

## Engine Examination

7/17/19

Conducted with: J. M. Childers, Lycoming Engines



---

Findings: The engine was removed from its airframe mount and the propeller was removed from its flange. The engine crankshaft was rotated by turning the crankshaft propeller flange and continuity of the crankshaft to the rear gears and valve train confirmed. Compression and suction were observed from all four cylinders. The interiors of the cylinders were observed using a lighted borescope and no damage noted other than water and corrosion debris in the cylinders. The fuel injector servo was fractured across its throttle bore and was separated from the engine. The throttle and mixture control cables remained attached to their respective control arms on the servo. The servo was disassembled. No debris was found in the fuel injector servo fuel inlet screen. Liquid consistent with the smell of aviation gasoline drained from the servo during disassembly. The fuel distribution valve was disassembled and no damage to its rubber diaphragm was noted. The fuel injector lines were secure, and the 2-piece fuel injector nozzles were unobstructed. The pumping segment of the engine driven fuel pump was separated from its mounting base. The pumping segment was disassembled, and no damage noted to the rubber diaphragms or internal check valves noted. Liquid consistent with the smell of aviation gasoline drained from the pump as it was disassembled.

The left magneto was removed, and it produced spark from all its ignition towers when it was rotated using an electric drill. The right magneto was removed, and it produced no spark from its ignition towers when rotated using an electric drill. The right magneto was disassembled, and corrosion was noted on the contact surfaces of the ignition points. The magneto's internal parts did not exhibit any preimpact anomalies. The No. 1, 2, and 4 top spark plugs and the No. 4 bottom spark plug exhibited dark gray coloration and worn normal condition. The electrode wells of the No. 3 top and all bottom spark plugs contained corrosion debris. The electrode wells of the No. 2 and 3 bottom spark plugs contained oily liquid. The No. 2 bottom spark plug was impact damaged. Oily liquid was observed in the engine. The oil suction screen was not examined. However, there was no debris observed in the oil filter media when its can was cut open. The oil cooler and parts of its associated plumbing exhibited impact damage.

---

I can attest that the above summary is correct to the best of my knowledge:

**Edward F. Malinowski**  
**National Transportation Safety Board**  
**Air Safety Investigator**