

National Transportation Safety Board

Office of Aviation Safety

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CEN24FA101

ENGINE 1 EXAMINATION SUMMARY

April 11, 2024

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A. ACCIDENT

Location: Ranchitos Las Lomas, Texas
Date: January 29, 2024
Time: 1441 CDT
Airplane: N315GW- Aircam, S/N AC283-3

B. ENGINE 1 EXAMINATION SUMMARY

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C. SUMMARY

A follow-up examination of Engine #1, Rotax 912ULS - S/N 4427981, was performed in Laredo, Texas with a Rotax Engines party member present. The examination revealed that there were no preaccident mechanical failures or malfunctions with the engine that would have precluded normal operation.

D. DETAILS OF THE EXAMINATION

1.0 Engine Examination

Initial condition of Engine as presented before detailed inspection

The engine was detached from the airframe and positioned on a pallet, still affixed to the engine mount. It was stored in an outdoor fenced lot at the Laredo, Texas Highway Patrol facility.

The intake manifolds were discovered separated from the engine and damaged due to impact. Additionally, several top spark plugs and plug wires sustained damage from the impact. The coolant radiator was significantly damaged from the impact. However, the oil cooler remained undamaged. The three-bladed Warp Drive carbon fiber propeller was broken approximately one foot from the center hub and displayed signs of rotational marks.

Both carburetors were disconnected from the intake manifolds, and the crossover tube linking the two intake manifolds was broken due to impact.

Several ignition components, including ignition modules and ignition coils, were damaged due to impact.

Spark Plugs

All spark plugs were NGK BR8ES.

The top No. 1 spark plug was damaged from impact, and the top No. 3 spark plug terminal was bent due to impact.

The No. 4 top ignition wire was disconnected from the spark plug boot due to impact damage; however, the spark plug boot remained attached to the spark plug. Additionally, the #1 spark plug boot was disconnected from the No. 1 top spark plug.

All plugs exhibited a good burn pattern and did not indicate any anomalies.

Ignition System

The ignition modules and ignition coils were damaged from impact and were not function-tested

Fuel System

The fuel system, including the fuel lines, was breached due to impact. The fuel pump was a BCD Torino brand with a Part Number 893110 and a Serial Number 13.0907.

There was no fuel return line installed in the fuel system.

A Facet electric fuel pump was installed in the fuel system.

The gascolator was found damaged from impact.

Both the 1/3 and 2/4 carburetors were displaced from the intake manifolds and had minor impact damage. The float bowls were removed and inspected. A small amount of liquid with the consistency and smell of automotive fuel was found contained within the 2/4 float bowl, while no fuel was found in the 1/3 float bowl. No contamination was found inside either of the float bowls. The main jet was examined, and no obstructions were observed. Both main jets of the 1/3 and 2/4 carburetors were a #155.

Lubrication system

The lubrication system sustained damage from impact. When the No. 2 cylinder sparkplug was removed oil poured out. The position of the stored engine put the No. 2 cylinder in the lowest position in relation to the other cylinders and oil sump. Upon removal of all the valve covers, signs of oil lubrication were evident. The oil appeared to be very clean. The oil filter installed was an original ROTAX branded oil filter and of the proper type.

The oil pump was found undamaged and appeared to be in good overall condition.

Cylinders

The cylinders and cylinder heads were externally examined. Damage was found on some of the cylinder cooling fins due to impact. The engine crankshaft was rotated by hand turning the remaining propeller blades. Continuity and compression were felt in all cylinders by thumb compression. The valvetrain operated and functioned correctly when the crankshaft was turned by hand.

Cooling system

The cooling system had impact damage, with remnants of coolant found in the expansion tank. No anomalies were discovered within the coolant system that would preclude normal operation.

Air Filter system

Both air filters were found damaged from impact. The 1/3 air filter element was white, indicating an absence of protective oil due to the air filters being exposed to the outside elements for a duration of time prior to the examination.

Exhaust system

The exhaust system sustained slight damage from impact and was partially disconnected from the engine.

Gearbox

The gearbox was intact. The propeller was rotated by hand and gear train continuity was verified.

Crankcase and crankshaft

The crankcase was externally examined and found to be in good overall condition. Continuity was established with the crankshaft while rotating the propeller shaft by hand using the remaining propeller blades.

Engine Maintenance and Journey Log

No maintenance or journey logs were provided for review.

Due to the physical condition of the engine and the impact damage it sustained, conducting an engine run was not feasible.

Submitted by:

Andrew Finne
Air Safety Investigator