

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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ENGINE EXAMINATION

April 6, 2022

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A. ACCIDENT

Location: Greenville, South Carolina
Date: October 10, 2021
Time: 1210 EDT
1610 UTC
Airplane: N121YT, Flight Design CTLS

B. ENGINE EXAMINATION

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C. SUMMARY

On October 10, 2021, at 1210 eastern daylight time, a Flight Design GMBH CTLS, N121YT, was substantially damaged when it was involved in an accident near Greenville, South Carolina. The private pilot sustained minor injuries. The airplane was operated as a Title 14 Code of Federal Regulations (CFR) Part 91 personal flight.

D. DETAILS OF THE EXAMINATION

1.0 Engine Examination

Rotax Engine Model Number: Rotax 912ULS

Rotax engine serial number: 5650071

- Engine in good physical condition
- Rotated propeller by hand. The crankshaft would not rotate.
- Oil line from the oil tank to the thermostat was found disconnected. Oil line from the oil cooler to the oil thermostat found disconnected.
- No damage to the 3-blade propeller
- Oil staining seen on front nose gear.

1.1 Exhaust System

- The exhaust system was removed from the cylinder heads and was found to be in good overall condition without any damage.

1.2 Cylinder and cylinder head

- The rocker covers were removed from all cylinders. There was no oil behind the rocker covers, and the valvetrain in the cylinder heads was dry and lacked lubrication. The #1 rocker cover had metal FOD shavings inside.
- No anomalies were observed with the cylinder heads or their components, such as valves, pushrods, rocker arms, etc.
- All cylinders were removed, and the cylinder bores were dry without any oil lubrication. No scoring or metal transfer marks were found.

1.3 Ignition System

- All plugs were NGK R DCPR8E
- No anomalies noted with spark plugs.
- Physically examined but not tested. No anomalies noted.

1.4 Crankcase and crankshaft

- The crankshaft could not be rotated by hand.
- After removing the cylinders, it was discovered that the #3 connecting rod bearing had failed due to insufficient lubrication.
- The #3 piston and connecting rod were removed and examined.
- Once the #3 piston and connecting rod were removed, the engine could rotate, and the crankshaft could turn.

1.5 Lubrication System

- Drained approximately 2.5 quarts of oil from the oil tank.
- Oil cooler system not breached or damaged
- Oil line from oil the oil tank to the thermostat was found disconnected. Oil line from the oil cooler to the oil thermostat found disconnected.
- Oil pump externally examined.
- Oil filter removed but not cut open.

1.6 Cooling System

- The coolant system was not breached, and it was filled with coolant. No anomalies were found in the cooling system.

1.7 Gearbox

- The gearbox was in good physical condition, and no anomalies were noted.

Submitted by:

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