



Accident to the Lindstrand LBL 210A registered F-HGAS

on 16 June 2021

at Castelnaud-La-Chapelle (Dordogne)

⁽¹⁾Except where otherwise indicated, the times in this report are in Coordinated Universal Time (UTC). Two hours should be added to obtain the legal time applicable in Metropolitan France on the day of the event.

Time	Around 05:25 ⁽¹⁾
Operator	Montgolfière & Châteaux
Type of flight	Sightseeing, commercial
Persons on board	Pilot and eight passengers
Consequences and damage	Five passengers injured of whom two seriously injured
This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in October 2021. As accurate as the translation may be, the original text in French is the work of reference.	

Involuntary descent, hard landing, bounces, during a revenue flight

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on the pilot's statement.

The pilot, accompanied by eight passengers, took off from Cénac et Saint-Julien (Dordogne) at around 05:00 for a sightseeing flight scheduled to last one hour. About 25 minutes into the flight, the pilot initiated a descent. Having reached the desired flying height of 500 ft, the pilot was unable to stop the descent and the fast descent warning sounded, indicating a vertical speed of more than 2 m/s. The pilot activated the two burners but the balloon continued to descend. The balloon struck the ground hard and came to a stop approximately 50 m further on. The pilot secured the balloon then assisted the passengers.

2 - ADDITIONAL INFORMATION

2.1 Balloon information

2.1.1 Description

The balloon comprises a Lindstrand 210A envelope with a capacity of 5,950 m³, a Lindstrand 140x240ST basket and a Lindstrand Jetstream double burner. The basket with a single "T" partition comprises two passenger compartments with space for up to eight passengers, and a compartment for the pilot. The pilot compartment holds the required flight equipment and four fuel tanks.

The balloon is equipped with a parachute valve which provides two functions: the measured release of hot air via the valve using a white line, and a rapid deflation function activated by a red line. The red valve line can be activated to rapidly deflate the envelope by collapsing the parachute into the centre of the balloon. It is only to be used for landing.

The total weight of the balloon was within the load limits of the envelope as defined by the manufacturer.

2.1.2 Procedures

The operating procedures in the operations manual require the carrying out of a pre-flight briefing, as well as a pre-flight safety demonstration. The briefing and demonstration notably cover the landing positions to be adopted and the use of the internal handles. The safety position is also described: back to the direction of travel, passengers side-by-side, two handles held with two hands, legs bent and flexible. The pilot is required to tell the passengers when the landing is imminent, and to check the position of the passengers on board.

The normal landing procedure requires the turning off of the pilot lights prior to touchdown and, if possible, closure of the liquid valves and bleeding of the hoses, then pulling on the parachute valve line to initiate deflation of the envelope and keeping the valve open to continue deflation.

The emergency landing procedure requires pilots to inform passengers that an emergency landing is necessary and to explain the correct position to be adopted in the basket. Pilots must then ensure that their instructions are followed and lastly warn passengers just before the impact. The procedure also reminds the pilots of the need to turn off the pilot lights, to close the tank valves and to bleed the fuel hoses, if the pilot has time.

The emergency procedure to stop an involuntary descent specifies that the descent will be stopped using the burner. All available power will be used (all main burners and the whisper burner). The procedure also specifies landing as soon as possible.

2.2 Pilot information

The 44-year-old pilot held a valid balloon pilot licence issued in September 2006. He had logged 787 flight hours in 812 ascents. He was also a microlight pilot.

2.3 Meteorological information

The general situation was characterised by a south-easterly flow in a low pressure barometric swamp.

The meteorological conditions estimated by Météo-France at the accident site were as follows: surface wind from 090° to 150° of 3 to 7 kt, visibility greater than 10 km, clear sky, ground temperature of between 17 °C and 19 °C, temperature inversion between the ground and a height of 600 m (where the temperature was 23 °C), slight turbulence.

The flight plan, established by the pilot when preparing for the flight, indicated a wind of 7 kt and a planned heading at 280°.

2.4 Statements

The pilot stated that, based on his analysis prior to departure, the meteorological conditions had been conducive to safely perform the flight. He had noted the presence of several bands of fog in the valley and easterly wind conditions. With the wind at altitude being stronger and able to carry him towards a wooded area unsuitable for landing, he had planned to fly at a height of 500 ft.

The pilot confirmed that he had given the pre-flight briefing and safety demonstration.

⁽²⁾ The vertical speed indicator recorded a maximum rate of descent of -3.6 m/s.

When approaching Castelnau-La-Chapelle, he had initiated a descent in order to follow the evolution of the terrain whilst remaining at his planned height of 500 ft. He had firstly stabilised the rate of descent at -1.5 m/s, then stopped the descent shortly before reaching the height of 500 ft. Several seconds after stopping the descent, he had heard his vertical speed indicator warning indicating that the rate of descent was more than -2 m/s⁽²⁾. He had then continuously heated the envelope, initially using one burner, then realising that the balloon was continuing to descend rapidly, using both burners, practically up until the impact with the ground. He stated that he had not had time to activate the whisper burner.

Two to three seconds prior to the impact, understanding that there was nothing he could do to prevent it, he released the burners and shouted to the passengers to adopt the landing position. He thought that not all of the passengers had had the time to adopt the position.

He stated that the first impact with the ground had been very hard, on a concrete surface. He had then activated the double burner to attempt to climb and to land safely further on. However, observing that the envelope was partially deflated, he had pulled the red parachute valve line. One to two bounces later, the balloon had fallen on its side and come to a stop.

The pilot stated that usually during early morning flights, when approaching the ground, the balloon enters a fresher air mass and rises by itself. This phenomenon did not occur on this occasion. He thought that this was due to the fact that the night had been warm and that the temperature inversion had probably been less pronounced than usual.

The pilot stated that he had been flying near another balloon. The pilot of this other balloon told him that he had seen that the valve had been in the correct position when he had flown over the balloon shortly prior to the accident and that the parachute had been very flat prior to the impact with the ground and that it had opened upon impact.

The pilot did not think that he had confused the balloon lines as they differ in tautness, with the red line requiring a lot more force. He did not rule out that the red line may have got trapped and activated by itself but he strongly doubted this.

He added that he had flown in the same balloon several times since the accident flight and that it had flown perfectly.

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

After 25 flight minutes, the pilot initiated a descent to reach a height of around 500 ft. He did not manage to stop the descent, despite prolonged use of both burners equipping the balloon. He focused on managing this problem and warned the passengers of the imminent landing at a very late stage, just several seconds prior to the impact when he realised that he was unable to prevent it. The passengers did not have time to adopt the safety position. The landing was hard and several passengers were seriously injured when the balloon struck the ground.

The pilot intended to regain altitude after this first contact with the ground and did not turn off the pilot lights.

The investigation was unable to explain the involuntary descent of the balloon.

Contributing factors

The following factors may have contributed to the injury of the passengers:

- ❑ the pilot's focus on managing the involuntary descent, to the detriment of the strict application of the emergency landing procedure;
- ❑ the pilot's late announcement to the passengers of the imminence of the landing, not allowing him to check whether the passengers had correctly adopted the safety position.

Safety lessons

The application of procedures requiring the turning off of the pilot lights, followed by closure of the tank valves and bleeding of the hoses prevents the outbreak of a fire if the basket tips or turns over.