

National Transportation Safety Board

Office of Aviation Safety

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ENGINE EXAMINATION

12/5/2024

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A. ACCIDENT

Location: Fountain Inn, South Carolina
Date: 11/18/2024
Time: 1530 EST
2030 UTC
Airplane: N102XP, Just Aircraft Highlander

B. ENGINE EXAMINATION

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NTSB/ERA
Atlanta, Georgia

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C. SUMMARY

On November 18, 2024, about 1530 eastern standard time, a Just Aircraft Highlander airplane, N102XP, was substantially damaged when it was involved in an accident near Fountain Inn, South Carolina. The airline transport pilot had minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site

The wreckage came to rest in a wooded area at coordinates 34.719666, -82.104197, near the departure end of runway 24.

An airworthiness inspector with the Federal Aviation Administration reported that their examination of the aircraft at the accident site did reveal any evidence of a preexisting malfunction or failure. Fuel was found in the carburetor bowls.

2.0 Airframe Examination

Substantial damage was confirmed to the fuselage, empennage, and right wing. There was no fire.

3.0 Engine Examination

The Rotax 912ULS2 engine, serial number 6777131, was examined at the facilities of Atlanta Air Recovery, Griffin, Georgia, on December 5, 2024.

The engine exhibited minor damage; the no. 1/3 intake manifold was separated due to impact. The no. 1/3 carburetor was displaced from the intake manifold due to impact. The no. 3 exhaust pipe was crushed flat due to impact. The coolant and oil systems were intact. The three-bladed World Wind propeller blades were damaged from impact.

All spark plugs were identified as NGK DCPR8E. The spark plugs were normal in color and wear when compared to a manufacturer's inspection chart. All spark plug caps were connected to their respective spark plugs and were in good physical condition.

The no. 1/3 carburetor was displaced from the intake manifold due to impact damage. The float bowl was removed and found to be full of yellow-colored fuel with an odor consistent with old fuel. Small red particles were observed floating at the bottom of the float bowl. The floats were identified as B-type and were weighed on a scale. They had a combined dry weight of 5.8 grams (maximum allowable weight is 7 grams). The main jet was a no. 155 and was clear of obstruction.

The no. 2/4 carburetor was still attached to the intake manifold. The float bowl was removed and found to be full of yellow-colored fuel with an odor consistent with old fuel. Small red particles were observed floating at the bottom of the float bowl. The floats were identified as B type and were weighed on a scale. They had a combined dry weight of 5.8 grams (maximum allowable weight is 7 grams). The main jet was a no. 155 and was clear of obstruction.

Both wing tanks supplied fuel to a header tank. The fuel system was equipped with a FACET Cube electrical fuel pump. A bypass with a check valve was installed around the FACET electrical fuel pump. The mechanical fuel pump was an older AC-type fuel pump, which should have been replaced due to age and per the Rotax Service Bulletin (S/B). No gascolator was installed within the fuel system. The fuel filter had a transparent housing and appeared to be clear of any obstruction. No fuel return line was installed on the fuel system.

The oil system appeared to be in good overall condition and showed no signs of being breached. The oil was successfully returned to the oil tank, and an oil level check revealed the level to be at the halfway mark on the dipstick, which is within the normal range.

The cylinders and cylinder heads were found to be in good physical condition. No anomalies were discovered during the compression and continuity checks.

The coolant system appeared to be intact and not breached; however, the coolant hose connecting the water pump to the coolant radiator was found resting against the exhaust system. A fire sleeve had been placed at the contact surface, but it was burned through, resulting in heat damage to the coolant hose. Several other areas of the coolant hose showed rub marks where they had been in contact with the engine mount. These marks indicated wear, but none had broken through the hoses. The expansion tank cap was removed for inspection. The expansion tank appeared to contain water instead of coolant, as the liquid was clear and had the consistency of water.

The air filters were cone-type and of the K&N brand. The air filters appeared to be dark in color, indicating that they required servicing.

The exhaust system was in good overall condition; however, the #3 exhaust pipe sustained impact damage and was nearly flattened closed. Evidence of an exhaust leak was observed, as a white powdery substance was found on the coolant hose, which is indicative of an exhaust leak.

The reduction gearbox was found to be in good physical condition, with no damage sustained from the impact. The propeller shaft was rotated by hand and turned smoothly, with no unusual noises emitted from the gearbox. The magnetic (mag) plug was not lock-wired and appeared to be improperly installed. Engine oil was observed below the magnetic plug, pooling on top of the oil pump.

4.0 Test Run

The engine was prepared for a test run:

The damaged no. 1/3 intake manifold was repaired using JB Weld quick-set and reattached to the cylinders. The no. 1/3 carburetor was reattached to the intake manifold, and the throttle cables were disconnected at the throttle levers to allow better control of the RPM during the test. Silicone was used to seal the no. 2/4 float bowl, as the cork gasket had disintegrated during the carburetor float bowl inspection. The fuel line from the header tank was removed and plumbed into a fuel container filled with automotive fuel, allowing the majority of the fuel system to be used for the test run.

The aircraft was securely strapped down and fastened to a forklift for stability during the test. The three-bladed World Wind propellers were cut evenly at the hub. The ignition P-leads were cut at the firewall to ensure the engine could start and shut down without the use of the key switch.

The engine was started and ran briefly before quitting when the choke was turned off. The choke was turned back on, and the engine was restarted. It ran for several seconds at different throttle positions before being shut down by grounding both magnetos.

With the choke off, the engine was started again, this time with the electric fuel pump turned off. The engine ran using only the mechanical fuel pump and operated at various power settings for several seconds before being shut down by grounding the magnetos.

The engine was started for the fourth time, and a magneto check was performed. During this test, the engine was run at an advanced throttle position, and each magneto was grounded individually. Both magneto drops sounded consistent with normal RPM drop ranges.

No anomalies were discovered during the engine examination or the engine test run that would have precluded normal operation.

Submitted by:

Ralph E. Hicks, NTSB
Investigator-in-Charge