

Memorandum for the Record – Engine Inspection at Air Salvage of Dallas

Accident Involving N878C – NTSB Case# CEN14LA480

August 6, 2014

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On September 5, 2014, the engine was examined at the facilities of Air Salvage of Dallas in Lancaster, Texas under the supervision of the NTSB.

Summary

The engine was intact with heavy impact damage in all areas. All of the rocker box covers had impact damage, and the oil sump and balance tube were impact damaged. All of the accessories were attached to the engine. The intake and exhaust pipes had heavy impact damage. The oil filter was crushed. All of the cylinders were ECI. The 7th studs were not used, and the 7th stud between cylinders 3 and 5 was missing from the crankcase half. The top spark plugs and rocker box covers were removed and the cylinders were examined with a lighted scope. All of the pistons and cylinder domes had normal combustion deposits, and the valves were in place. The crankshaft was rotated using the propeller. Continuity was confirmed to all of the cylinders and to the rear of the engine, including the oil pump gears. Thumb compression was confirmed on all of the cylinders, except numbers 5 and 6. Pistons 5 and 6 were confirmed to be moving in the cylinders. Cylinders 5 and 6 had heavy impact damage on the heads.

The oil pump was in place and was free to rotate. The gears were coated with oil and a few small metal particles were observed on the pump gears. The oil filter was in place and crushed. The numbers 7/28/14, 5946.0, N878C, were written on the side of the filter. The filter adapter had a large amount of RTV around the attach point and the nut. Some small metal particles were observed in the filter element. The oil pump gears were in place and not damaged. The outer section of the governor was crushed.

The fuel pump was in place, but was broken in half. The unit was disassembled and no internal damage was observed. The drive coupling was intact and not damaged. The fuel metering unit was in place, and the throttle and mixture controls were hooked up and were free to move. The throttle interconnect was not damaged. The fuel screen was clean and dry. The fuel manifold was in place and the safety wire was intact. The unit was disassembled and the diaphragm and spring were not damaged. The nut was tight on the plunger. The screen was clean and clear. Some type of white substance (possibly firefighting chemical) was observed on the plunger. All of the fuel nozzles were in place, except numbers five and two. They were separated and the threads were damaged. All of the nozzles had dirt in the interiors.

Both magnetos were in place with impact damage on the attachment flanges. Both magnetos sparked at all terminals when the drive shafts were hand rotated. The hardened magneto drive gear was not of the side where the air conditioner pulley was mounted.

The top spark plugs were removed and examined. They were worn out normal when compared to the Champion Check-A-Plug comparison card. They had dark deposits in the electrode areas.

The turbocharger was partly separated and impact damaged. The drive shaft was free to rotate. The turbine and compressor blades were not damaged. No oil leaks were observed.

The starter adapter was in place and was free to rotate. When tested the spring was slipping on the shaft and some damage was noted to the shaft.

The propeller hub remained attached to the crankshaft, and the hub was shattered. Two of the blades were missing. The remaining blade had "S" type bending, and heavy scaring on the cambered side of the blade.

The inspection did not reveal any abnormalities that would have prevented normal operation and production of rated horsepower.

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