

Accident to the AIR CREATION GTE 503S / MILD 16 identified 17KB

on 17 July 2020

at Expiremont microlight strip

⁽¹⁾Except where
otherwise indicated,
times in this report
are in local time.

Time	Around 9:30 ⁽¹⁾
Operator	Private
Type of flight	Local flight
Persons on board	Pilot
Consequences and damage	Pilot fatally injured, pendulum ultralight destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in July 2021. As accurate as the translation may be, the original text in French is the work of reference.	

Loss of control during runway circuit, collision with the ground

1 - HISTORY OF THE FLIGHT

Note: The following information is principally based on statements and from the examination of the pendulum ultralight.

The pilot, who had obtained his pilot's certificate around a week earlier, carried out his first solo flight on the pendulum ultralight he had acquired a few months previously. He took off facing north and made a right-hand runway circuit. After a go-around, the pilot performed a second, left-hand circuit. In the base leg, the pendulum ultralight entered a tight left turn, fell almost vertically and collided with the ground.

2 - ADDITIONAL INFORMATION

2.1 Accident site

2.1.1 Expiremont microlight strip information

The microlight strip is a private airstrip. It consists of an unpaved runway about 300 m long and about 15 m wide, oriented north/south. The pilot stored his pendulum ultralight in the hangar located near the runway. The immediate surroundings of the strip are free of obstacles and dwellings.



Figure 1 : Position of the wreckage

The wreckage was located about 115 m from the runway threshold, in a field of sunflowers. The marks in the field were not dispersed: only one impact was identified on the ground.

2.1.2 Examination of the wreckage

The wreckage was not dispersed and was complete. No technical singularity which could explain the accident was found on the pendulum ultralight. The damage observed on the trike and the wing resulted from the accident. The emergency parachute fitted to the pendulum ultralight had not been activated by the pilot.

The propulsion system was complete. Its detailed examination did not reveal any damage or singularity which could explain an in-flight shutdown. However, the condition of the propeller did not reflect transmission of engine torque to the blades at the moment they struck the ground. This small amount of damage to the blades can be explained either by the propeller stopping during the very short time between the impact of the front section of the aircraft and the blades coming into contact with the ground, or by an engine shutdown before the first impact.

The fuel recovered from the carburetors was analysed. Its characteristics were those expected for unleaded automotive fuel. The nature of the oil used by the pilot was unknown. Therefore, the fuel/oil mixture ratio⁽²⁾ could not be defined, nor the composition of the oil used.

The observations made on the pendulum ultralight seem to testify to contact with the ground with a high nose-down attitude.

No ballast was found simulating the weight of a passenger.

⁽²⁾ This mixture is essential for the correct operation of the two-stroke engine equipping the ultralight.

2.2 Pilot's experience and information

The 68-year-old pilot had formerly held aeroplane and balloon private pilot licences. He had logged about 100 flight hours in aeroplanes and about 180 balloon ascents. His single engine piston rating was no longer valid since 1 January 2007. He held a microlight licence since 8 July 2020 with a pendulum ultralight rating, and had logged a flight time of about 17 hours and 15 minutes on microlights. This total included his training which had started on 2 October 2019 at Corme Écluse microlight strip. During this training he flew 16 hours and 30 minutes in 29 lessons, all on a pendulum ultralight similar to the one involved in the accident. During his training he had made two solo flights in radio contact with his instructor: the first of 45 minutes on 24 June, the second of 30 minutes on 3 July, performing landings on a shorter runway.

The information sheet for Corme Écluse ultralight strip, where most of the pilot's training took place, indicated that as overflight of dwellings was to be avoided, the runway circuit was fairly short.

The accident flight was the pilot's first solo flight on his pendulum ultralight.

2.3 Pendulum ultralight information

The two-seater pendulum ultralight purchased on 7 December 2019 by the pilot comprised:

- a GTE 503 S trike manufactured by Air Creation;
- a Mild 16 wing manufactured by Air Creation;
- a Rotax 503 engine associated with an Arplast composite three-blade propeller.

The pendulum ultralight was stored in the instructor's hangar until the pilot was certified. It was reassembled one week before the accident and equipped with a radio.

The instructor performed a check flight after the reassembly, during which no wing or engine problems were detected. According to the instructor and the manufacturer, this pendulum ultralight is easy to handle. The pendulum ultralight's maximum engine power was identical to that of the pendulum ultralight on which the pilot had trained.

2.4 Meteorological information

The weather conditions estimated by Météo-France at the time of the accident were as follows: northerly wind of 5 kt, with gusts of 8 to 10 kt, visibility greater than 10 km, scattered stratocumulus based at 6,000 ft, temperature 21 °C.

2.5 Statements

2.5.1 Accident witness

The witness has no aeronautical knowledge and was approximately 500 m north-east of the accident site. He saw the pendulum ultralight take off facing north. The pendulum ultralight made an approach from the south, did not land and went around. It made a left turn at the end of the runway, heading south, parallel to the runway, at a height of between 50 and 100 m. The witness stated that he had heard no abnormal engine noise. The pendulum ultralight made a tight left turn, then fell nose down. The witness does not remember whether the engine shut down or not before impact.

2.5.2 Pilot's instructor

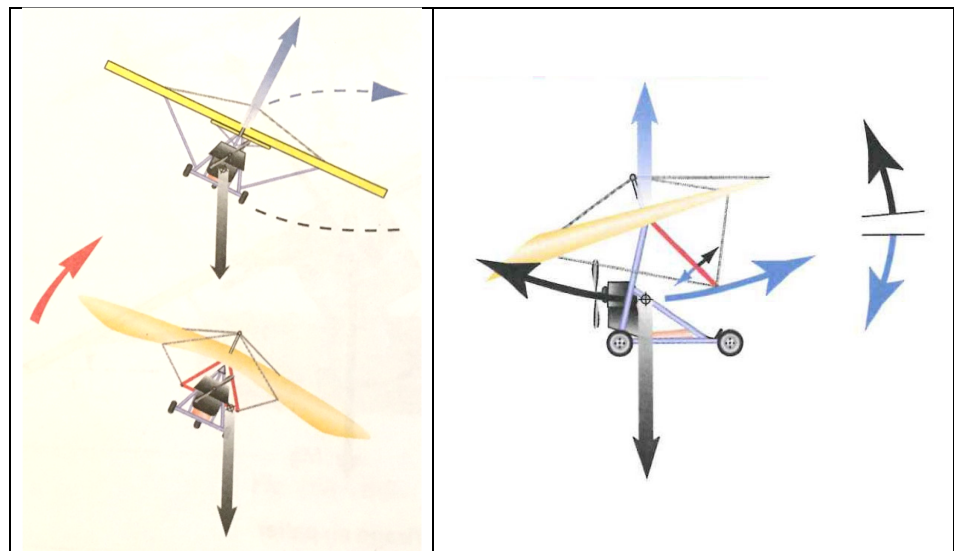
The instructor emphasised that the pilot was a good student, with sound aeronautical experience. He had no particular difficulty, and training had gone smoothly. He stated that the pilot had no problems during the various stall, failure or forced landing exercises. He stated that during briefings before first solo flights, he focuses on the particular characteristics associated with this transition, in particular on the different performance of the pendulum ultralight due to the weight difference. He emphasised that during the training solo flights, he uses a ballast to simulate the weight of the second occupant. He advises newly-certified pilots to use such ballasts.

The instructor stated that he had accompanied the pilot during the ferry flight on the pendulum ultralight that he had acquired. The flight had lasted around 45 minutes. The pilot was at the controls throughout this flight. During the approach, the pilot had turned on the base leg and had performed a long final before landing.

2.5.3 Pendulum ultralight flying reminders

Note: The information given below is based on the 14th edition of the "Manuel du Pilote ULM" (Microlight Pilot's Handbook) published by Cépaduès Editions.

A pendulum ultralight is controlled by the lateral and/or longitudinal shift in the centre of gravity causing an aerodynamic response on the wing. To bank the pendulum ultralight right, the pilot moves the control bar laterally to the left. To climb, the pilot pushes the control bar forwards and to descend, the pilot pulls the control bar backwards. (Figure 2 below).

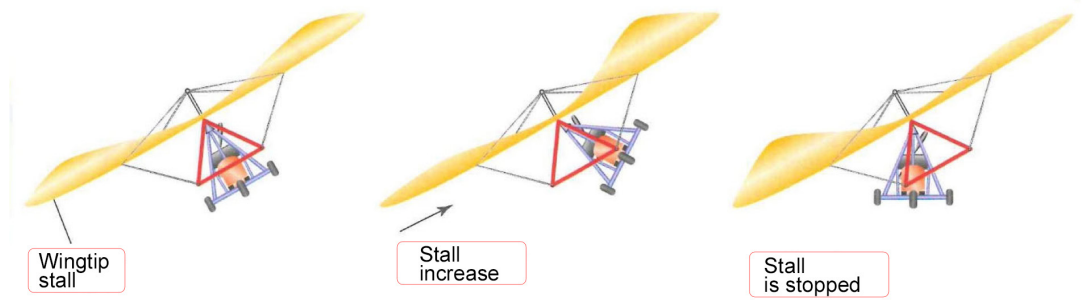


Source: 14th edition of the "Manuel du pilote ULM" published by Cépaduès Editions

Figure 2: Change of path on pendulum ultralight

⁽³⁾ Lobe: swelling of wing generated by the air mass moving over it.

During the stall in right turn (as shown in Figure 3), the inside wing stalls first. If the pilot tries to counter the wing drop by moving the control bar to the right, the lobe⁽³⁾ on the left side will further increase the angle of attack of the inside wing. If the pilot moves the control bar to the left, the movement of the lobe to the right wing will decrease the angle of attack of the inside wing and can eliminate the stall.



Source: 14th edition of the “Manuel du pilote ULM” published by Cépaduès Editions

Figure 3: Image of stall in right turn, front view (BEA annotations)

It is important to note that a pilot with flying experience in a fixed-wing microlight or aeroplane may react in a way that contradicts the actions expected in the event of stall. During the stall of a pendulum ultralight at low speed in straight flight, if the pilot pushes the control bar forwards (movement comparable to the nose-down action taught in an aeroplane in similar circumstances), the stall phenomenon is maintained or even accentuated. Recovery is assured by doing the reverse i.e. pulling on the control bar.

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 accident occurred while the pilot was carrying out runway circuits, probably to get used to his pendulum ultralight. During the start of the turn on the base leg, the left wing clearly stalled. The low height at which he was flying made it difficult for the pilot to regain control of the pendulum ultralight or to effectively use his emergency parachute.

The investigation was unable to determine if the engine had shut down in flight prior to loss of control. Based on the condition of the engine propeller, this hypothesis cannot be ruled out.

Contributing factors

The following factors may have contributed to the loss of control:

- The pilot's small amount of experience in solo flight in a pendulum ultralight combined with the fact that the only two solo flights performed during his training were performed carrying ballast on the passenger seat and this was his first solo flight on this pendulum ultralight.
- The performance of a runway circuit too close to the runway, which led the pilot to initiate a tight turn.

In addition to the low height at which the loss of control occurred, the pilot's previous experience in an aeroplane may have caused him to have reflex actions that were the opposite to those required in a pendulum ultralight in the same situation.

Safety lessons

During the investigation, the French Microlight Federation (FFPLUM) told the BEA that it is best practice to initiate the last turn around 500 m from the runway threshold in order to maintain a sufficient safety height during this manoeuvre. Thus, on a sufficiently long final, a pilot has the time to stabilise their approach and to adjust their glide path without having to make sharp variations to the flight path. The FFPLUM published an awareness-raising video⁽⁴⁾ focusing on the last turn, not dedicated specifically to the pendulum ultralight. In this video, the FFPLUM gives no specific distance in relation to the runway threshold but states the importance of controlling the bank angle during this manoeuvre and illustrates its statements with examples of particularly wide runway circuits. Training in making adapted runway circuits, at low height and using a shortened path, aims to teach pilots how to react in an unforeseen situation and may also be justified depending on the environment of some strips. It is not expected that this type of manoeuvre becomes a standard practice of future certificate holders unless necessary. More generally, the FFPLUM advises maintaining an altitude, during the different flight stages, that offers the greatest possible margin of manoeuvre in the event of a reduction in engine power⁽⁵⁾.

Moreover, although no two students have the same profile, the FFPLUM considers that three to five supervised solo flights and one solo cross-country flight is best practice during a pilot's initial training. According to the FFPLUM, these solo flights are all the more beneficial as they are followed up with a suitable debriefing and are judiciously incorporated within the programme of dual-control flights.

⁽⁴⁾ <https://www.youtube.com/watch?v=mdrMTjYct00>

⁽⁵⁾ Refer to the [FFPLUM Safety Memo](#)