

## ACCIDENT

<b>Aircraft Type and Registration:</b>	Rans S6-ES, G-CDVF	
<b>No &amp; Type of Engines:</b>	1 Rotax 912-UL piston engine	
<b>Year of Manufacture:</b>	2006 (Serial no: PFA 204-14464)	
<b>Date &amp; Time (UTC):</b>	5 July 2015 at 1048 hrs	
<b>Location:</b>	Shifnal Airfield, Shropshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - 1
<b>Injuries:</b>	Crew - 1 (Serious)	Passengers - 1 (Serious)
<b>Nature of Damage:</b>	Substantial	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	64 years	
<b>Commander's Flying Experience:</b>	282 hours (of which 70 were on type) Last 90 days - 3 hours Last 28 days - 0 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

## Synopsis

The aircraft suffered an uncommanded loss of engine rpm shortly after takeoff. The aircraft struck the ground in a steep nose-down attitude seriously injuring the pilot and the passenger.

## History of the flight

The aircraft had undergone a 100 hour inspection eighteen days prior to the accident flight. On the day before the accident flight the pilot had visually checked the aircraft and engine and completed engine ground runs during which it appeared to operate normally.

On the day of the accident flight the pilot, accompanied by a passenger, fuelled the aircraft and completed the pre-flight checks. Four takeoffs, circuits and landings were then flown without incident but the pilot commented, in his report to the AAIB, that the engine performance "felt sluggish". While preparing for the fifth takeoff the engine began to run roughly and its rpm decreased before recovering. The pilot checked that the engine instrument readings were normal, the fuel selector was ON and that the fuel tank contents were as expected. A magneto drop check was completed after which the pilot carried out two high-power engine runs. As the engine now appeared to be performing normally the pilot decided to carry out another takeoff. Shortly after becoming airborne, between 100 ft and 200 ft agl, there was an uncommanded reduction in engine rpm. The aircraft lost height and struck the ground in a steep nose-down attitude.

After coming to rest a small fire developed which was extinguished by a witness to the accident. The witness removed the passenger from the aircraft. The pilot was removed from the wreckage by the emergency services. Both the pilot and passenger received serious injuries during the accident and the aircraft was destroyed.

### **Investigation**

Shortly after the accident, the wings had been removed from the fuselage and the wreckage had been moved a short distance from the accident site by members of the flying club. The wreckage was subsequently transported to the AAIB for further investigation.

No evidence of pre-accident defects or restrictions in the aircraft's flight or engine control systems was found. Disassembly of the aircraft at the accident site had resulted in the loss of all of the fuel from the aircraft. It was therefore not possible to confirm that the aircraft's fuel met the required specification and was free from contamination. The damage sustained during the accident prevented any operational test of the engine, ignition system or the carburettors.

A partial disassembly of the engine confirmed that there was no evidence of a major mechanical malfunction. The engine's mechanical fuel pump was tested and found to operate normally. The fuel filter was free from contamination and the spark plugs showed no sign of abnormal operation. Both carburettors, which had been fitted with heaters to minimise the formation of carburettor icing, were disassembled. There was no evidence of any pre-impact defect which would have prevented their normal operation.

### **Analysis**

There was no evidence of a pre-existing defect within the engine, its controls or fuel supply which would have prevented the engine from operating normally. As the aircraft had completed four short flights without event, it is considered unlikely that contamination had resulted in the loss of engine rpm. The completion of the previous flights also supports the fact that the engine ignition system had appeared to operate normally; however, the inability to test the system meant that the presence of an intermittent defect within the ignition system could not be eliminated as potential cause for the uncommanded engine rpm reduction.