

No: 6/89

Ref: EW/C1100

Category: 1c

Aircraft Type

and Registration:

- (1) Cessna A152, G-BHAB
- (2) Gemini Flash Microlight, G-MVCZ

No & Type of Engines:

- (1) 1 Lycoming O-235-L2C piston engine
- (2) 1 Rotax 503 piston engine

Year of Manufacture:

- (1) 1978
- (2) 1988

Date and Time (UTC):

10 February 1989 at 1410 hrs

Location:

Shobdon, near Leominster

Type of Flight:

- (1) Continuation
- (2) Instruction

Persons on Board:

Crew - (1) 1 Passengers - (1) Nil
(2) 2 (2) Nil

Injuries:

Crew - (1) 1 (Fatal) Passengers - (1) N/A
(2) 1 (Slight) (2) N/A
1 (Serious)

Nature of Damage:

- (1) Destroyed
- (2) Destroyed

Commander's Licence:

- (1) Student Pilot
- (2) Private Pilot's Licence Instructor Rating Group D

Commander's Age:

- (1) 38 years
- (2) 46 years

**Commander's Total
Flying Experience:**

- (1) 17 hours (all on type)
- (2) 3000 hours (of which 600 were on the Flash II Alpha)

Information Source:

AAIB Field Investigation

History of the Flight

The student pilot in the Cessna 152, G-BHAB (AB) had flown a dual check that morning, and had carried out her first solo immediately afterwards. In the afternoon she had a further dual instructional flight and was authorised for a detail of solo circuits. The weather was fine with an estimated visibility of 20 km, cloud 3/8 at 5,000 feet, and wind 270° at 10 kt.

A Gemini microlight aircraft G-MVCZ (CZ) had completed one dual circuit and landing and was taxied clear of the runway and shut down in order to allow the instructor to disembark and supervise the

departure of another student on a solo cross-country flight. After the departure of the cross-country flight, full pre-flight checks were carried out on CZ and the instructor announced on the RTF Air/Ground frequency of 123.5 MHz the cross-country student's duration of flight and ETA. He then transmitted that his aircraft was ready for an immediate take-off, and this was acknowledged by the aerodrome manager who was monitoring the radio. It is thought that at this time AB was on a base leg for runway 27, but neither of the two occupants of the microlight CZ saw the Cessna AB, and cannot recollect any RTF calls from this aircraft in the circuit.

CZ took off and climbed away at 45 to 50 mph to approximately 400 feet agl. The C1252, AB was seen to carry out its third touch and go landing of the second solo detail and also climb away in the direction of the runway extended centreline. AB caught up with CZ and collided with it from behind, damaging the microlight sufficiently to make it uncontrollable. CZ spiralled to the left and descended relatively slowly, the occupants survived the impact. After the collision AB rolled right and dived at a steep angle into the same field. The pilot was killed instantly by impact forces; there was no fire.

The occupants of CZ were wearing lap straps only, but the descent of the aircraft was almost vertically downwards with a level pitch attitude and little forward motion. The pilot of AB was wearing full lap and diagonal upper torso restraint, but the impact was not survivable.

Examination of wreckage

Examination of the wreckage indicated that the microlight aircraft had come into contact with the right wing of the Cessna. Damage to the microlight included the severing of the flying wires running between the left hand side of the handlebar on the 'A' frame and the underside of the left wing. This had allowed the left wing to fold upwards, and in consequence the aircraft descended in an uncontrolled left hand spiral. The major impact on the microlight was on the monopole, which is the main structural member linking the trike to the wing. The pole was severed approximately 3ft above the engine (thereby clearing both the instructor's head and the propeller arc): however, the safety cable running within the monopole had remained intact and it was this that prevented the trike, together with its occupants, from separating from the wing. The wing of the Cessna had also struck additional rigging wires, the left 'A' frame member and the compression tube. The latter attaches the top of the monopole to the nose of the trike and had become separated during the airborne impact, coming to earth some 50ft from the main wreckage.

The Cessna had struck the ground in a dive angle of approximately 75° and rolled slightly to the right. The impact heading was 062° magnetic, *ie* pointing in the approximate direction of the airfield. The aircraft was considerably disrupted in the impact, with the rear fuselage suffering an inertial failure and the cabin area being crushed. Examination of the engine controls revealed that the throttle was in a retarded position. The fact that the knob was bent suggested that it had been pulled back before the impact and had subsequently been struck by something during the impact. Examination of the propeller showed little damage due to rotation and tended to confirm a low power setting at impact.

Damage sustained by the right wing during the impact with the ground tended to obscure the airborne damage. However it was possible to discern an area of damage on the leading edge centred approximately 5ft from the tip caused by the impact with the monopole on the microlight. The aileron operating cable system had not been damaged during this impact. The flaps were found to be in the retracted position.

Examination of the fracture of the monopole revealed that the force that caused the failure had been applied from the microlight's 8 o'clock direction. The distortion that had occurred to the forward compression tube was in a similar direction. However the witness evidence indicated that both aircraft were flying in approximately the same direction. Thus the most probable sequence of events was that the initial impact, which would have occurred at a closing speed of approximately 30 kts, caused the Cessna to yaw violently to the right, the severing of the microlight's structural members occurring later during the process of the collision after the Cessna had rotated through 45° or so. A consequence of the yaw would have been a roll to the right, the combined effect of which was to precipitate G-BHAB into a dive on a reciprocal heading. Clearly at some stage the Cessna's wing disengaged from the monopole, as the safety cable running within it was not severed.

The azimuth and altitude of the sun was 210°T and 19°, but pilots who were airborne at, or around the time of the accident reported no difficulties. The C152, AB had flown for 1 ½ hours prior to its last flight, and with the absence of the instructor would have been lighter than usual and required a higher than usual nose up pitch attitude in order to contain the recommended climb speed of 65 kt. A flight test was conducted on a similar type of aircraft, and measurements were taken of the available forward view. Due to the number of variable parameters that could have affected the attitude of the aircraft, the performance, and visual perception of the pilot, no firm conclusions could be drawn.