

ACCIDENT

Aircraft Type and Registration:	SD-1 Minisport, G-CIMA	
No & Type of Engines:	1 Kohler CH750 piston engine	
Year of Manufacture:	2012 (Serial no: 12)	
Date & Time (UTC):	24 May 2015 at 0845 hrs	
Location:	Meldreth Valley Farm, Cambridgeshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Minor)	Passengers - N/A
Nature of Damage:	Damaged beyond economic repair	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	72 years	
Commander's Flying Experience:	2,206 hours (of which 14 were on type) Last 90 days - 18 hours Last 28 days - 3 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent AAIB enquiries	

Synopsis

Whilst attempting to take off from his home strip, the pilot, who owned the aircraft, became aware that the aircraft was not gaining height. He was therefore forced to attempt a landing straight ahead, in a tall crop. The pilot considered that the aircraft had marginal takeoff performance from the strip.

History of the flight

The pilot reported that he took off into a light wind which was blowing approximately along Runway 21 of the strip. The upslope on this runway is approximately 2%. The takeoff initially appeared normal, but whilst the engine appeared to the pilot to be functioning correctly and maintaining the correct rpm, he was unable to climb without losing airspeed once he was beyond the end of the strip and had left ground effect. Consequently, it became necessary to land ahead in a field of crop. The tall crop caused severe damage to the aircraft.

Background information

The SD-1 Minisport is an ultralight single seat aircraft of tailwheel layout and falls into the single-seat deregulated category when operated in the UK.

The aircraft type is available with a choice of engines. In the case of G-CIMA, the geometry of the CH750 engine installation results in the crankshaft axis and the directly-driven propeller being positioned lower on the fuselage than in the case of some other engine

types available. Additionally, the propeller diameter is smaller than that on some other installations. Consequently, the slipstream has only limited effect on the high mounted stabilator. The owner/pilot confirmed that the ability to raise the tail to put the aircraft axis in the low drag horizontal position during takeoff is almost entirely dependent on airspeed, rather than being largely affected by applied engine power. In addition, the low wing and short landing gear enables the aircraft to fly horizontally in ground effect at speeds well below that required for level flight in free air.

Although limited performance figures have been stated by the manufacturer, being an unregulated design, these have not been independently verified.

The pilot began operating the aircraft from his home base during January 2015, and had carried out approximately 50 flights totalling approximately 14 hours at the time of the accident. The aircraft had accumulated 201 airframe hours since new, having previously served as a demonstrator by the designer and manufacturer in the Czech Republic. The pilot also operates another fixed wing microlight aircraft type from the strip; this has superior airfield performance and is of high wing configuration.

The pilot now considers that G-CIMA had marginal performance from the strip, having on a few earlier occasions noted that he had difficulty in establishing a positive climb rate when out of ground effect. Consequently, a combination of adverse factors on the day of the accident probably resulted in the achieved airspeed being inadequate for a successful climb out. Some of the possible contributory factors are:

1. The steady increase in ambient temperature between when he began operating the aircraft in January and that at the time of the accident in May. This would have resulted in a progressive, but not very noticeable reduction in performance which may have seemed more than adequate when he first flew the aircraft;
2. The wind direction on the day favouring a takeoff direction opposite to the otherwise preferable downhill direction;
3. A lower windspeed at the strip than that quoted in the TAF and the METAR for nearby Cambridge, used for flight planning;
4. Delay in transitioning from a high drag tail-down position to a low drag fuselage level position early in the takeoff roll.

It was not possible to estimate the required takeoff distance accurately because reliable takeoff performance data, taking account of wind speed and direction, surface slope and condition, ambient temperature and pressure, pilot technique and loaded weight, was not available for the type. In addition, frequently flying a type with superior takeoff performance, and having little difference in behaviour in and out of ground effect, may have caused the pilot to have been less alert to the marginal takeoff performance of his SD-1 aircraft.