

ACCIDENT

Aircraft Type and Registration:	FLS Aerospace Sprint 160, G-SCLX	
No & Type of Engines:	1 Lycoming AEIO-320-D1B piston engine	
Year of Manufacture:	1994 (Serial no: 002)	
Date & Time (UTC):	10 April 2014 at 1015 hrs	
Location:	Kirdford, West Sussex	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	Damage to tail surfaces, left elevator detached	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	23 years	
Commander's Flying Experience:	103 hours (of which 56 were on type) Last 90 days - 0 hours Last 28 days - 0 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The aircraft lifted off from a private grass airstrip but failed to climb away. Its tail struck a wire fence at the end of the strip and the aircraft was brought to a stop in the field beyond. The aircraft, which was taking off in calm conditions with an increased flap setting, appeared to have encountered conditions which exceeded its performance capabilities.

History of the flight

The pilot's PPL had lapsed, and the purpose of the flight was for him to conduct training in preparation for a Licence Skills Test for licence renewal. His flying instructor held a CPL and had 7,762 flying hours.

The pilot reported that conditions were fine for the flight, with a calm wind. The intention was to carry out a local flight with his instructor from a private grass airstrip. The airstrip, which was 400 m long and orientated north-south, was assessed by the pilot as soft but useable over its length. There was a slightly softer region about one-third distance from the start of takeoff, identified by a higher than usual power required when crossing at taxi speed. Taking off in a southerly direction, the airstrip had a gradual up slope for about two thirds of its length, before sloping downwards to its end. A wire fence crossed the southern field boundary.

Aircraft checks were completed normally. The pilot reported that he had frequently and successfully used two stages of flap for takeoff, in order to minimise the ground roll, and so

selected two stages of flap on this occasion. With full power achieved during a static run-up, he released the brakes. The aircraft appeared to accelerate normally and lift off speed was achieved before the highest part of the strip. The pilot's impression was that the aircraft lifted off but did not climb away, and this was confirmed by eyewitnesses at the airstrip. The aircraft then sank back towards the ground and gave no further indication of climbing.

With the end of the airstrip approaching, the pilot selected a nose-high attitude in an attempt to minimise cockpit or propeller damage. The rear of the aircraft contacted the ground and then struck the wire fence at the end of the airstrip. The elevator control lost effectiveness and the aircraft touched down in the field beyond. Brakes were applied and the aircraft came to a stop before the instructor shut down the engine. The aircraft was then secured and both occupants vacated normally.

The pilot thought that the aircraft's acceleration may have been adversely affected by the soft ground, although he had not thought so at the time. The flying instructor commented that the pilot had appeared very competent and knowledgeable in matters of aircraft operating techniques. He also thought that the acceleration appeared normal. He noted that the aircraft failed to accelerate after lift off, and thought it was possibly due to the selection of full flap, even though the pilot had reportedly used it before to good effect.

AAIB comment

When an aircraft is just above the ground during takeoff, it benefits from the advantage of 'ground effect' which impedes the development of vortices associated with high-lift conditions, and therefore the induced drag which results. However, if the aircraft is flown out of ground effect without first accelerating, induced drag increases markedly as these vortices develop. If the aircraft does not have sufficient power, it may be unable to climb further, or may fail to clear obstacles under the takeoff flight path. This scenario is normally associated with tailwheel aircraft because of their natural tail-low configuration, but is a potential risk area for all aircraft.

In this case, it is possible that the aircraft became airborne in a high drag configuration at a relatively slow airspeed (which was the reason for increasing the flap setting) and experienced a significant increase in power required as it transitioned through ground effect, exceeding the aircraft's capabilities.

The surface winds at Gatwick Airport (17 nm away) around the accident time showed light winds of between 2 and 5 kt, generally from just north of west but variable in direction from between 210° and 030°. With calm wind at the surface at the airstrip, the possibility of encountering a tailwind component soon after lift off must also be considered.