

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Cirrus SR22, N404RW	
<b>No &amp; Type of Engines:</b>	1 Continental Motors IO-550-N piston engine	
<b>Year of Manufacture:</b>	2009	
<b>Date &amp; Time (UTC):</b>	5 April 2010 at 1253 hrs	
<b>Location:</b>	White Waltham Airfield, Berkshire	
<b>Type of Flight:</b>	Private	
<b>Persons on Board:</b>	Crew - 1	Passengers - 1
<b>Injuries:</b>	Crew - None	Passengers - None
<b>Nature of Damage:</b>	Aircraft destroyed	
<b>Commander's Licence:</b>	Private Pilot's Licence	
<b>Commander's Age:</b>	51 years	
<b>Commander's Flying Experience:</b>	400 hours (of which 15 were on type) Last 90 days - 45 hours Last 28 days - 10 hours	
<b>Information Source:</b>	AAIB Field Investigation	

**Synopsis**

During takeoff on the undulating grass runway, the aircraft became airborne at a low speed, rolled rapidly, and cartwheeled. The runway profile and the pilot's lack of training and experience on the aircraft type were possible contributory factors.

**History of the flight**

The pilot planned to fly the aircraft to a nearby airport to practise instrument approaches. He was accompanied by the aircraft owner, who was also a pilot, and who sat in the right hand seat. The two discussed the flight before departure and agreed that the owner would act as co-pilot, operating the radio; this was their normal arrangement when they flew together. Both understood clearly that the pilot, not the owner, would be in

command of the flight. The pilot had not received any formal training on the Cirrus aircraft.

They boarded the aircraft, started the engine, and taxied for departure. The wind was approximately 220/15 kt and the grass Runway 21 was in use. The flaps were set to 50% for takeoff and the trim was set slightly towards the aft end of the takeoff range. Having completed a normal power check, the pilot lined the aircraft up for takeoff and applied full power. He reported that he kept the control column approximately neutral in pitch during the takeoff roll.

The pilot stated that the aircraft became airborne quite early and that he intended to let the aircraft accelerate in

ground effect before climbing away. However, without any warning, the left wing dropped and contacted the ground, and the aircraft cartwheeled. Eyewitnesses recalled that the accident sequence began approximately at the intersection of Runway 21 with Runway 25. The aircraft fuselage came to rest on the runway, erect but substantially damaged. Parts of the aircraft structure had separated from the fuselage during the cartwheel. Both occupants evacuated the aircraft without injury before fire engulfed the cabin.

The aircraft owner, who was more experienced on the type, reported that he had not been paying sufficient attention to the progress of the takeoff to enable him to intervene to prevent the accident.

### The runway

AAIB investigators who inspected the runway found that the surface was somewhat rough in places and had a notable undulation at its intersection with Runway 25. Civil Aviation Publication (CAP) 168 – *Licensing of Aerodromes* gives guidance on the subject. The section relating to unpaved surfaces (including grass runways) states, in part:

*'A simple method of assessing the evenness of a natural surface is to drive over it in a suitable vehicle. The surface should not display undue signs (e.g. wheel ruts) of the vehicle's passage and, if the surface is acceptably even, this test should be accomplished without discomfort to the vehicle occupants.'*

### Takeoff technique

The aircraft's Flight Manual recommends that a smooth rotation should begin at 70 kt, but adds:

*'Soft or rough field takeoffs are performed with 50% flaps by lifting the airplane off the ground as soon as practical in a tail-low attitude. If no obstacles are ahead, the airplane should be levelled off immediately to accelerate to a higher climb speed.'*

### Wreckage examination

The wreckage was examined after its removal from the accident site. There was no evidence of malfunction or failure to account for the accident. Trim settings were approximately mid-range. Neither the seatbelt mounted air bags, nor the ballistic parachute, had deployed.

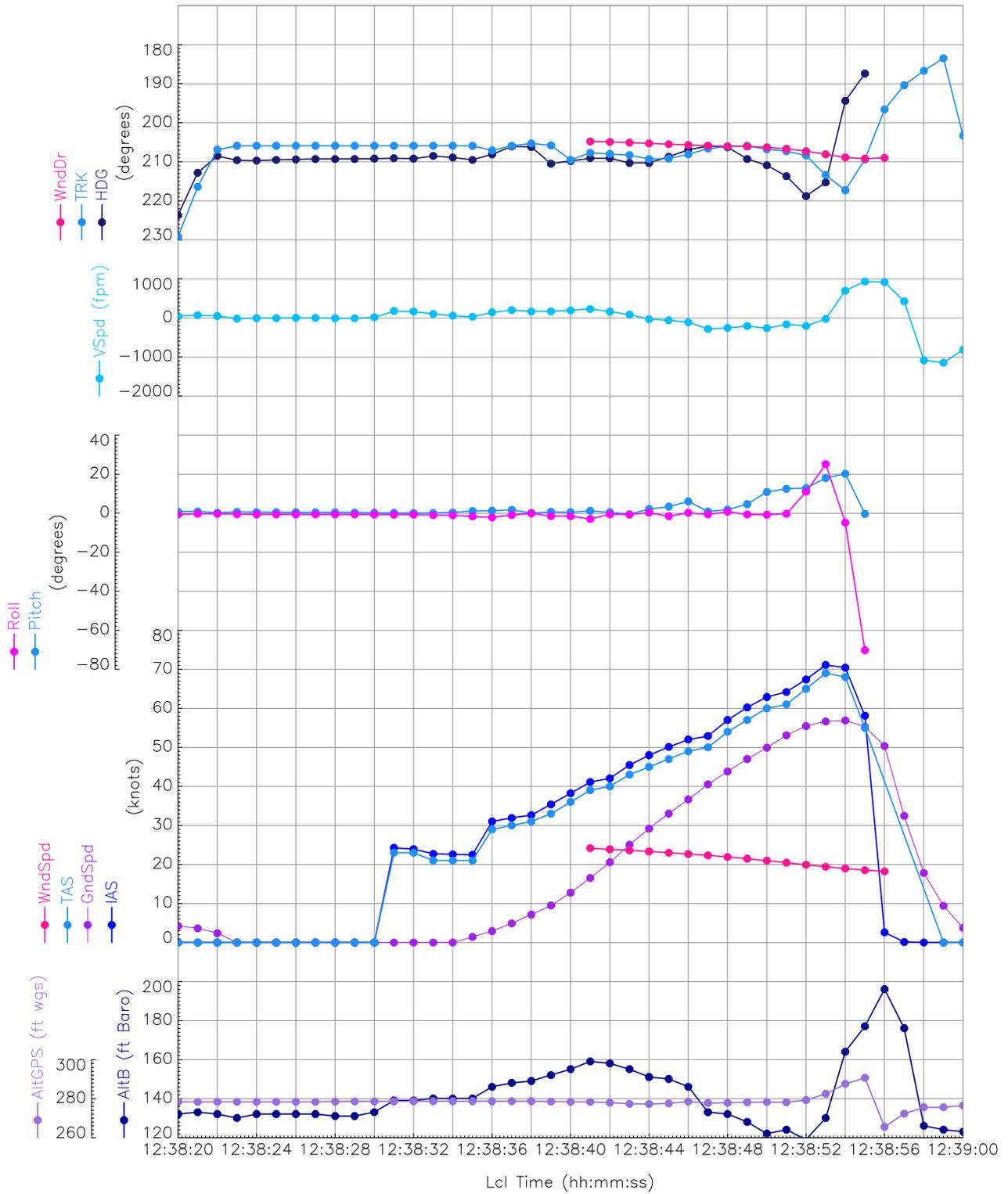
### Recorded data

The displays fitted to the aircraft contained three SD data cards on which various parameters were recorded, each parameter being sampled once per second. The cards were retrieved from the wreckage and downloaded. The aircraft was also fitted with a Recoverable Data Module (RDM), which records a wider range of parameters. However, the additional parameters were not considered necessary for the investigation and the RDM was not downloaded.

The display data showed that following a small pitch oscillation at about 52 kt, the aircraft's pitch attitude began increasing at 57 kt, reaching 11° nose-up before the aircraft rolled right and then rapidly left (see Figure 1).

### Analysis

There was no evidence of a technical cause for the accident. It is probable that the undulating runway contributed to the aircraft becoming airborne at a low speed, and the pilot lacked training and experience on the aircraft type that might have assisted him in controlling the situation.



**Figure 1**  
Display data