

On June 15, 2020, Inspectors Brad Gottschalk, Daniel Butler, Joseph Kraus, and Neal Thorne from Memphis Flight Standards District Office (FSDO), CE-21 and Inspector Angela Kachinski from Nashville FSDO, CE-19 observed Mr. Chris Ferraraccio of Wingnuts Aviation in the evaluation of an IO360 Engine which was installed on N6989P. The observation took place at Springfield, TN (M91). During the debrief, we all agreed that one pre-impact anomaly was noted concerning fuel sampled at various locations described below in the fuel system comments.

EXTERNAL INSPECTION OF ENGINE

There was no evidence of a post impact fire. The engine did not show evidence of impact damage and all components were present. The propeller did display bending aft damage on one of three blades and could be easily rotated in the hub in either feather or unfeather direction. The propeller blades did not display rotational damage or scarring.

ENGINE TEARDOWN AND COMPONENT EXAMINATION

IGNITION SYSTEM

Magneto timing indicated the left magneto timing at 35 degrees Before Top Dead Center (BTDC). The right magneto timing was 25 degrees BTDC. Magnetos were rotation tested and sparked from all ignition lead towers. Magneto drive gears were undamaged. All top spark plugs were indicative of normal combustion and all were within wear limits.

FUEL SYSTEM

No visible damage was noted to any fuel system component. The cockpit controls for throttle, mixture, and alternate air were operated and verified from stop to stop. A fuel sample was obtained from the carburetor bowl which displayed a cloudy [green/yellow] tint. A second fuel sample obtained from the fuel supply hose was clear liquid with a blue tint. A third sample obtained from the main gascolator sump was clear with blue tint. The electric boost pump powered on and pumped liquid. The

screen internal of the electric pump was clean with no debris. The mechanical fuel pump produced suction on the inlet side with propeller rotation.

LUBRICATION SYSTEM

The crankcase was undamaged. The dipstick indicated 8 quarts of oil. An oil sample obtained from the low point drain was free of debris or contaminants.

CYLINDERS

All cylinders were present with no impact damage. Thumb compression was obtained on all cylinders. Valve operation was confirmed with crankshaft rotation.

CRANKSHAFT ASSEMBLY

Crankshaft continuity was confirmed during rotation by observing accessory gear rotation at the rear of the engine and movement of each piston and rod while rotating the propeller.

CAMSHAFT

Camshaft continuity was confirmed through rotation of the propeller and observing operation of all valves through opening and closing sequences.



Photograph 1 – Fuel sample #1 – obtained from carburetor bowl.



Photograph 2 – Fuel sample #2 – obtained from fuel supply hose.