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Subject: WPR24LA241, Engine observation [verbatim excerpt]

Contact: Troy Helgesen, Air Safety Investigator, Lycoming Engines

A visual examination of the engine was performed in preparation for an engine run. Drive belts were also cut off for the engine test run. The engine was started, and the throttle was advanced slightly above idle. It ran for approximately 40 to 60 seconds and then cut off. Several additional runs produced the same results. The engine was then run again with the electric boost pump activated. After a short warmup period, the throttle was advanced to 100%. A roughness was notice with engine. When the mixture was leaned out, the roughness mostly smoothed out. Anytime the clutch/boost pump switch was disengaged the engine would die. While the engine was running at about 80%, a magneto/ignition check was performed. Both left and right positions produced about a 20 to 25% drop.

The bottom spark plugs were removed and exhibited a dark carbon appearance as compared to the Champion Aviation Check - A Plug chart AV-27. Tactile thumb compression was observed at all the cylinders when the engine was rotated by hand. Both throttle and mixture control continuity were confirmed throughout.

Both the helicopter main fuel screen and the fuel servo inlet screen were found to be free of debris.

The engine driven fuel pump and Fuel servo were both removed and retained by the NTSB for further bench and flow testing.