

Report of Findings

Date of accident: August 14 2019
Location of accident: Watauga County, NC
Aircraft registration: N5020X
Aircraft type: Fantasy Allegro 2000
Engine type and S/N: Rotax 912UL S/N 4407347
NTSB or TSB file number: ERA19LA247
Date of Report: September 19 2019
File number:

Original Accident Location:

Woods next to owner's property just outside of Boone, NC

Preliminary engine inspection

Inspection carried out at: Owners Hanger near Boone, NC

Date of inspection: September 19, 2019

Persons in attendance

Oversight by NTSB/FAA personnel:

Lorri, Orlowski – FAA – Charlotte FSDO

ENGINE

Rotax Engine Model Number: Rotax 912UL

Rotax engine serial number: 4407347

OVERVIEW

- See NTSB Preliminary Report

Initial condition of Engine as presented prior to detailed inspection

- Engine substantially damaged by the post impact fire
- Both carburetors displaced from the intake manifolds and heavily damaged from the post impact fire.
- Fuel lines consumed by the post impact fire
- Fuel pump partially consumed by the post impact fire
- Ignition system and Ignition wires consumed by the post impact fire
- 3 blade propeller with all blades still attached to the propeller hub. All 3 blades were substantially damaged
- Exhaust system still attached to engine
- Old style fuel pump installed (should have been replaced to new style)

Detailed Engine Inspection

Spark Plugs & Spark plug Caps

#1 Top Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

#2 Top Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

3 Top Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

#4 Top Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

#1 Bttm Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

#2 Bttm Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

#3 Bttm Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

#4 Bttm Spark Plug

- NGK DCPR8E
- Gap .029
- Good condition

Ignition System:

- Consumed by the post impact fire and could not be examined or tested for function

Fuel System including carburetors, fuel lines and fuel pump:

- All of the fuel lines were consumed by the post impact fire. Fire sleeve that was previously covering the fuel lines was present
- Pierburg fuel pump installed – This fuel pump should have been changed to the new fuel pump many years ago.
- Carburetors displaced from the intake manifolds and substantially damaged by the post impact fire.

1/3 (L/H) Carburetor

- 158 Main jet (unobstructed)
- Float consumed by post impact fire
- Float bowl consumed by post impact fire
- Could not remove the piston slide due to the poor condition the carburetor was
- Could not remove the jet needle due to the poor condition the carburetor was in

2/4 (R/H) Carburetor

- 158 Main jet (unobstructed)
- Float consumed by post impact fire
- Float bowl consumed by post impact fire
- Could not remove the piston slide due to the poor condition the carburetor was
- Could not remove the jet needle due to the poor condition the carburetor was in

Lubrication system:

- Oil lines consumed by the post impact fire
- Removed the oil pump and inspected. The fuel pump could not be fully disassembled due to the damaged it sustained during the post impact fire. No anomalies found with the oil pump
- Oil tank was inspected – No anomalies found with the oil tank

Oil filter Element:

Removed oil filter from oil pump. The filter pleats were consumed by the post impact fire and could not be inspected.

Cylinder and cylinder head

#1 Cylinder head

- Removed cylinder head and inspected for any anomalies. No anomalies seen with the cylinder head and its components (valves, rocker arms, pushrods, valve springs etc.)

#2 Cylinder Head

- Removed cylinder head and inspected for any anomalies. No anomalies seen with the cylinder head and its components (valves, rocker arms, pushrods, valve springs etc.)

3 Cylinder Head

- Removed cylinder head and inspected for any anomalies. No anomalies seen with the cylinder head and its components (valves, rocker arms, pushrods, valve springs etc.)

#4 Cylinder Head

- Removed cylinder head and inspected for any anomalies. No anomalies seen with the cylinder head and its components (valves, rocker arms, pushrods, valve springs etc.)

#1 Cylinder

- Removed Cylinder and inspected for any anomalies. No anomalies found with the cylinder and good cross hatching was seen

#2 Cylinder

- Removed Cylinder and inspected for any anomalies. No anomalies found with the cylinder and good cross hatching was seen

#3 Cylinder

- Removed Cylinder and inspected for any anomalies. No anomalies found with the cylinder and good cross hatching was seen

#4 Cylinder

- Removed Cylinder and inspected for any anomalies. No anomalies found with the cylinder and good cross hatching was seen

Cooling system

- The coolant lines and coolant tank were consumed by the post impact fire
- The coolant water pump was substantially damaged from the post impact fire. No anomalies were seen with the coolant water pump.

Air Filter system

- Air filters were consumed by the post impact fire and could not be examined

Exhaust system

- Exhaust system was still attached to the engine. The exhaust system was damaged from impact.
- The exhaust system was removed and inspected. No anomalies were seen with the exhaust system.

Gearbox

- Removed gearbox and inspected. No anomalies were seen with the gearbox and the propeller shaft rotated within the housing.

Crankcase and crankshaft

- Crankcase was damaged from the post impact fire. The case halves were split and internally inspected. Evidence of oil lubrication was seen inside the case. Camshaft and Crankshaft case bearings inspected and no anomalies seen.
- Crankshaft could not be rotated within the case due to the damage the case sustained during the post impact fire. Not all the pistons could be removed from the crankshaft due to it not being able to rotate. The crankshaft was badly corroded as it sat in the elements for several weeks before it was recovered. Other than corrosion, no anomalies were seen with the crankshaft

Engine Maintenance and Journey Log

- Not available for review

Summary

- The engine teardown did not reveal any mechanical anomalies that would prevent normal operation of the engine, however the fuel pump that was installed on the engine should have been changed several years prior as per Rotax instructions.