



Accident to the Ozone Freeride 17
identified **36UU**
on 25 June 2022
at Savines-le-Lac (Hautes-Alpes)

Time	Around 06:45 ¹
Operator	Private
Type of flight	Slalom competition
Persons on board	Pilot
Consequences and damage	Pilot fatally injured, paramotor 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.	

Wing collapse in flight, loss of control and collision with the surface of a lake

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on statements and a video recording of the accident.

The pilot was taking part in a paramotor slalom competition organised by the French Microlight Federation (FFPLUM) from 21 to 25 June 2022 at the lake of Savines-le-Lac. This event brought together some thirty paramotor competitors, with or without a trike, divided into two categories: “Elite” for experienced pilots used to competition, “Espoir” for other up-and-coming pilots. Some of the competitors, including the pilot of 36UU, were part of the Collectif France² group. He was competing in the “Espoir” category with a trike.

During the competition, pilots may only use two different wings and engines.

On Tuesday 21 June, the pilot started the competition with his best-performing wing, the Ozone Freeride 17. During the first slalom, he ended up in the water during an evasive manoeuvre to avoid a pylon, with no consequences for the equipment used. However, he decided to switch his wing to the Gin Falcon 20, which was less efficient but easier to fly. During take-off, the wing tilted and some of the trailing edge lines were severed by the engine propeller. Therefore, the only wing available to the pilot was the Ozone Freeride 17, which he used for the rest of the competition.

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

² A group of champions who may be selected to be part of the FFPLUM paramotor “French team”.

On the day of the accident, the pilot was preparing for his first slalom of the day. He was the ninth participant in the competition's running order. He was in the holding area, at an estimated height of between 100 and 150 m. While in straight flight, his wing suddenly collapsed. The paramotor fell and collided with the surface of the lake less than five seconds after the wing collapsed.

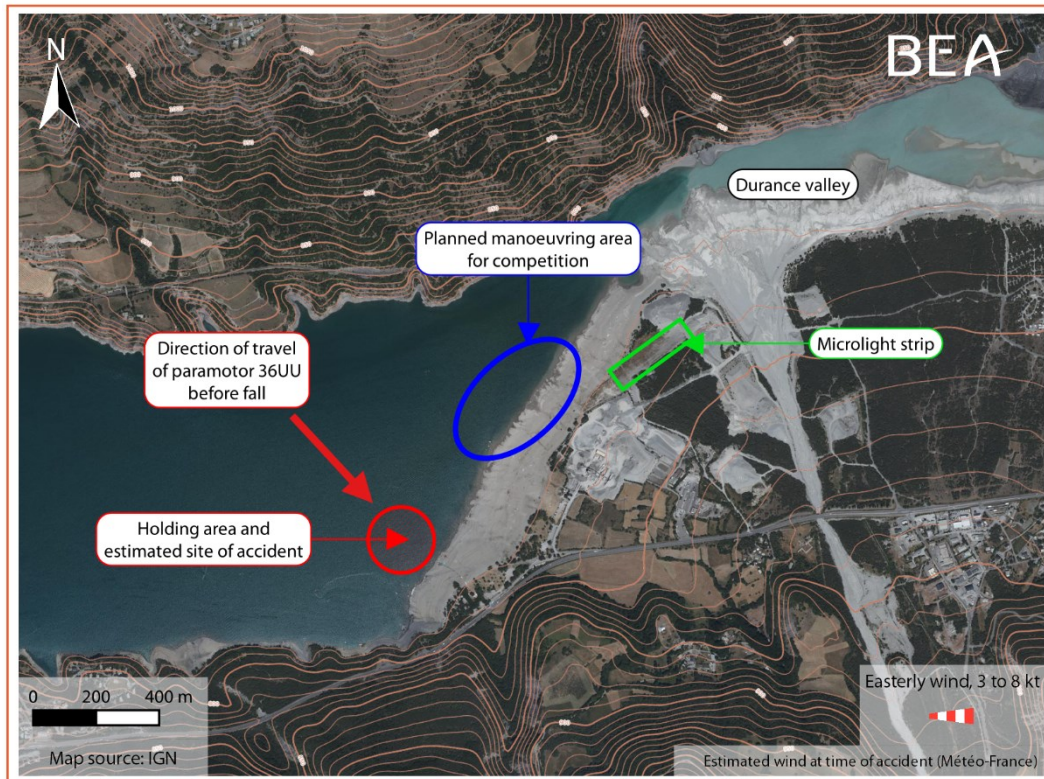


Figure 1: accident site

2 ADDITIONAL INFORMATION

2.1 Pilot experience

The 35-year-old pilot held a paramotor microlight pilot licence issued in 2017. The FFPLUM was unable to provide the BEA with the pilot's total paramotoring experience, or his experience with the Ozone Freeride 17 wing. He bought this wing in November 2021.

2.2 Meteorological information

Note: the following information is based on the information provided by Météo-France and on the statements of the pilots who flew in the area where the wing closed at the time and in the minutes preceding the accident.

2.2.1 Conditions estimated by Météo-France

The meteorological conditions estimated by Météo-France between the ground and a height of 400 m were as follows: easterly wind of 3 to 8 kt, visibility greater than 8 km, temperature 15 °C, dew point temperature 8 °C, QNH 1016 hPa. A light breeze of less than 10 kt was descending the Durance river with surface gusts of 10 to 12 kt. Daytime heating was still low and was not generating thermal turbulence at the time of the accident. The surrounding terrain did not induce dynamic wave- or rotor-type turbulence, as the air flow at altitude was too weak.

When the wing closed, the sun was roughly facing the pilot, with a 20° elevation.

2.2.2 Statements of pilots who flew in the holding area

The flight conditions in the holding area could be assessed based on the statements gathered from pilots.

The first pilots who flew in the holding area reported the following:

- Close to the ground: calm air without turbulence.
- At a height of between 50 and 100 m: light turbulence, some unpleasant movements of the wing reported by a pilot who was close to the terrain.

The pilots who flew in the holding area in the minutes preceding the wing closure reported the following:

- From the ground to a height of 100 m: uncomfortable turbulence associated with a breeze descending the valley, which caused noticeable wing movements, but which did not require any input from the pilot.
- At a height of between 100 and 150 m: severe turbulence encountered by a pilot who reported a windshear area and being strongly shaken.
- At a height of between 150 and 300 m: one pilot reported encountering severe and unpleasant turbulence, being “shaken about” and “tossed around”. He kept his hand on the emergency handle and considered coming back to land. He added that the further he descended, the calmer the atmosphere became.

2.3 Wing information

Note: the following information is based on the [Ozone Freeride wing's pilot manual](#).

The Ozone Freeride 17 wing is a 17 m² wing described as a high performance, dynamic, fast, precise and manoeuvrable wing that was designed to meet the needs of competitive slalom flying. It is equipped with various systems: *Paap Kolar (PK)*, *Tip Steering System (TST)*, *Slalom Steering System (AM)*, which improve performance but require more active and precise piloting. Some of these systems can make the wing more sensitive to closing and increase recovery time.

The flight manual contains many recommendations on what to do to prevent the wing from closing. In particular, it is pointed out that in very turbulent conditions the pilot must remain active at the controls in order to be able to react correctly in the event of an incident, and that the risk of collapse is increased if the trimmers are not returned to neutral (fully slow position). The manual also recommends not applying the brakes whilst accelerating (using the speed bar) as this makes the wing more prone to collapse.

The expected weight range of the paramotor wing is 65 to 140 kg. The all up flying weight (commonly known as TFW³) estimated at the time of the accident was between 126 and 144 kg. According to an experienced instructor and competitor, this loading configuration is suited to slalom competition because the wing is more dynamic and responsive. The travel and effort at the controls are reduced, the wing shows higher resistance to collapse and most manoeuvres are easier. However, if the wing collapses, it is more difficult to get it back into flying condition.

³ Total flying weight.

2.4 Examination information

The paramotor comprises a wing, a tubular trike frame to which the harness is attached, and an engine whose propeller is surrounded by a circular cage and protected by a fabric netting.

The propeller cage was damaged when the paramotor was pulled on board one of the two rescue boats set up to cover the competition. During the rescue operations, some lines and the straps of the harness securing the pilot in place were cut, and his floater jacket was punctured.

Examination of the wreckage was unable to determine with certainty the attitude of the trike when it struck the surface of the water, or the associated energy level. It revealed that a red leading edge line went inside the last coil of a spring in the propeller protection cage. The investigation was unable to determine whether the line became hooked on the spring when the wing collapsed or after the accident when the paramotor was recovered and transported to the storage area. If the line became hooked on the spring in flight, it may have prevented the wing from reopening.

Examination of the wing was limited due to the condition of the set of lines, almost all of which were cut during the rescue operation. Visual inspection was therefore incomplete, and checking the setting was impossible. Mechanical tests confirmed a structure (fabric + lines) that was robust, close to new condition.

The propeller blades were intact. Their rotation was hindered by the rear part of the trike, which was distorted during the accident. This finding is consistent with an engine that was shut down or idling when the paramotor collided with the surface of the lake. Indeed, when the engine idles, the clutch stops the propeller.

The trimmers were symmetrically set for dynamic fun-flying or for slalom-flying (white line). The AM system installation slightly deviated from the pilot manual instructions. The brake line leading from the brake handle was not routed through the upper pulley. According to the designer of this system, this assembly had no direct impact on the wing's behaviour. However, this type of adjustment may have an impact in the event of a wing collapse in flight. Incorrect adjustment or handling will therefore have an impact on the wing's behaviour.

Examination of the harness did not reveal any fault.

The emergency parachute was not activated.

2.5 Statements

A pilot flying in the holding area at the time of the accident said that the pilot of 36UU was higher than her. She reported that 36UU was in her field of vision, that its wing was inflated and symmetrical, and that it suddenly folded by $\frac{3}{4}$ forwards and hit the pilot's head. The paramotor then fell vertically without any rotational motion until it made contact with the surface of the lake. She added that the wing did not reopen.

3 CONCLUSIONS

The conclusions are solely based on the information which came to the knowledge of the BEA during the investigation.

Scenario

While the pilot was in straight flight in turbulent aerological conditions, the wing suddenly closed, folded forwards and hit the pilot's head.

The paramotor collided with the surface of the lake less than five seconds after the wing collapsed, without the pilot being able to reopen it or activate his emergency parachute.

Examination of the paramotor did not find any element likely to explain the wing collapse. The investigation was unable to determine in particular whether this collapse was related to the use of the speed bar combined with an input on the brakes.

Contributing factors

The following factors may have contributed to the wing collapse:

- local aerological conditions generating severe turbulence;
- trimmers set to meet the needs of the intended slalom flight, but increasing the risk of wing collapse in turbulent conditions.

The TFW, which was close to the upper limit, may have made the wing more difficult to reopen after its untimely closure.

Safety lessons

The Ozone wing's pilot manual recommends that pilots switching to another wing category make their first flights in calm conditions, at a familiar site, while they gradually get used to the new wing.

In this context, incident flight simulation training courses for paraglider pilots may help support this change of category. These training courses may help pilots to understand the various incidents likely to occur in a paraglider and provide them with solutions to react appropriately so as to avoid or recover from such incidents. They may also be an opportunity to practise using an emergency parachute.

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