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Accident to the LAMBERT - MISSION M106-MK1-TD registered 63ASZ on 22 August 2020 at Ceyssat (Puy de Dôme)

Time	Around 17:45[1]
Operator	Private
Type of flight	Cross-country
Persons on board	Pilot and one passenger
Consequences and damage	Passenger seriously injured, microlight destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation. As accurate as the translation may be, the original text in French is the work of reference.	

Hard landing in field, go-around, loss of control, collision with trees

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on the pilot's statement, and data recordings from the onboard engine computers and GNSS.

The pilot, accompanied by a passenger, took off from Issoire-Le Broc aerodrome bound for a field located in the commune of Ceyssat that he had previously spotted during a walk. After about 25 minutes of flight, he joined a close downwind leg at a height of approximately 600 ft to observe the two windsocks he had made from a metal tube and warning tape. He then performed a left-hand descending U-turn with reduced engine power to line up on final. He completed his turn on the axis of the field, approximately 650 m from the intended touchdown point and at a height of approximately 125 ft above the field[2]. The pilot explained that a few metres above the field, shortly before the intended aiming point, the speed decreased from 80 to 50 km/h and the microlight sank. The microlight hit the ground hard and bounced. The pilot then applied full power and took a nose up attitude while keeping the flaps in the landing configuration. The microlight did not gain height or speed. The left wing lifted, the microlight veered to the right and collided with trees.

[1] Except where otherwise indicated, the times in this report are given in local time.
[2] Approach slope was approximately 6%.

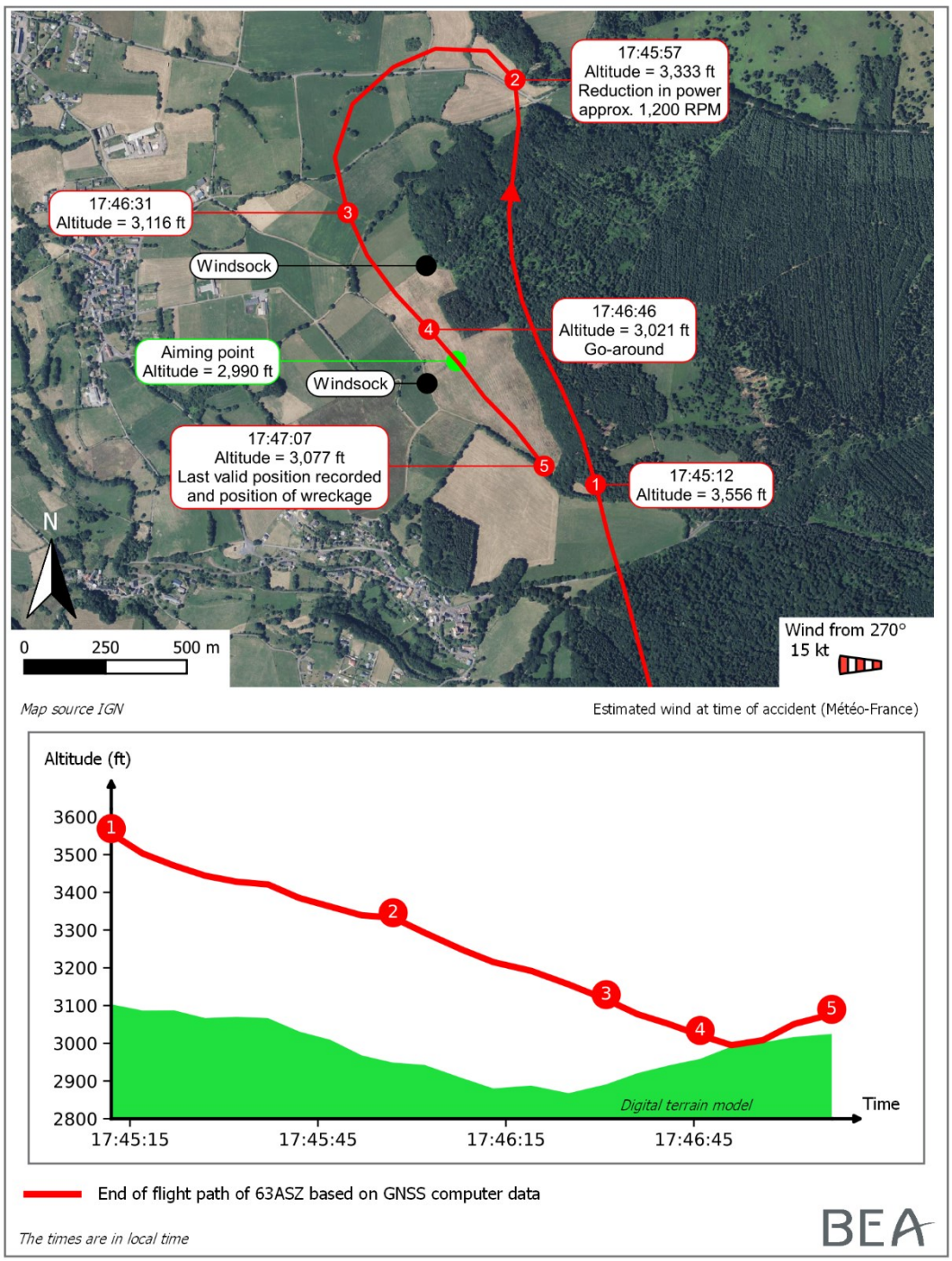

Figure 1: flight path of the microlight (based on the GNSS data)

2 ADDITIONAL INFORMATION

2.1 Site and wreckage information

The accident occurred in a hilly environment at an altitude of about 3,000 ft. The field chosen by the pilot was oriented approximately 140°/320° and was about 850 m long. Its profile was convex with an average upward slope of 4% in the direction of landing.

The slope in the first part of the field was steeper (in the direction of landing). It was bordered by trees about 30 m high.

The microlight struck the trees that bordered the right side of the field at moderate speed. It then fell to the ground on its right side.

Pieces of wood fibre and vegetation trapped in the leading edge of at least two of the three blades of the composite propeller indicate that the engine was producing power until the collision with the ground. The read-out of the engine computer confirmed that the engine was operating nominally until the impact with the trees.

The examination of the wreckage did not reveal any anomalies that could have contributed to the occurrence.

2.2 Pilot information

The 61-year-old pilot held a private pilot licence for aeroplanes issued in 1986, with a single-engine piston rating that was valid on the day of the accident. He also held a glider pilot licence issued in 1990. He obtained his microlight licence in December 2011 with a fixed-wing rating. The pilot stated that he had totalled approximately 350 microlight flight hours, including approximately 50 h in the M106. He had also flown 450 h in gliders and 600 h in aeroplanes. The pilot stated that he was used to flying microlights on runways which were difficult in terms of their size, steep slope and particular aerology. He had never landed in the field where the accident occurred.

The pilot explained that he had discovered this field, which offered a beautiful panorama, during a walk. He then planned to go there by microlight and contacted the owner of the field to obtain permission to land there.

Note: The regulations (decree of 13 March 1986[3]) authorize microlight pilots to land and take off on an occasional basis outside aerodromes or permanent specially-prepared microlight strips.

The day before the accident, he drove to the spot to check out the area. He walked around the field to observe the condition of the surface and set up two windsocks, each consisting of a 2.5 m metal bar and a 2 to 3 m-long warning tape.

[3] Decree establishing the conditions under which microlights may land and take off elsewhere than at an aerodrome (version in force on the day of the accident).

Figure 2: windsocks installed by the pilot (source GTA)

He had planned to land facing the upward slope of the field and chose the "break in the slope", towards the middle of the field, as his aiming point.

During the accident flight, the pilot indicated that he observed both windsocks and noted that there was very little wind. He stated that the windsock at the “break” in the field indicated a crosswind from the left, while the windsock in the bottom part of the field indicated the opposite direction. He added that he did not increase his speed and that he fully extended the flaps. He explained that he did not intend to land but only to make a first approach.

2.3 Microlight information

The Mission 106 MK1 is a high fixed-wing microlight equipped with an ULPower UL206i engine producing a maximum power of 95 hp at a speed of 3,300 rpm[4].

The procedure for a rejected landing or go-around set out in the flight manual is as follows:
1. Throttle fully forward
2. Speed 90-100 km/h IAS
3. Flaps retracted

In Chapter 5 of the flight manual concerning aircraft performance, it is stated that the rate of climb is 900 ft/min for a weight of 450 kg[5], in retracted flaps configuration, in standard atmospheric conditions at sea level and at a speed of 110 km/h.

This corresponds to a slope, without wind, of about 15%. The flight manual does not contain information on climb performance with flaps extended.

[4] The propeller spins clockwise (as seen from the pilot’s seat).

[5] The estimated weight of the microlight at the time of the accident was approximately 420 kg.

The slope between the touchdown point and the top of the trees at the end of the field was approximately 10%.

2.4 Meteorological information

The analysis of the meteorological conditions by Météo-France indicated anticyclonic conditions with a light north-westerly wind. The wind between FL 020 and FL 050 was from the west to northwest of 10kt. The average wind at the accident site was estimated at around 15 kt from the west with gusts of 23-25 kt. The temperature was around 18°C.

The Clermont-Ferrand - Auvergne aerodrome[6] METAR at 17:30 local time reported an average wind from 300° of 7 kt, varying between 250° and 360°. The 18:00 METAR reported a wind varying between 250° and 360°.

3 CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation. They are not intended to apportion blame or liability.

Scenario

The pilot undertook a flight to a field which he had previously spotted on foot and at the edge of which he had installed two windsocks which he had made. The field was on a slope in a hilly environment and was bordered by trees. The warning tape used for the windsocks probably became entangled in the vegetation and fence, causing the pilot to have an erroneous perception of the direction and strength of the wind. The pilot thus undertook a landing with a significant tailwind component without being aware of it. In addition, with a downwind leg close to the field, after the U-turn, the microlight was on the axis of the field at a low height. The pilot then had very little time, about fifteen seconds, to stabilise the final. In this context he was unable to keep control of the microlight which hit the ground hard and bounced, probably due to an aerological phenomenon.

The pilot then went around but did not manage to gain height or speed. This can be explained by the low speed of the microlight after the bounce, the flaps still being fully extended, and the tailwind component. The upward slope of the field and the proximity of obstacles may also have caused the pilot to increase his attitude significantly, thus degrading the climb gradient and causing the loss of control of the microlight which veered to the right before colliding with trees.

Safety lessons

Microlight pilots have the possibility of landing off aerodromes[7] and thus benefit from a wide choice of landing areas. This autonomy may expose them to situations that they might not be able to control safely.

[6] The airport is located approximately 20 km from the accident site.

[7] With the agreement of the person who has the use of the land and a prior declaration to the mayor of the commune concerned for occasional airstrips.

In a hilly environment and restricted by obstacles, a go-around can be particularly difficult to negotiate, especially if it is carried out late. In addition, the aircraft's climb performance may be insufficient to clear obstacles.

The threat posed by the apparent ease of access to such sites can be mitigated by an in-flight reconnaissance of the site as well as by flying a sufficiently long final leg to give the pilot time to stabilize his path and thus limit the probability of having to reject the approach or the landing.

The BEA investigations are conducted with the sole objective of improving aviation safety and are not intended to apportion blame or liabilities.