

N912RV Engine Failure on April 17, 2012 my thoughts

Actions and conditions before engine failure.

- Plane not flown for 4 months, in hanger at TS65, Ducote Air Park
- Preflight, cowling removed for preflight, more than normal checked.
- Gas added to right tank to bring total fuel to approximately 6 gallons in a 9.5 gallon tank.
- Fuel selector on right tank
- 12v fuel pump ran for 20 seconds to get fuel to engine then turned off.
- Normal engine start, taxi, and run-up.
- Wait for oil temperature to reach 120 degrees F.
- Engine was running for 4 minutes when take-off was started. Note: In test of a 912uls in a different airframe to see how long the 912uls would run on fuel in the carburetors and fuel lines the engine ran for 4 minutes. The engine was primed with the 12v pump and the fuel selector turned off before engine start.
- Take off and climb to approximately 50' was normal.
- Engine lost power (partial power) for 2 or 3 seconds then quit totally.

Possible causes explored

1. Carburetor Ice, Temperature, humidity, air intake under cowling and Pulsar History all vote NO.
2. Water in Fuel, The accident broke and drained the fuel tanks. Found 1 oz. of fuel by fuel pick up in right tank with no water. Lawn mower run before and after accident on gas from same gas can. Fuel tank is composite construction (no condensation) vote NO.
3. Contamination in fuel system, Fuel filter clean and right tank opened up and was clean, vote NO.
4. Mechanical fuel pump failure, pump removed and tested, vote NO.
5. Fuel filter plugged, No debris in filter and filter removed, able to blow through, vote NO.
6. Collapsed fuel lines, line in good shape with no soft spots, vote NO.
7. Fuel pick up blocked in right tank. Tank opened above fuel pickup and inspected vote NO.
8. Fuel selector OFF, Engine would not have started after sitting 4 months and a neighbor turned selector to OFF (vertical) right after the accident, vote NO.
9. Partially plugged fuel tank vent, math (tank volume, amount of fuel, fuel burn rate) does not amount to enough pressure change in 4 minutes, also experience of 2 other Pulsar's with plugged vents, vote NO.
10. Engine mechanical problem, engine pulled thru with normal compression, vote NO.
11. Ignition failure, 2 separate systems and no fuel in fuel filter and mechanical pump point to lack of fuel, vote NO
12. Fuel selector on left tank, not right tank, there were about 3 gallons in the left tank, over 30 minutes of fuel, vote NO.
13. 12v electric fuel pump, tested good by NTSB and me. However cannot explain why I could blow thru the pump in both directions after removal from N912RV and before shipping pump to NTSB. There are 2 check valves in the pump, one fixed and one on the solenoid or plunger. Either check valve should have prevented me from blowing backwards (opposite the direction of pumping) thru the pump. Have not been able to reproduce. The unexplained keeps the pump on my list of suspects.