



MEMORANDUM FOR RECORD

Heidi Kemner
Air Safety Investigator
Eastern Region Aviation

February 2, 2021

Subject: ERA20LA028
Who: Tony Baumgard – FAA Inspector

In an email Inspector Baumgard stated the following:

“Engine was Already removed from airframe prior to my arrival and on a suitable mount on a rolling table for inspection and teardown. Engine was visually inspected and showed little sign of physical damage. Engine showed 9 qts. of clean oil in the sump. Removed bottom spark plugs and placed them in a spark plug rack. Number 2- and 4-Cylinder spark plugs showed more contaminants than the rest did. Rotated engine and performed thumb compression check. Number 4 cylinder had very weak compression. Checked magneto to engine timing. Left magneto was at 20 Degrees BTC and right magneto was at 0 Degrees (At Top Center). Inspected magneto bases and anchor plates and documented that magnetos did not show any signs of movement and torque putty was not disturbed on bases indicating that they had not moved during or after the accident. Magnetos were removed and fire tested on the bench. Magnetos fired normally with the impulse couplers. Removed cover plate on both mags and no anomalies were noted. The engine driven fuel pump was removed, and the drive coupling was inspected. Drive coupling was in-tact and not sheared. Fuel pump rotated normally with no anomalies noted. Removed main fuel control inlet screen for Inspection. No fuel was noted but some contaminants and debris were noted. Debris and contaminants noted was minimal. Removed remainder of the spark plugs and placed them in spark plug rack. Upon viewing all spark plugs only #2 and #4 Cylinders showed contaminants. Removed starter adapter and it was noted that the starter engagement spring was fractured in two. Therefore, starter engagement was not possible. This failure was most likely caused during the accident sequence when the prop was forced backwards abruptly during the rollover of the aircraft. The oil pump and scavenge pump was removed and disassembled for inspection. No anomalies were noted on either pump. Both pumps had oil present and showed no signs of distress or oil deprivation. Inspected gear train. It was noted that all

gear teeth looked normal and retaining bolts and safety wire was noted on all gears. Engine was very clean inside with no contaminants noted. Physically inspected the outside of all cylinders. No signs of burned paint or flaking paint due to excessive high operating temps were noted. Removed # 2 and # 4 cylinders for further investigation due to very weak compression on # 4 and the spark plug contamination noted earlier. Inspected pistons and cylinder heads. Pistons showed no signs of over-temp and no scoring or piston skirt scuffing were noted. Cylinders # 2 and Cylinders # 4 did show a lot of carbon had flaked off and was just loose floating around in the cylinders. This loose carbon looked a lot like the contaminants that was found in the spark plugs on # 2 and # 4 cylinders. Those two cylinders also showed signs that water had been introduced into them also causing the rust in the barrels and the carbon to be released. Nowhere did we ever see any signs of severe over-temp or extremely lean operations. In conclusion, there was no evidence of any mechanical issues that would have caused this engine to overheat and lose power. At no time did we note any signs of fuel anywhere in the fuel system.”