Report of Findings

Date of accident:	21-APR-2019
Location of accident:	Shirley Williams Airport (44TE), Kingsland, TX
Aircraft registration:	N25TX
Aircraft type:	Rans S-7 Courier
Engine type and S/N:	912ULS s.n 5644978
NTSB or TSB file number:	CEN19FA122
Date of Report:	July 9th 2019
File number:	2019-046

Original Accident Location;
Shirley Williams Airport (44TE), Kingsland, TX

Preliminary engine inspection

Inspection carried out at; Air Salvage of Dallas (ASOD)

Date of inspection; July 9th 2019

Persons in attendance

Oversight by NTSB/FAA personnel:

Mr. Joshua Lindberg Central NTSB region, Dallas Office.

ENGINE

Rotax Engine Model Number: 912ULS

Rotax engine serial number; 5644978

OVERVIEW:

ASN: The aircraft experienced an impact with the terrain and subsequent fire at the Shirley Williams Airport (44TE) in Kingsland, Texas. The airplane was destroyed during the accident sequence and the two occupants onboard were fatally injured

See NTSB Prelim for more detailed information:

Initial condition of Engine as presented prior to detailed inspection

-Substantially damaged by post impact fire
-Carbs displaced from intake manifold
-Fuel pump partially consumed by post impact fire
-Engine still attached to firewall and engine mount
-3 blade propeller (Whirlwind Model 64-RW3B-STOL75). 2 of the 3 blades broken off at hub
-Aircraft substantially damaged from post impact fire
-Engine and firewall separated from the aircraft and placed on work table
-Exhaust damaged from impact
-Ignition system partially consumed by post impact fire
-Fuel lines consumed by post impact fire
-Intake manifolds were installed opposite (2/4 manifold on 1/3 cylinders & 1/3 manifold on 2/4 cylinders)

Detailed Engine Inspection

Spark Plugs & Spark plug Caps

-Plug caps and wires mostly consumed by post impact fire

#1 Top – NGK DCPR8E – Good condition no anomalies – Electrode Gap 0.30
#1 Bttm – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30
#2 Top – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30
#2 Bttm – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30
#3 top – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30
#3 Bttm – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30
#4 Top – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30
#4 Bttm – NGK DCPR8E – Good condition no anomalies - Electrode Gap 0.30

Ignition System

Ignition leads consumed by the post impact fire
Ignition modules and coils damaged by the post impact fire and could not be tested for function.

Fuel System

- System had a fuel return line incorporated within the fuel system. Unknown if the fuel returned back to the fuel tank.
- No blockages seen within the fuel distribution manifold
- Fuel lines consumed by post impact fire
- Fuel pump P.N 996 593 S.N 05.1273 Pierburg (should have been replaced)
- Both carburetors displaced from intake manifolds and substantially damaged from the post impact fire. Both float bowls consumed by the post impact fire. Both carburetor main jets are 155 size.

Lubrication system

- Oil pump filter attachment point damaged from impact. Oil filter not present
- Oil pump removed from engine and examined. No anomalies found with oil pump

Oil filter Element

Not present for examination.

Cylinder and cylinder head

- Removed all cylinder heads and cylinders and examined for condition, defect or malfunction. No anomalies seen.

Cooling system

- All coolant lines consumed by the post impact fire. The water pump was badly damaged and partially consumed by the post impact fire.

Air Filter system

- Not present for investigation

Exhaust system

- Damaged from impact and fire. Removed from engine and examined. No anomalies seen

Gearbox

- Removed gearbox from engine. Oil lubrication could be seen throughout and a small amount of oil poured out of gearbox when it was removed. The propeller shaft rotated without issue. No anomalies seen with gearbox or gear set.

Crankcase and crankshaft

Viewed through the lifter ports and the piston ports of crank case. No anomalies seen with crankshaft or camshaft.

The crankshaft rotated slightly (not full 360) due to the crankcase being superheated by the post impact fire.

Engine Maintenance and Journey Log

One photo of one page of the maintenance log available. No other records could be found

Summary

No anomalies seen with the engine components that were examined.

COMPONENT TYPE	ENGINE	PART NUMBER	SERIAL NUMBER	VALID FROM	VALID TO
Propeller Shaft	5645088	837285	05.1273	02.06.2005	31.12.2999
Fuel Pump Assy.	5644978	996593	05.1273	03.05.2005	31.12.2999
Camshaft Assy.	4430149	837417	05.1273	07.06.2005	31.12.2999

TIME LIMIT FOR PARTS

General note

ATTENTION

This time limit must be followed independently and in addition to the visual inspections (see Chapter 05-20-00 section: Visual Inspection) of the respective components.

Time limit

The following components and systems must be replaced every 5 years:

- Venting hose of the carburetors
- Diaphragm on both carburetors
- Carburetor sockets
- All rubber hoses of the cooling system
- All rubber hoses of the fuel system
  See SI-912-022, latest issue.
- All rubber hoses of the lubrication system which are part of the engine supply volume and if they are not in the maintenance schedule of aircraft manufacturer
- Connecting hose of the air intake system
- Venting hose of the fuel pump
- V-belt

TIME LIMIT FOR FUEL PUMP

General note The fuel pump must be replaced every 5 years.

TIME LIMIT FOR THE COOLANT

General note Coolant must be replaced as per manufacturers instructions, at the latest during overhaul or when the engine is replaced.

ANNUAL INSPECTION

General note A 100 hr. inspection is to be carried out periodically after every 100 hours of operation **or every 12 months,** whichever comes first.
See Chapter 05-20-00 section Scheduled maintenance checks.

Product
5644978

Model	Production Date	Warranty End Date
ROTAX 912 ULS	03.05.2005	17.05.2007

DETAILS RELATED

Product Serial Number
5644978

Model number
309120110

Model
ROTAX 912 ULS

Engine Type
912 ULS2

Description
without fuel lines
UL2 I=2,43 with clutch
without vacuum pump
with green valve covers
without mech. tachom. pick up
without external generator
without air guide baffle
with std. temperatur sensors
with nipple conn. for oil pump
with expansion tank
without air box
bent sockets for engine truss
starter large

Product Status
Unknown

Product Status Indication

Model Year from Model
1997

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