BEA
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SAFETY INVESTIGATION REPORT

Accident to the SCHLEICHER - ASW24 registered F-CGKH on 12 June 2021 near Pont-Saint-Vincent aerodrome (Meurthe-et-Moselle)

Time	17:48[1]
Operator	Club ACAM 54
Type of flight	Local
Persons on board	Pilot
Consequences and damage	Pilot severely injured, glider destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in September 2022. As accurate as the translation may be, the original text in French is the work of reference.	

Loss of control in turn, collision with the ground

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on the pilot's statement and data from the aircraft's FLARM computer.

The pilot took off at approximately 16:15 for a local flight north-east of the aerodrome.

After around one flight hour, about ten kilometres from the aerodrome to which he was returning for landing, the weather conditions became more difficult and the glider slowly lost altitude.

At 17:41, seven minutes before the accident, the glider was nine kilometres from the threshold of runway 24[2] (see Figure 1, point ❶). It was flying at an altitude of 930 m and was following a downward path with an average vertical speed of -0.9 m/s. The average ground speed was 85 km/h.

Having drifted because of the wind, the pilot found himself on the left side of the runway axis, level with the threshold of runway 24. He understood that he was not going to be able to join the right-hand downwind leg to the runway. He then decided to turn left in order to join the left-hand downwind leg to runway 24 (see Figure 1, point ❷). The data from the FLARM computer confirmed that the left turn was made at an altitude of 544 m (i.e. a height of 154 m) and at an average ground speed of less than 80 km/h.

During the turn, the glider stalled and made two full spins. The pilot managed to stop the spin and level the wings before the collision with the ground.

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

[2] Runway 24 was the runway in service; the aerodrome's altitude is 407 m.

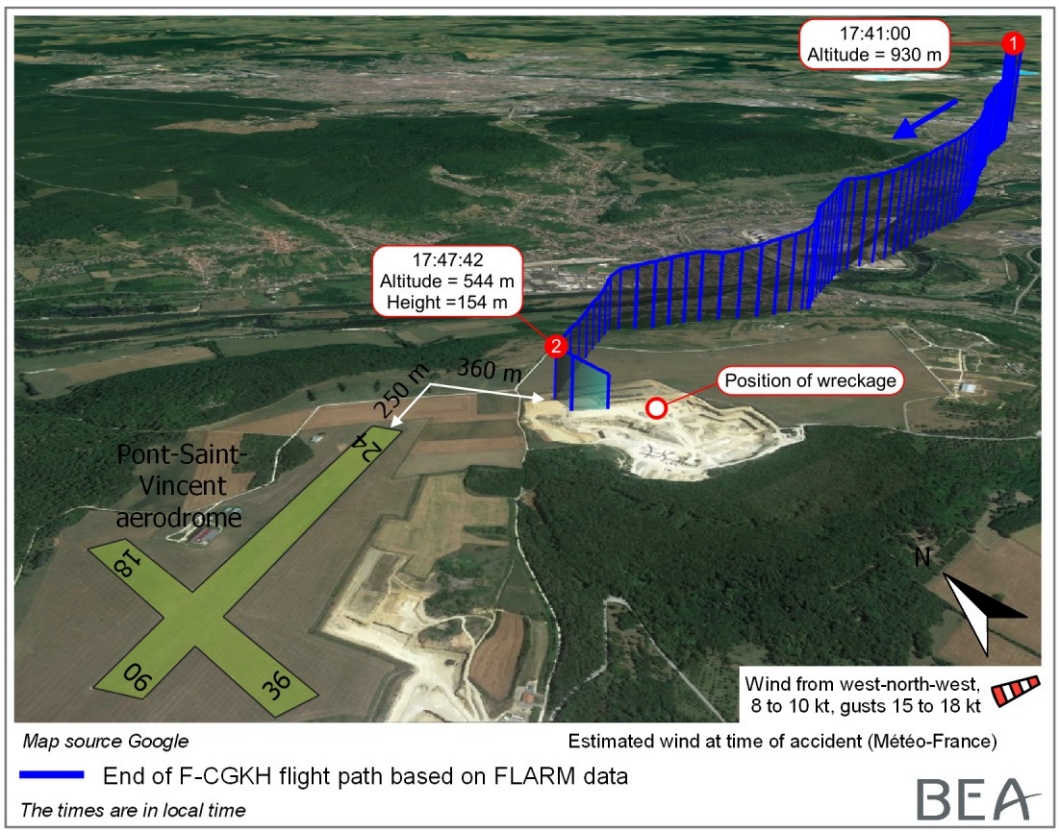

Figure 1: flight path based on FLARM computer read-out

2 ADDITIONAL INFORMATION

2.1 Examination of site and wreckage

The glider wreckage was located in a quarry passage about 670 m to the left of the threshold of runway 24 at Pont-Saint-Vincent aerodrome.

Figure 2: accident site (Source: BEA drone)

The glider hit the ground with a slightly nose-down attitude and the wings almost horizontal. The wreckage was complete and not dispersed. Some debris (part of the right horizontal tailplane and components of the landing gear) was present over a distance of approximately 20 m before the wreckage. No technical structure failures prior to the collision with the ground were identified.

The examination of the flight controls did not reveal any anomaly. All the failures observed were caused by the impact with the ground.

The positions of the air brakes and the landing gear could not be determined.

A FLARM computer was removed for analysis at the BEA's premises. The altimeter setting was found blocked on 1027 hPa.

2.2 Aerodrome information

Pont-Saint-Vincent aerodrome (LFSV) is a restricted-use aerodrome reserved for gliding, home-based aircraft and aircraft authorized by the DSAC-NE (the French civil aviation safety directorate for the north-east (oversight authority)). It has two grass runways:

- runway 06/24, measuring 1,152 x 100 m;
- runway 18/36, measuring 693 x 80 m, which is reserved for glider landings.

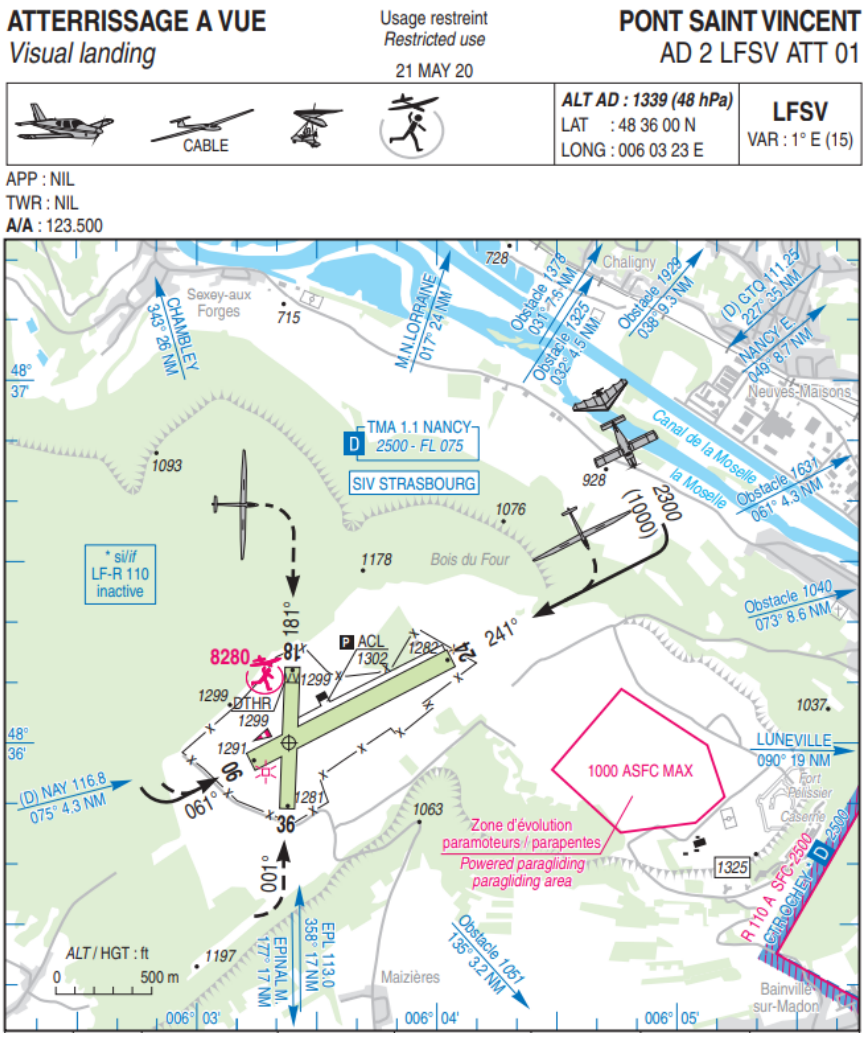

Figure 3: Pont-Saint-Vincent aerodrome VAC chart (Source: AIS)

2.3 Meteorological information

The meteorological conditions estimated by Météo-France at the site at the time of the accident were as follows:

- mean wind: west-north-west of 8 to 10 kt;
- maximum spot wind: west-north-west of 15 to 18 kt;
- visibility greater than 10 km;
- cloud cover: very cloudy sky (2 to 4 oktas of cumulus at a height of 1,100 m, 6 to 7 oktas of stratocumulus at a height of 1,600 m);
- temperature: 24 to 25 °C;
- slight turbulence;
- QNH: 1023 hPa[3].

According to Météo-France, the conditions observed (moderate west-north-west wind, very cloudy sky), and the general configuration of the site - an aerodrome located on a hill and a quarry nearby - might have contributed to the occurrence of downdrafts, or subsidence, in the areas south and east of the aerodrome.

2.4 Pilot information

The 19-year-old pilot held a glider pilot licence (SPL) issued in February 2018. On the day of the accident, he had logged 190 flight hours, around 110 hours of which as pilot-in-command (PIC).

2.5 Pilot's statement

The pilot indicated that he regularly made flights lasting several hours. He carried out 24 flights in 2019, and four in 2020. The flights on the day of the accident were his first flights of 2021. He added that he had trained in the past for off-field landings, but that he had never landed outside an aerodrome during a cross-country flight ending earlier than planned.

He added that the accident flight was his first flight of the year as PIC and that he had not prepared any particular cross-country flight. In the morning, he attended the general briefing, then he made a first (dual) flight lasting approximately one hour and 30 minutes with an instructor from the club.

He could not remember whether he corrected the altimeter setting before taking off on his second flight or whether he checked that the altitude displayed was that of the aerodrome.

He specified that the weather conditions were quite good to the north-east of the aerodrome. He was able to find uplift of +2 m/s. According to him, he did not descend below an altitude of 1,000 m on his route. There were cumulus clouds and he navigated from cloud to cloud without too much difficulty. He indicated that from Houdemont and Ludres, after about one flight hour, the conditions were less good but stable, and that he glided in a gentle descent towards the aerodrome. He arrived from the east and estimated he was too high to directly join the final for runway 24.

[3] The QNH reading of 1027 on the glider's altimeter indicated that the altitude information available to the pilot was 34 m higher than the glider's actual altitude.

Due to the north-westerly wind, he found himself to the left of the axis of runway 24, at a height he estimated to be between 250 and 300 m, in a situation where he could no longer find uplifts. He realised that he was not going to be able to reach the right-hand downwind leg to runway 24 and therefore decided to turn left to make a left-hand circuit to runway 24.

He added that he did not extend the landing gear or air brakes and that he had not yet announced he was joining the circuit over the A/A frequency.

He specified that the bank angle during the turn was a maximum of 20° and that his indicated airspeed was close to 100 km/h. During the turn, the glider entered a left spin. He carried out the actions necessary to get out of this situation: foot input on opposite side of the spin and nose-down then neutral input on the stick. He managed to level the wings, but with the glider still in a nose-down attitude. He was too low to regain full control of the glider and hit the ground in the quarry. He lost consciousness for a few minutes. He then detached his parachute and moved away from the wreckage. Alerted by a witness, the emergency services arrived quickly.

The pilot added that he did not consider landing outside the aerodrome as the environment in the vicinity of his path was not suitable for landing.

2.6 Glider information

On the day of the accident, the glider's all-up weight was approximately 330 kg. The glider flight manual provides the following stall speeds:

Position of the air brakes	Weight	Weight
	320 kg	410 kg
Retracted	65 km/h	73.5 km/h
Extended with the landing gear extended	71.5 km/h	81 km/h

The manual states that the recommended approach speed is 95 km/h.

The flight manual also provides a graph for determining the stall speed in a turn. For example, when turning with a bank angle of 10 or 20°, the indicated stall speed is between 70 and 80 km/h.

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

On the return leg from a local flight lasting approximately one hour, the pilot decided to join the right-hand aerodrome circuit to runway 24. Approximately 250 m from the runway threshold, he was too low and 360 m to the left of the runway axis. Realising that he was not going to be able to join the right-hand aerodrome circuit, he initiated a left U-turn to join the end of the downwind leg or base leg of the left-hand circuit for runway 24. During this turn at low height (about 150 m) and with a speed that did not offer him a sufficient safety margin, the glider stalled and collided with the ground.

The investigation was unable to determine with certainty what caused the stall. It is likely that the low-speed turn, combined with gusts of up to 18 kt and possible downdrafts over the quarry, caused the stall and the resulting spin.

The pilot's inputs allowed him to quickly exit from the spin before the collision with the ground and thus mitigated the consequences of the accident.

The altimeter setting error, which led to an altitude indication approximately 35 m higher than the glider's actual altitude, may have contributed to the pilot's misperception of the glider's actual height on the way back to the aerodrome.

Safety lessons

When the weather conditions are marginal (loss of uplifts) but good enough for the pilot to think that it will nevertheless be possible to return to the aerodrome, the pilot must determine the safest way of joining the aerodrome.

In the ten minutes prior to the accident, the glider was in a slight continuous descent on a heading close to the runway axis. In the conditions of the day, directly joining the final for runway 24 was the option offering the greatest safety margin compared to joining the downwind leg of a right-hand circuit, which required multiple path changes and could expose the pilot to additional loss of altitude.

This accident also highlights the risk of loss of control when performing a low-level, low-speed U-turn in an aerodrome circuit.

The analysis of previous occurrences showed that the most serious accidents during the take-off or landing phases most often occur during a significant heading change, or even an attempted turn-around, during which the stall speed increases considerably.

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