



## Accident to the Rolladen Schneider LS8-18 registered F-CIBD

on 13 April 2019

at Avize (Marne)

<sup>(1)</sup> Unless otherwise  
stated, all times  
given in this report  
are in local time.

<b>Time</b>	Approximately 16:45 <sup>(1)</sup>
<b>Operator</b>	Association Aéronautique du Val d'Essonne (AAVE)
<b>Type of flight</b>	Local flight
<b>Persons on board</b>	Pilot
<b>Consequences and damage</b>	Pilot fatally injured, glider destroyed
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in April 2020. As accurate as the translation may be, the original text in French is the work of reference.	

## Loss of control in flight, collision with the ground

### 1 - HISTORY OF THE FLIGHT

*Note: The following information is based mainly on statements, data from the FLARM installed in the glider and an aviation application installed on the pilot's mobile phone.*

The pilot made a towed take-off at about 13:30 from Buno-Bonnevaux aerodrome (Essonne) for a circular eastbound flight to Épernay-Plivot aerodrome (Marne), passing over the towns of Villeneuve-l'Archevêque (Yonne) and Épernay (Marne).

At about 16:40, the glider passed over Épernay-Plivot aerodrome and the pilot began the return leg.

Approximately three minutes later, while flying at a height of 630 m above an agricultural zone, the pilot lost control of her glider and hit the ground in a vineyard.

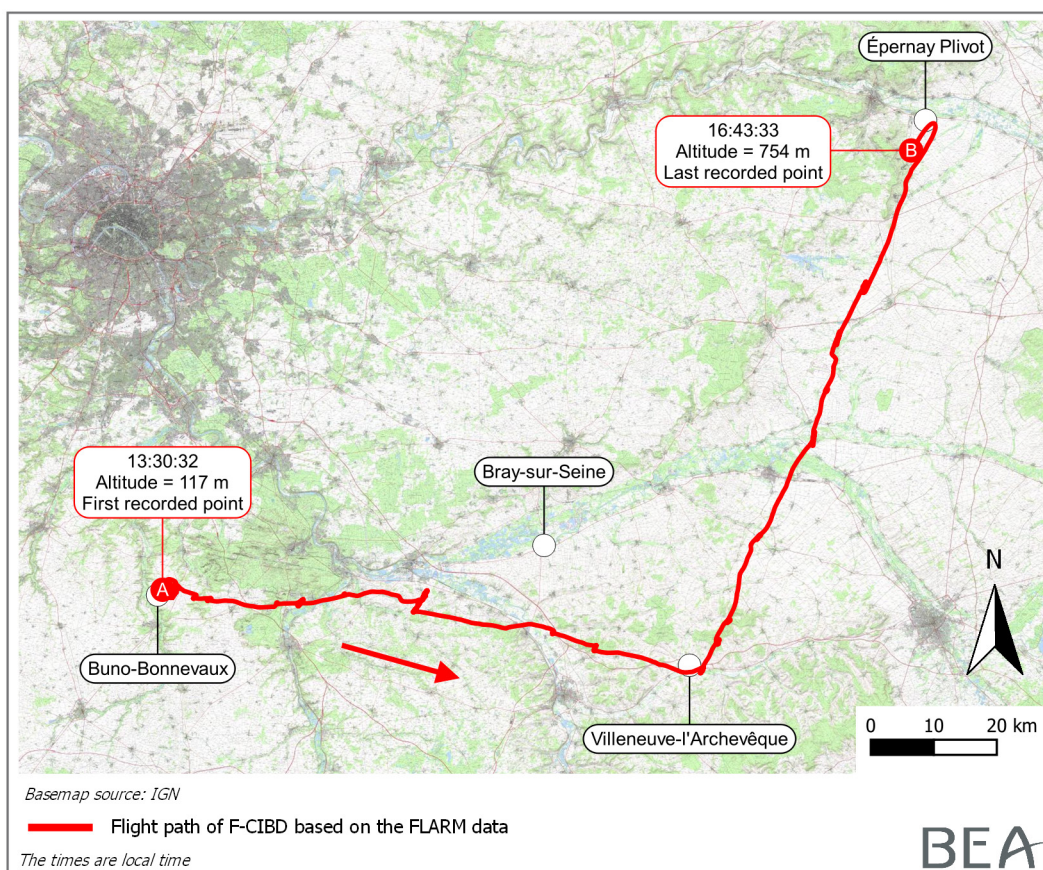


Figure 1: flight path of F-CIBD (full flight)

## 2 - ADDITIONAL INFORMATION

### 2.1 Pilot information

The 62-year-old pilot had held a glider pilot licence since 1994. This licence was valid on the day of the accident and was accompanied by the "Aerotow" and "Touring Motor Glider" class ratings.

On the day of the accident, she had logged approximately 1,700 flight hours in gliders and was on her fourth flight of the season.

The investigation was unable to determine her experience on type. The members of the aero club stated that she was experienced on this type of glider.

An autopsy was performed following the accident. It did not reveal the presence of any medication or psychoactive substances that could have affected the pilot's performance. This examination did not find any characteristic marks made from the wearing of a harness during a violent impact.

### 2.2 Glider information

The LS8-18 glider registered F-CIBD was operated by the Association Aéronautique du Val d'Essonne (AAVE) aero club and was based at Buno-Bonnevaux.

The LS8-18 is a single-seater carbon fibre glider with a wingspan of 18 m, which is intended for competition and high-performance flight, but not for training. The aircraft flight manual states that "flying it requires a skilled pilot [...]".

It is known to be reliable and smooth to fly in its flight envelope, but likely to stall suddenly outside the flight envelope. Its short fuselage and large wingspan can, in such a case, lead to an abrupt nose down attitude. The aircraft flight manual indicates that the stall warning sign is a *"slight tail shudder prior to entry"*. The former chief pilot of AAVE, who has significant experience on this type of glider, confirmed that stalling occurs very suddenly and the warning sign is not easy to detect, especially during a turn.

Its stall speed at maximum weight and with its wings level is 80 km/h.

The minimum climbing speed recommended by AAVE for this glider is 100 - 115 km/h in turbulent air, which is to be modulated depending on the radius of the spirals.

### 2.3 Meteorological information

In the region where the occurrence flight was carried out, the wind was northerly, with a dry, convective air mass.

Cumulus clouds formed in the morning, with their base located at an altitude of about 1,200 m. These clouds were bringing showers to the north, but no precipitation was recorded in the accident area.

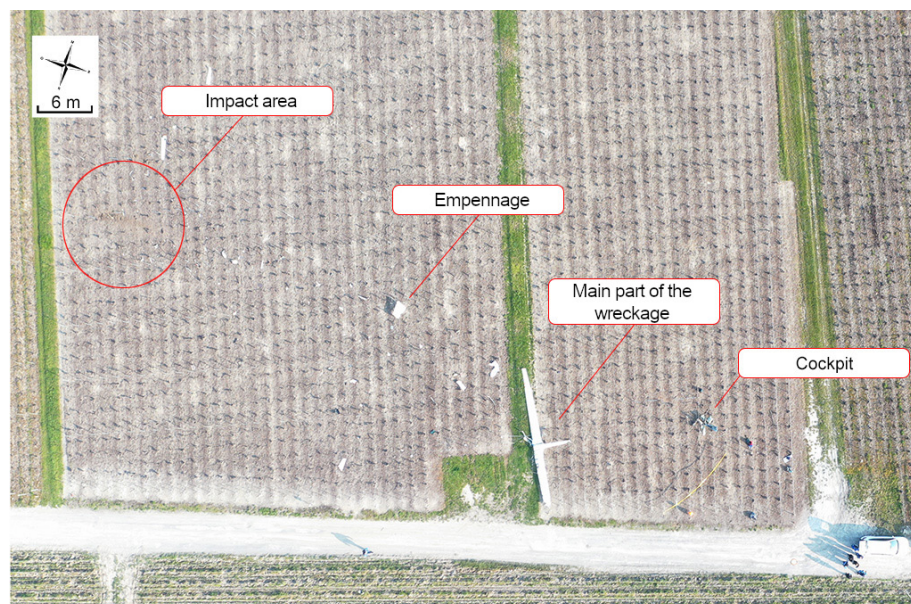
The WITEM chart at 13:00 for FL 020 (950 hPa) forecast a north-north-easterly, 10 kt wind.

The automatic METAR at 16:30 for Chalons-Vatry aerodrome, located approximately 13 NM from the accident site indicated:

- ☐ CAVOK;
- ☐ 12 kt wind from 010° ;
- ☐ visibility greater than 10 km.

AAVE pilots who flew in the same area on the day of the accident and who were interviewed for the investigation reported that the wind was locally turbulent in the low layers.

### 2.4 Site and wreckage information



Source : BEA

Figure 2: aerial view of the accident site



The wreckage was complete, scattered in the middle of a vineyard.

The cockpit was destroyed and the 4-point harness was found buckled on the seat. The pilot, who was equipped with her back parachute, was found several metres downstream from the cockpit. It was confirmed that these elements were not disturbed by the rescue services and the first people to arrive at the accident site. This configuration suggests that the pilot was not strapped into her harness.

An examination of the site and the flight controls confirmed that the glider was complete and the controls were connected at the time of the collision with the ground.

The damage to the cockpit, the fact that there was little damage to the wing-tips and the topology of the tearing of the metal wires marking out the vine furrows suggest that the glider struck the ground with a nose-down attitude and its wings level.

## 2.5 Statements

The chief pilot of AAVE indicated that the pilot of F-CIBD was a member and described her as a very experienced and careful pilot.

He stated that he was present at Buno-Bonnevaux on the day of the accident and had made several flights there, including training and aerobatics flights.

The chief pilot indicated that the pilot of F-CIBD had arrived early in the morning. She was able to attend the briefing, which included the meteorological reports and safety instructions. He said that he himself had given the briefing. He remembers that the wind was turbulent and, combined with its ascending speed, could cause severe shear in the low layers. He indicated that this type of aerology is conducive to entering autorotation. He mentioned that he had given instructions to increase airspeeds during flight phases at low height to protect against the risk of entering autorotation.

He added that he had reminded the pilots of the instructions relating to their lack of recent experience at the start of the season.

## 2.6 Glider spin

Also known as autorotation, a glider spin is caused by an asymmetric stall due to high angles of flight, excessively low airspeed, and sideslip. High-risk situations include flying in turbulence. It can be caused by a turn at a high bank angle with insufficient airspeed, which causes the pilot to lose control of the symmetry of the glider<sup>(2)</sup>.

Wind shear or turbulence are contributing factors to entering rotation, as they can cause an abrupt change in the glider's angle of attack, which sometimes results - especially when the airspeed is already close to the stall speed - in a local airflow separation, typically at the inside wing tip.

Spin recovery manoeuvres in gliders generally involve full rudder input in the opposite direction to the rotational movement at the same time as a forward stick input. An aileron input in the opposite direction to the direction of the spin is also possible in the case of the LS8 18<sup>(3)</sup> to accelerate the recovery. These techniques are part of the glider pilot's initial training and are also recalled for each glider at the time of a model-specific release.

<sup>(2)</sup> Source: Pilot operating handbook - gliding, 12th edition (Editions Cépaduès).

<sup>(3)</sup> Source: LS8-18 aircraft flight manual.

<sup>(4)</sup> Chapter 3.5 -  
Spin recovery.

<sup>(5)</sup> Global Navigation  
Satellite System,  
(incorporating  
various systems  
with international  
coverage, including  
the American GPS).

It should be noted that the application of these instructions is particularly tricky when the pilot is not firmly strapped into his seat.

In the section of the aircraft flight manual relating to spin recovery<sup>(4)</sup>, it is stated that altitude loss during recovery is approximately 100 m (300 ft).

## 2.7 Read-out of recorded data

The glider was equipped with a FLARM - a traffic awareness and collision avoidance system - which records GNSS tracks<sup>(5)</sup> in a non-volatile memory. The flight path of F-CIBD from take-off to a point near the accident site was recovered (Figures 1 and 3).

In addition, the pilot's telephone was found at the accident site. The Winlog application was installed on it. This software, which is designed for glider pilots, can record GNSS tracks. It thus stored the flight path of F-CIBD, which was similar to the flight path recorded by the FLARM. The data from this application also indicates the pilot's planned route: Buno-Bonnevaux - Villeneuve-l'Archevêque - Épernay Plivot - Bray-sur-Seine - Buno-Bonnevaux.

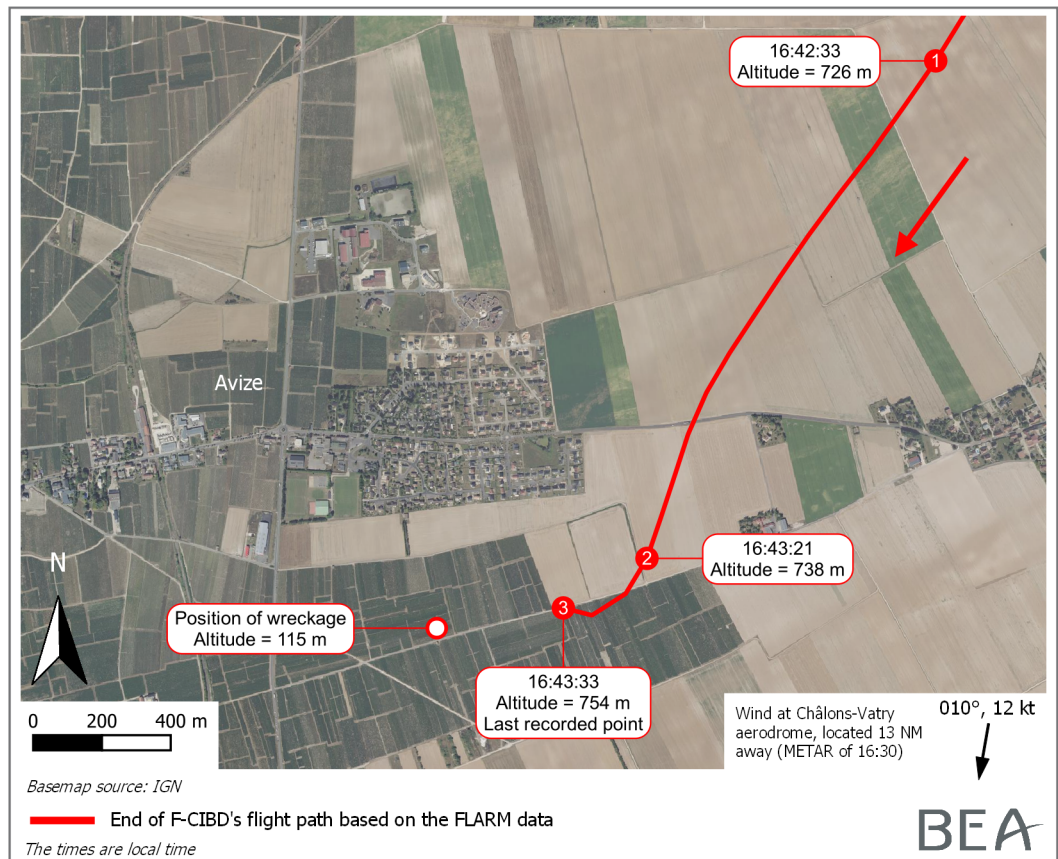


Figure 3: path during the last minute of the flight

The analysis of this data combined with wind information for the area allows assumptions to be made about the glider speed relative to the air mass between points 1 and 2 in Figures 3 and 4. The calculation method used to analyse the data gives assumptions that are robust for straight-line flight, but whose reliability decreases significantly for turns and is almost nil for climbing spirals.

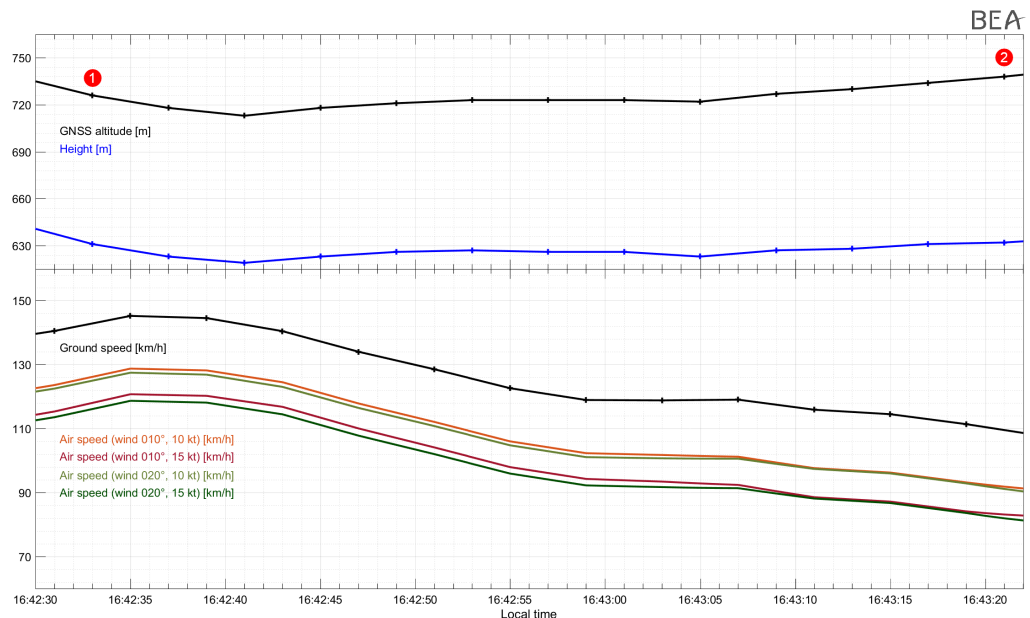


Figure 4: altitude, height and speed during the last minute of the flight

In the minute preceding the accident up to point 2, the glider was flying in a straight line, climbing slightly and its speed was decreasing. At point 2, the ground speed was about 110 km/h. Based on the wind assumptions used, the airspeed was around 85 to 90 km/h.

The sudden loss of height between point 3 and the position of the wreckage (loss of about 650 m over a horizontal distance of less than 300 m) can only correspond to a loss of control leading to a rapid fall.

## 2.8 Survival aspects/wearing a harness

### 2.8.1 Regulatory framework

In its NCO<sup>(6)</sup> section, Regulation (EU) No 965/2012, known as the "Air OPS", requires that :

- ☐ Sailplanes shall be equipped with a seat belt with upper torso restraint system with a single point release.<sup>(7)</sup>
- ☐ During the flight, the pilot-in-command [...] shall keep his/her safety belt fastened while at his/her station.<sup>(8)</sup>

<sup>(6)</sup> Non Commercial Operations.

<sup>(7)</sup> NCO.IDE.S.125 Seats and Restraint Systems.

<sup>(8)</sup> NCO.GEN.105 Pilot-in-command responsibilities and authority – paragraph (f).

### 2.8.2 Flight manual

The flight manual indicates in its minimum equipment list that the 4-point harness is one of the mandatory items of equipment for the flight.

In addition, the cockpit checklist that must be completed before take-off mentions the need to fasten the seat belt.

### 2.8.3 Operational aspects of wearing harness

In addition to the survival aspects in the event of an accident, wearing a properly adjusted harness will help to secure the pilot in his seat. This allows the pilot to keep hold of the controls, even during sudden movements.

This is particularly important for a glider, where the cockpit configuration and the sensitivity of the controls make it difficult to maintain control of the aircraft when the pilot is no longer in the nominal position.

Ground tests were conducted on an LS8-18 belonging to AAVE with a person similar in size to the pilot. The results showed that:

- ❑ When the pilot is unrestrained, his back parachute is positioned against the four-point buckle of the harness and prevents him from feeling the buckle. In addition, the shoulder straps of the parachute bag can give the pilot the feeling that his torso is correctly restrained by the harness.
- ❑ It is physically impossible for the pilot to fasten or unfasten the harness buckle behind his back once he is seated in the cockpit.
- ❑ When the pilot is not in the nominal position in his seat, it is difficult, even impossible, for him to make a full stick deflection input. With the control stick positioned between the pilot's legs, if the pilot is thrown forward or to the side without being firmly restrained, it is impossible for the pilot to control the glider.

## 3 - CONCLUSIONS

*The conclusions are established solely on the basis of the information that came to the knowledge of the BEA during the investigation. They are in no way intended to apportion blame or liability.*

### Scenario

The pilot commenced a flight in turbulent meteorological conditions.

She was sitting on the harness in its locked position. The investigation was unable to determine whether this omission was intentional or an oversight.

The flight proceeded nominally up to Épernay Plivot aerodrome. A few minutes after starting the return leg, at a height of about 630 m, the flight path curved and the glider was observed to gain height concomitantly with a decrease in airspeed.

The investigation findings indicated that the subsequent loss of control and possible autorotation were probably due to the aerological conditions combined with low airspeed while the glider was turning.

### Contributing factors

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

- ☐ Harness not being worn.
- ☐ The sudden and abrupt nature of the stall of LS8-18.

### Safety lessons

The accident to F-CIBD is the first occurrence recorded by the BEA since 1996 where the failure to wear a safety harness has been identified as a direct contributing factor. As this problem is not currently an area of particular vigilance, this accident reminds us that it is important to maintain a good situational awareness of this issue.

AAVE have introduced a visual check of the pilot's harness by the wing assistant just before take-off. These new procedures are currently being tested and have not been approved by the French Gliding Federation.

In addition, AAVE has incorporated into the training courses in unusual situations, offered to its members, a module specifically concerning the entry into a spin on high-performance gliders.