



National Transportation Safety Board Aviation Accident Factual Report

Location:	West Liberty, KY	Accident Number:	ERA20LA039
Date & Time:	11/15/2019, 1430 EST	Registration:	N831RS
Aircraft:	Rans RANS S7 COURIER	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

On November 15, 2019, about 1430 eastern standard time, an experimental, amateur-built Rans S7 Courier airplane, N831RS, was substantially damaged during a forced landing to a field in West Liberty, Kentucky. The private pilot was not injured. The personal flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed, and no flight plan had been filed for the cross-country flight, which originated from Jackson County Airport (I18), Ravenswood, West Virginia around 1220, and was destined for Smyrna Airport (MQY), Smyrna, Tennessee.

According to the pilot, while en route to the destination, the engine lost total power "like someone turned off" the magnetos. He primed and restarted the engine, however it only produced power for 3 to 4 seconds before it lost total power for a second time. He repeated the process again, and the engine again lost power. When he attempted to restart the engine for the third time, the propeller would not rotate to initiate the start. The pilot elected to make a forced landing to a nearby field. During the landing, the airplane struck a fence post, which resulted in substantial damage to the left wing and engine mounts.

An examination of the engine by a Federal Aviation Administration inspector revealed that the propeller would rotate through 360° of motion when turned by hand. In addition, the oil reservoir was empty. Fuel samples were taken from both wings and no debris was noted in either sample of 100LL fuel.

An examination of the two-stroke engine by an NTSB investigator and manufacturer representative revealed that the engine remained attached to the fuselage. The propeller could be rotated through 360° of motion and compression was confirmed on both cylinders. Fuel was noted in both carburetors that was free of debris. The spark plugs were removed, exhibited normal wear, and were not oil soaked. An examination of the oil system revealed that there were no leaks in the system and the oil injection tank was empty. There was no oil pooling in the oil ports in the carburetors. Furthermore, when the exhaust y-pipe was removed from the cylinders, the aft piston exhibited vertical scoring and was not lubricated. The front piston did not have any scoring and was slightly lubricated. The fuselage was examined, and no oil streaking was noted. Oil was added to the oil injection tank and no leaks were noted.

According to the flight manual, the oil consumption of the engine was "approximately 0.2 [quarts] per hour at 5800 rpm (1 quart in 5 hours)," which converted to about 6.4 ounces of oil per hour. Furthermore, it stated that the oil tanks held about one gallon of oil and that the "oil tanks should supply enough oil for 20 hours of continuous engine operation." While examining the engine it was noted that there was only one oil tank and it could contain about 2 quarts of oil. No other oil tank that injected into the pistons was noted on the airplane. There were no maintenance entries that mentioned any oil tank maintenance in the logbooks.

According to the engine operator's manual, the engine oil injection would be 8.2 cubic inches of oil per hour per outlet, which, with two outlets, converted to about 9 ounces of oil per hour.

The preflight checklist stated to check the engine oil, hoses, wires, and cables prior to engine start.

Pilot Information

Certificate:	Private	Age:	35, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without Waivers/Limitations	Last FAA Medical Exam:	11/01/2016
Occupational Pilot:	No	Last Flight Review or Equivalent:	07/23/2019
Flight Time:	427 hours (Total, all aircraft), 21 hours (Total, this make and model), 341 hours (Pilot In Command, all aircraft), 42 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Rans	Registration:	N831RS
Model/Series:	RANS S7 COURIER Undesignat	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	0988031
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	11/15/2018, Condition	Certified Max Gross Wt.:	1050 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	651 Hours as of last inspection	Engine Manufacturer:	Rotax
ELT:	Installed, not activated	Engine Model/Series:	582
Registered Owner:	On file	Rated Power:	65 hp
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	JKL, 1357 ft msl	Distance from Accident Site:	29 Nautical Miles
Observation Time:	1953 UTC	Direction from Accident Site:	187°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	Light and Variable /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	Variable	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.22 inches Hg	Temperature/Dew Point:	10° C / -3° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ravenswood, WV (I18)	Type of Flight Plan Filed:	None
Destination:	Smyrna, TN (MQY)	Type of Clearance:	None
Departure Time:	1220 EST	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	38.070833, -83.245000 (est)

Administrative Information

Investigator In Charge (IIC): Heidi Kemner

Additional Participating Persons: Mark Potter; FAA/FSDO; Louisville, KY

Note: The NTSB did not travel to the scene of this accident.

Investigation Docket: <http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=100591>