



Accident to the CAMERON - A300
registered **F-HHLC**
on 16 September 2022
at Le Liège

Time	Around 08:30 ¹
Operator	France Montgolfières
Type of flight	Sightseeing, commercial
Persons on board	Pilot-in-command and 12 passengers
Consequences and damage	One passenger severely injured and one passenger slightly injured

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, injury to passengers,
during a sightseeing flight**

Note: the BEA was informed of the severity and the nature of the injuries to the passengers approximately one month after the occurrence of the event, which was initially classified as an incident. This new information resulted in the event being reclassified as an accident and to the opening of a safety investigation. Due to this time interval, some data could not be retrieved.

1 HISTORY OF THE FLIGHT

Note: the following information is principally based on the statements of the pilot and the injured passengers.

The pilot, accompanied by 12 passengers, took off at around 07:35 for a sightseeing flight from Civray-de-Touraine – Varenne de Chenonceaux take-off site (Indre-et-Loire).

After approximately 50 minutes of flight in nominal conditions, the pilot initiated the procedure to land in a field located in the commune of Le Liège (Indre-et-Loire). The pilot stabilized his approach five metres above the ground at approximately 15 km/h (i.e. approximately 4 m/s)² and asked the passengers to adopt the safety position that he had demonstrated to them before the flight. He then flew over a low voltage line and a telephone line and repeated instructions to the passengers asking them to hold on tight. The basket touched down with a vertical speed that he estimated to be approximately 1 m/s, tipped onto its long side and dragged along the ground for approximately four metres before coming to a stop.

During the landing, one of the passengers fell onto the woman next to her, who was injured during the manoeuvre.

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

² Speed estimated by the pilot based on a GPS application installed on his mobile phone.



Figure 1: basket after the accident (Source: GTA)

2 ADDITIONAL INFORMATION

2.1 Pilot information

The 38-year-old pilot held a Balloon Pilot Licence (BPL) issued in March 2021, along with a hot air balloon class rating, groups A, B, C and D. He had totalled approximately 840 flight hours. He had carried out 35 flight hours during the previous month.

He indicated that, on the day of the accident, he prepared his flight file, which included in particular, obtaining meteorological information, checking the NOTAMs and filling in the load sheet. At the passenger meet-up location, he released a helium balloon to confirm the wind information and to determine a flight departure point that would allow him to fly over the tourist spots.

He remembered that before take-off from the chosen point, after setting up the basket, he delivered the safety briefing to the passengers in French and in English, focusing on the importance of the safety position. He specified that he demonstrated this position in person before asking the passengers to show him the position. He added that just before landing, the injured passenger and her two friends were having a lively discussion and were not paying much attention to his instructions. He remembered having to repeat his instructions to one of them several times before the passenger in question put away the telephone with which he was filming the flight and held the rope with both hands in compliance with the safety instructions. The pilot indicated that this passenger adopted a position that did not conform to the position he had demonstrated and that he continued to record the flight with his telephone. He also specified that he was able to view this recording afterwards³.

He stated that the two passengers involved in the accident had adopted the correct safety position but that they were distracted. They were therefore surprised by the impact with the ground and probably did not dampen the impact using their legs.

³ This video file was not sent to the BEA.

2.2 Injured passenger information

The passenger who was severely injured was Icelandic and aged 72 on the day of the accident. She does not speak French and communicated in English during her stay in France. She was accompanied by two friends (one of whom was slightly injured during the accident), both also Icelandic.

She indicated that the balloon “*crashed to the ground*” just as it was about to land. According to her, it bounced two or three times before tipping onto its side. She specified that she was then sat in the corner of the basket that made contact with the ground first.

After the accident, she was taken to hospital where she was diagnosed with a left leg tibial plateau fracture.

2.3 Meteorological information

According to Météo-France, on the day of the accident, the Le Liège sector had high stratocumulus clouds at daybreak, then a pretty inactive rear zone with the presence of some cumulus clouds. There was a slight wind blowing westerly to northwesterly at the start of the day.

The 07:00 automatic METAR report for Tours airport, located about 35 km away from the accident site, available before departure, gave the following information:

- light wind (below 4 kt) from 350°;
- visibility greater than 10 km;
- broken clouds at 4,400 ft;
- temperature 13°C and dew point temperature 11°C;
- QNH 1015.

The 08:30 automatic METAR report indicated:

- light wind (below 3 kt) varying in direction;
- CAVOK;
- temperature 13°C and dew point temperature 11°C;
- QNH 1015.

The TAF message for the same airport, published at 07:00, did not forecast any marked change.

The reading of the weather station at Reignac-sur-Indre (Indre-et-Loire), located approximately 10 km from Le Liège, indicated a mean wind from 310° of 2.0 m/s (i.e. approximately 3.9 kt) and a maximum spot wind from 280° of 3.6 m/s (i.e. approximately 5.8 kt) between 08:00 and 09:00.

The pilot explained that he usually obtained meteorological information from different websites, in particular [Meteociel](#), [XCWeather](#), [Windy](#) and [Meteo-Parapente](#). His flight file contained, among other information, the following meteorological information regarding the situation at 07:00 at ground level (approximately 100 m of altitude):

- atmospheric pressure 1003 hPa (which approximately corresponds to a QNH of 1013);
- temperature 12.9°C and dew point temperature 9.5°C;
- NNW wind of 7.9 km/h.

2.4 Balloon information

The hot air balloon registered F-HHLC comprises a 300,000 ft³ Cameron A-300 envelope (i.e. approximately 8,500 m³), a Cameron Shadow triple burner and a Cameron double-T basket with a maximum capacity of 14 occupants. The basket is divided into five compartments: one for the pilot in the centre and four to accommodate the passengers, two on either side of the pilot.

The OM indicates the following: *“The balloon must not be flown free, if the surface wind at the time and place of take-off is greater than: Balloons ≤ 600,000 ft³ (16992 m³): 15 knots”* (i.e. 27.7 km/h). It also specifies that this value concerns spot wind, i.e. gust speed.

2.5 Operator information

France Montgolfières is a passenger commercial balloon operator. It operates a fleet of 16 hot air balloons with capacities ranging from 2 to 16 people. It has a number of sites including its headquarters in Semur-en-Auxois (Côte-d’Or) and the site at Val de Loire in the commune of Saint-Julien-de-Chédon (Loir-et-Cher) where the Civray-de-Touraine take-off site is located.

As part of its safety management system, France Montgolfière conducted a risk study of its entire operational activity. The results of this safety study are included as an appendix to the OM.

Regarding the section pertaining to normal landings, some of the ultimately undesirable occurrences indicated are:

- sudden impact;
- tipping of the basket after impact, not announced to passengers.

The safety measures identified to prevent these occurrences in particular include:

- maximum concentration (however, it is not specified whether this measure exclusively applies to the pilot, or whether it also concerns passengers and therefore the pilot checking the passengers’ state of mind);
- checking landing position.

2.6 Passenger briefing

The French civil aviation authority (DGAC) has published [safety instructions regarding the implementation and the operation of hot air balloons](#). The Fédération Française d’Aérostation (French Aerostation Federation (FFAé)) recommends that pilots give a safety briefing before the flight, so that the passengers better assimilate the instructions. The recommendation is for passengers to be reminded of this briefing in flight, at a height sufficient enough to free the pilot from the constraints of obstacles and noise of the burners. It is also recommended that passengers practise adopting the correct position for landing before initiation of this landing phase.

All of these measures are also mentioned in Commission Regulation (EU) No 2018/395 laying down detailed rules for the operation of balloons⁴.

⁴ Refer to AMC1 BOP.BAS.115 Passenger briefing ([Version in force on the day of the accident](#)).

The instructions for the landing phase are given to the passengers during the safety briefing before inflation of the balloon. In particular, these instructions include the following: Place your back [...] against the padding. Keep your knees together, legs slightly bent and tensed. Hold firmly to the rope handles. [...] Continue to hold the handles firmly after the first contact as there may be a bounce. These measures are intended to minimise the physical consequences of impacts.

In its OM, France Montgolfières focuses on the essential nature of the passenger briefing and recommends both:

- training in the landing position before take-off, with repetition of the main instructions;
- carrying out a pre-landing briefing, including reiteration of the main instructions, as well as storing cameras and bags.

It also specifies that, in the event of communication difficulties, the use of illustrated instructions is recommended. However, neither the Icelandic passengers nor the pilot reported any difficulty in this respect.

The pilot's "pre-landing" checklist includes the "briefing repetition" item.

3 CONCLUSIONS

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

Scenario

On the day of the occurrence, the weather conditions were suitable for the scheduled flight and did not show any particular risk for the morning. On boarding, the pilot judged that the physical condition of the passengers was compatible with the flight. Before take-off, he carried out a safety briefing and in particular, showed the passengers the position to adopt for landing.

Before landing, he repeated the instructions to the passengers and asked them to adopt the safety position. Most of them complied with the instructions, but a small group continued to talk and did not immediately adopt the requested position. The balloon was at a low height at this point and the pilot had a high workload as he had to manage the flight path to avoid obstacles and prepare for the landing.

On landing, the basket tipped over and one of the passengers, probably taken by surprise, was unable to maintain the safety position and was thrown onto her friend, resulting in injuries to two people.

Contributing factors

The following factors may have contributed to the passengers suffering injuries:

- a possible lack of concentration by some passengers;
- the passengers being surprised when the basket tipped, unaware of this possibility during the landing;
- physical limits potentially exceeded given the sometimes dynamic nature of balloon landing.

Safety lessons

This event serves as a reminder of the vulnerability of passengers during balloon landings, in particular those who are unfamiliar with this activity or who are not in good physical health.

As reiterated by the BEA in the [Safety lessons 2020 for balloons](#), passengers “*may not be aware that the landing can sometimes be dynamic. Touchdown can prove rough, in particular when there is a strong wind or during an emergency descent with a high vertical speed. In these conditions, passengers may be surprised and their physical capabilities may be exceeded.*”

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