

Aircraft Inspection/Engine Teardown Inspector Statement (IIC)

On May 3, 2024, Inspector Aaron Granger was tasked to continue to investigate the accident of N7538P, a 1961 Piper PA-24-250, serial number 24-2743. I was to perform continuity and operational analysis of the aircraft fuel system, engine system and document any substantial damage. This was conducted at the local aircraft salvage and recovery company, AMF Aviation, Inc. located in Westfield, Massachusetts. An overview of the Lycoming O-540-A1D5, S/N RL-4134-40 engine was conducted and revealed this engine had been overhauled/rebuilt in December 1994 and accumulated 450.4 hours of operation up until the accident.

Upon arrival to AMF Aviation, the aircraft was lifted by forklift to facilitate inspection. Wings and horizontal stabilizers were removed to allow for transport to AMF Aviation. Approximately 30 gallons of 100LL was drained from the aircraft wings prior to transport and stored in a 55-gallon drum. The fuel drum was visually inspected and revealed approximately 4 gallons of separated water. A visual walkaround was performed, photo documented and revealed substantial damage present on both left- and right-wing trailing edges and fuselage below left and right windscreens.

The engine appeared in good condition overall despite post-accident damage. It was confirmed that mixture, prop control and carb heat linkages had full range of motion. Throttle linkage motion could not be confirmed due to post accident corrosion. Engine rotation was confirmed rotating the propeller through its full range of motion without any hang-ups or rotation difficulties. Suction and compression were verified at each cylinder by hand rotating the crankshaft. After removing all lower and upper spark plugs and inspecting them, all appeared in good operational condition, without heavy deposits or gap problems. Magneto timing was verified, and sparks were visually observed on all leads. Rocker box covers were removed from all cylinders and normal valve operation was observed while hand rotating the crankshaft. Inspection of the intake and exhaust valves revealed that all components appeared in good operational condition. Each cylinder was borescope inspected and revealed no anomalies aside from post-accident damage.

The engine driven fuel pump feed and return lines were disconnected for evidence of remaining fuel and revealed a small amount of fluid present. Fluid was milky and dark yellow in color, had a very weak fuel odor and presence of water was determined using water indicating paste. The engine driven fuel pump was removed and actuated by hand verifying pressure and suction were present at inlet and outlet fittings. The engine driven fuel pump was disassembled and inspected, a piece of FOD approximately $\frac{1}{2}$ inch by $\frac{3}{4}$ inch, flexible and black in color was noted in the inlet section of the pump. The carburetor was removed, disassembled and inspected. Carburetor bowl was emptied and revealed a fluid similar to that found in the engine driven fuel pump present. The fuel inlet screen was inspected and appeared in good operational condition with no signs of blockages.

The engine oil filter was removed, split open, inspected and revealed no anomalies preventing proper oil circulation throughout the engine. An engine oil/water mixture was present in the engine when the engine drain plug was removed. The oil suction screen was removed, inspected and revealed no signs of blockages.

Overall, this aircraft engine revealed no apparent mechanical issues or operation anomalies to prevent this engine from normal operation. All accessories, ducts and lines appeared secured. Damage from the accident did not prevent our determination that no evidence was found indicating mechanical problems with the engine.

AARON J
GRANGER

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