Report of Findings

Date of accident:	06/13/2019
Location of accident:	Quinlan Texas
Aircraft registration:	N324SB
Aircraft type:	Just Highlander
Engine type and S/N:	Rotax 912ULS S/N 5651135
NTSB or TSB file number:	CEN19LA173
Date of Report:	8/15/2019
File number:	2019-050

Original Accident Location:

Quinlan Texas.

Preliminary engine inspection

Inspection carried out at: Pilots Hanger (Not Owner of aircraft) Terrell Airport, Texas

Date of inspection: 8/15/2019

Persons in attendance

- FAA Inspector Gavin Hill
- Pilots Mother

ENGINE

Rotax Engine Model Number: Rotax 912ULS

Rotax engine serial number: S/N 5651135

OVERVIEW

NTSB Preliminary: On June 13, 2019, about 1935 central daylight time, an amateur-built Just Aircraft Highlander airplane, N324SB, impacted terrain during initial climb from Rockin M Airport (T14), Quinlan, Texas.

The pilot and passenger were not injured, and the airplane was substantially damaged. The airplane was registered to a private individual and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Day visual meteorological conditions prevailed for the flight.

According to the pilot, he performed several solo takeoffs from T14, with a ground roll about 200 ft. He returned to pick up the passenger and they lifted off after a ground roll of 400 ft, which was about 400 ft from the end of the runway. During the initial climb, the airplane performed poorly and "felt sluggish" on the flight controls. Unable to clear tall trees about 300 ft beyond the end of the runway without potentially stalling the airplane, the pilot elected to pitch the nose down and impacted into shorter trees, damaging the right wing

Initial condition of Engine as presented prior to detailed inspection

- Good physical condition with no damage
- Minor damage to propeller spinner
- Tempest Oil filter installed (Non Rotax)
- L/H wing previously removed from aircraft
- R/H wing previously folded back in transport mode
- Paper fuel filter with a plastic housing installed in engine bay on the suction side of fuel pump
- No fuel return line installed (As per Rotax installation instructions)
- No fire sleeve or fire protection of fuel lines.
- Electrical wires zip tied to fuel lines.

Detailed Engine Inspection

Spark Plugs & Spark plug Caps

- Spark plug caps were secured to each spark plug. No anomalies seen with the spark plug caps.
- No anomalies seen with the spark plugs and plug caps as they operated normally during engine test run.

Ignition System

- Ignition system functioned normally during test run. No anomalies were found with the ignition system

Fuel System including carb inspection and fuel lines

- Fuel return line - No
- Fuel pump drain line in neutral air zone - Yes
- Size of fuel line installed – ¼”
- Fuel contained within the paper fuel filter
- Drained fuel from sump. Fuel was blue in color and believed to be AV-GAS
- Removed both the 1/3 and 2/4 carburetor float bowls- Both bowls were found empty of fuel – very little contamination found in the 1/3 float bowl. No contamination found in the 2/4 float bowl.
- Both carburetor main jets were inspected and clear of obstruction.
- Both carburetor floats were examined. No anomalies found with either of the carburetor floats.
- Both carburetors functioned normally during engine test run.

Fuel supply including fuel pump

- Electric fuel pump installed with check valve in parallel
- BCD mechanical fuel pump installed on engine P/N 893 110 S/N 11.3841.
- Both fuel pumps operated normally during engine test run.

Lubrication system

- Non-approved aftermarket Tempest oil filter installed.
- The lubrication system was examined. No anomalies found with the lubrication system. The oil pump operated normally during the engine test run.

Cylinder and cylinder head

- Visually and externally examined both the cylinder and cylinder heads. No anomalies seen with either the cylinder or cylinder heads and both function normally during engine test run.

Cooling system

- The cooling system was examined. No anomalies or coolant system breach was found with the coolant system. The coolant system functioned normally during engine test run.

Air Filter system

- The air filters were examined. No anomalies seen with the air filters as they were the proper type and looked fairly clean and in good condition.

Exhaust system

- The exhaust system was in good physical condition. No anomalies seen during examination and it functioned normally during engine test run.

Gearbox

- The gearbox was externally examined. No anomalies seen during examination and it functioned normally during engine test run.

Crankcase and crankshaft

- The crankcase was externally examined. No anomalies were seen with the crankcase and it along with the crankshaft functioned normally during engine test run.

Engine Maintenance and Journey Log

- Not available for review

Test Run

The aircraft was secured to a transport flat deck trailer with the use of tie down straps. The fuel line was removed from the gascolator and placed into a tank with fuel.

With the use of the aircrafts battery, the Rotax 912ULS engine was started and ran at idle for several seconds until engine perimeters (oil temp, oil psi, coolant temp etc.) were within normal operating range.
The throttle was then advanced to the following settings:
-2000 RPM Idle (for several minutes) – No anomalies noted and parameters were normal
-3000 RPM (for several seconds) – No anomalies noted and parameters were normal
-3500 RPM (for several seconds) – No anomalies noted and parameters were normal
-4000 RPM (for several seconds) – No anomalies noted and parameters were normal
- 4500 RPM (for several seconds) – No anomalies noted and parameters were normal
-5000 RPM (for several seconds) – No anomalies noted and parameters were normal
- 5300 RPM (for several seconds) – No anomalies noted and parameters were normal

Due to safety reasons, the engine was not advanced beyond 5300 RPM. The engine was then brought back to idle and shut down by grounding both the ignition modules.

No anomalies were found that would prevent normal operation of the engine during the engine examination and test run.