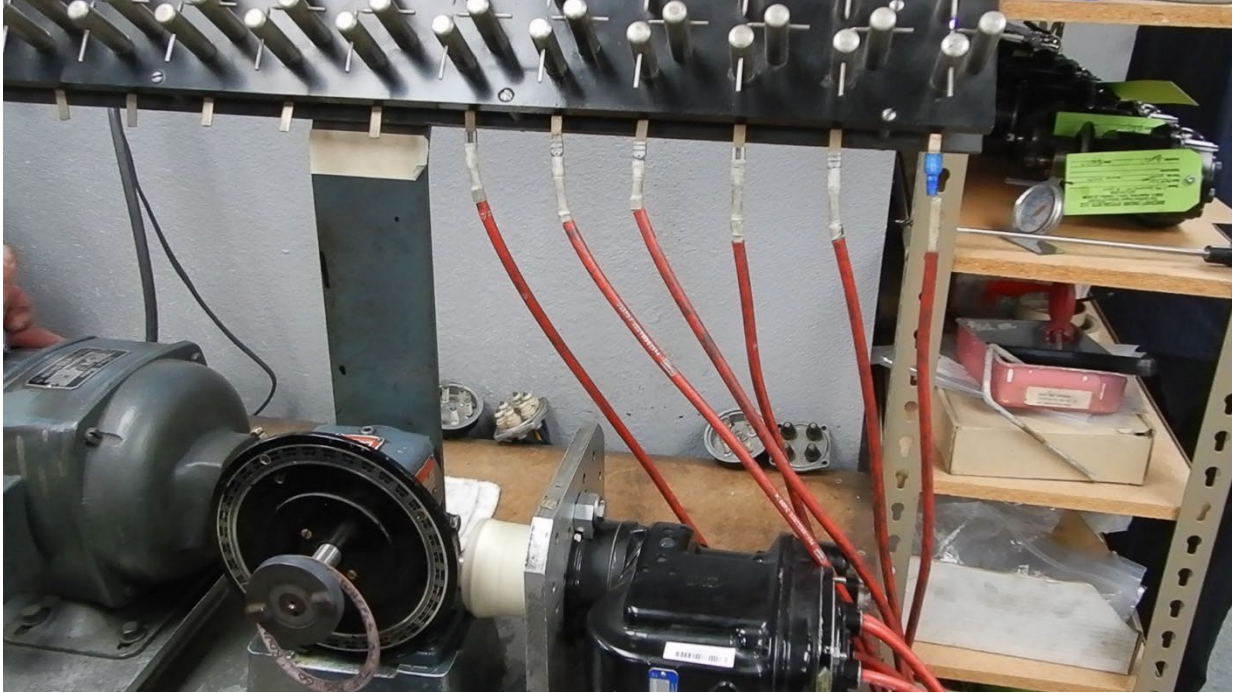


Figure 3. Magneto F16GA384R on test bench.

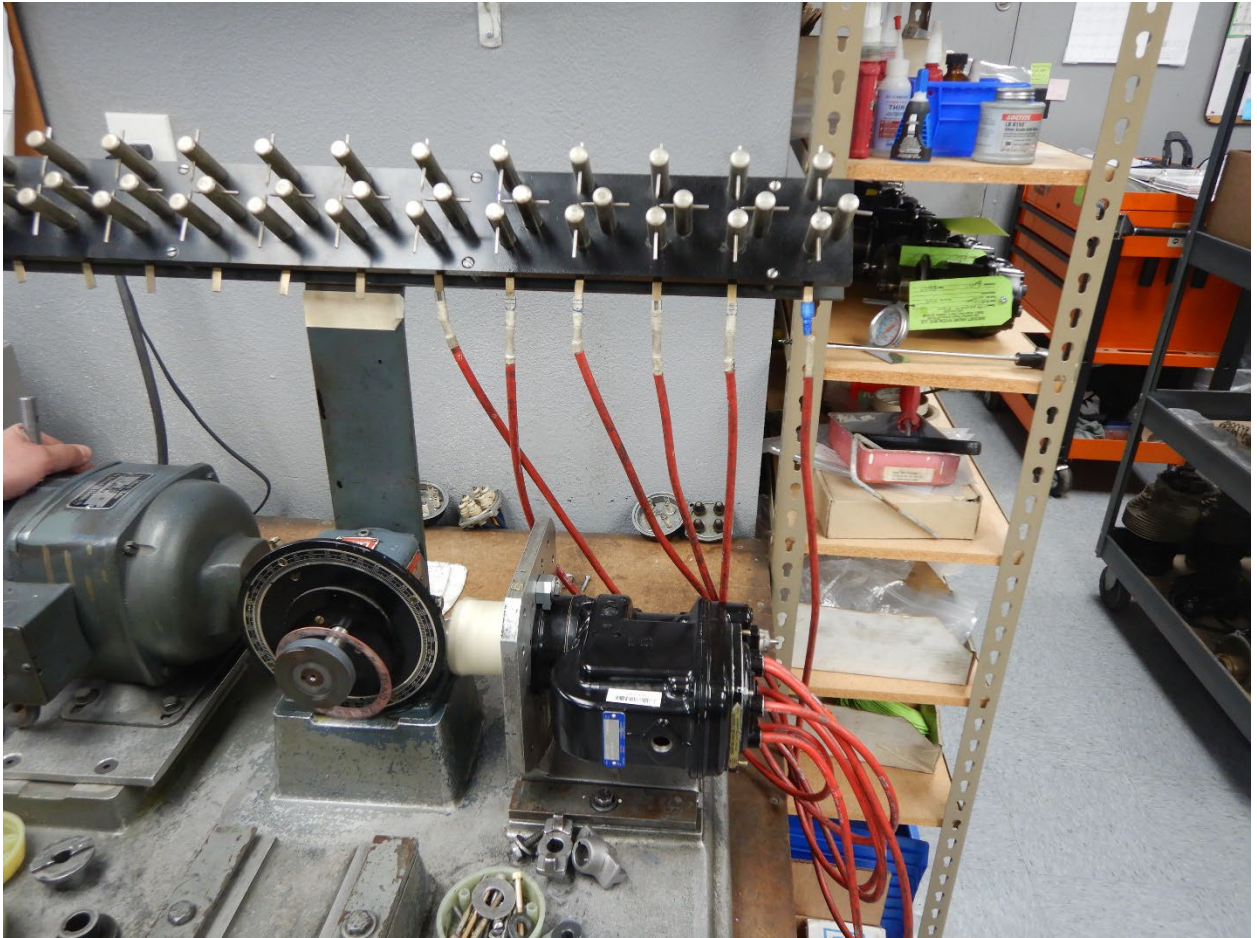


Figure 4. Magneto F16HA264R on test bench.

Examination revealed that both capacitor studs exhibited torn rubber insulation, consistent with over-torque of the capacitor studs; however, the studs were not damaged.



Figure 5. Torn rubber at the capacitor stud, F16HA264R

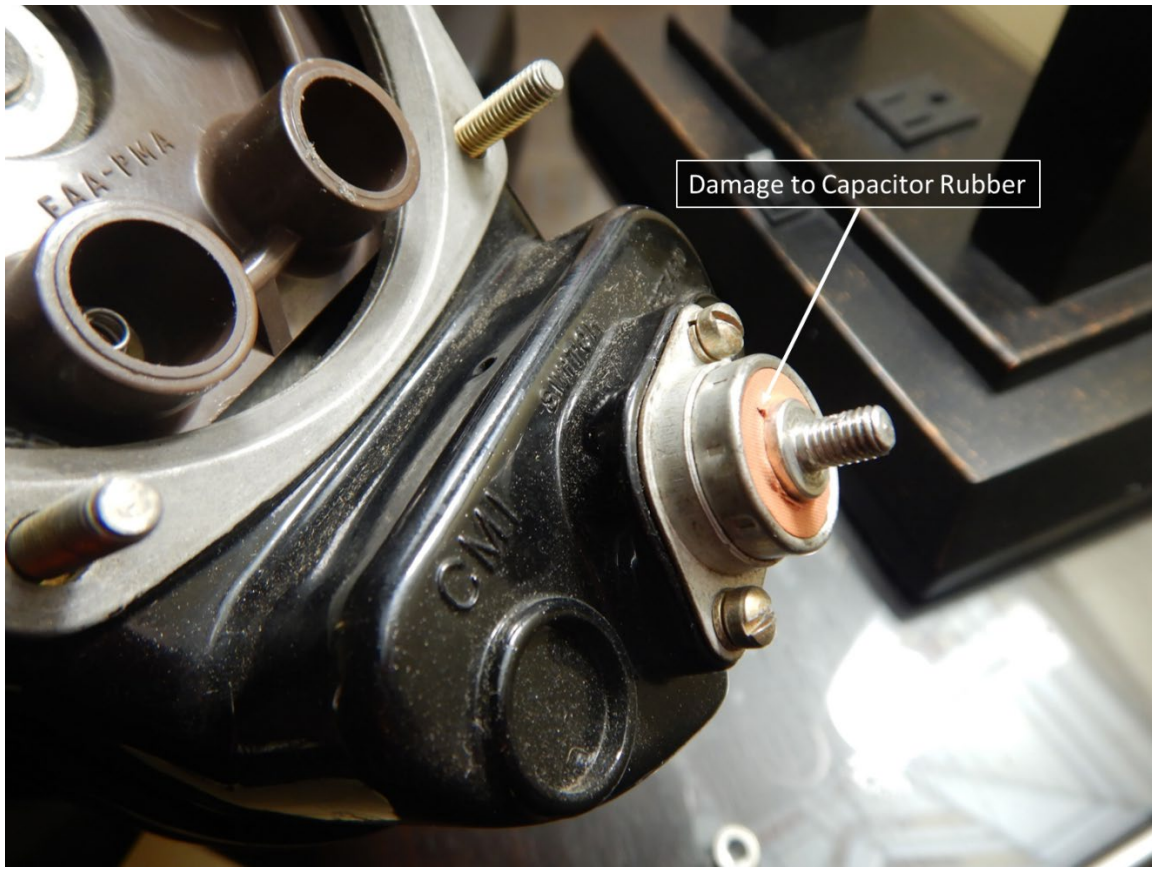


Figure 6. Magneto F16GA384R

The magnetos were returned to the owner. Without authorization from the IIC, the owner took it upon himself to ship the magnetos to Aircraft Magneto Service, Stevensville Montana for another examination. According to Mr. Steve Cotton, there was no reason that the magnetos would stop the engine from operating. He stated that the magnetos were timed correctly, and the magnetos were tested in cold and hot conditions and were within limits.

The examination did not find any mechanical malfunctions or anomalies that would have precluded normal operation.

In a follow up conversation with Mr. Cotton, it was confirmed that the magnetos were partially disassembled and not reassembled in a usable condition.

On February 23, 2024, the IIC arrived at the owner's hangar to discover that the magnetos were unusable and directed the owner to send the magnetos back to Aircraft Magneto Service for proper assembly to install the magnetos back on the engine and prepare for a test run. The owner returned the magnetos to Aircraft Magneto Service for assembly. The shop assembled the magnetos and returned them to the owner.

The last five flights were downloaded from the installed MVP-50 engine data monitor (EDM) but provided no usable data.

2.0 Engine Test Run

On July 10, 2024, the NTSB returned to the owner's hangar and prepared the airplane for a test run. Prior to the test run, both the left and right magnetos were reinstalled and timed to 22° BTDC per the engine specification. The ignition switch was reinstalled.

The airplane was moved outside to facilitate a test run. The engine was primed utilizing the airframe boost pump prior to start. Multiple attempts to start the engine resulted in the engine running briefly for about 2 to 3 seconds before losing power. Fuel began to puddle under the aft area of the engine.

The airplane was moved back into the hangar, and all six fuel injector lines were disconnected from the injector nozzles. Cups were placed under each injector nozzle, and the airframe fuel pump was turned on. Some fuel was observed expelling from each injector line. Fuel was observed leaking from the fuel servo outlet line on the fuel servo side. The line was moved by hand and became instantly disconnected from the fuel servo fitting. No additional anomalies were noted with the examination of the airframe or engine.

The accident flight downloaded from the EDM. A review of the accident flight data revealed normal operations until the last moments where indications of a total loss of power were present.



Figure 7. Fuel leaking from the fuel servo outlet line.



Figure 8. The fuel servo outlet line pulled away from the fuel servo.

Submitted by:

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IIC