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INVESTIGATION REPORT

Accident to the Schroeder Fire Balloons G30/24 registered F-GLAU

on 20 September 2020
at Jouaville (Meurthe-et-Moselle)

Time	Around 09:00[1]
Operator	Club Montgolfières Icare
Type of flight	Sightseeing, commercial
Persons on board	Pilot and two passengers
Consequences and damage	Balloon severely damaged

This is a courtesy translation by the BEA of the Final Report on the Safety Investigation published in January 2021. As accurate as the translation may be, the original text in French is the work of reference.

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

Collision with power line during landing

1 - HISTORY OF THE FLIGHT

Note: the following information is principally based on statements and data from the Hot Air application installed on the pilot's tablet.

The pilot took-off from Maizières-lès-Metz (Moselle) at around 08:10 with two passengers for a sightseeing balloon flight [2]. After around 50 minutes of flight, in anticipation of landing, he flew over a field free of obstacles at less than five metres of height. He observed that the wind was strong, 14 km/h according to the application installed on his tablet. He activated the burners and climbed to a height of 40 metres. He then notified the passengers of the safety instructions, with a view to landing.

[2] 3,000 m³ envelope, two burners and basket with a capacity for five persons.

At the end of the safety briefing, the pilot observed that the risers of the balloon's basket were at the same height as a medium-voltage power line that he had identified earlier. With the balloon a few dozen metres from this power line, in descent, the pilot decided to land before the line and pulled on the valve line[3]. He landed around 15 metres from the power line with the basket upright. Pushed by the wind, the balloon moved closer to the power line and its envelope touched the cables that broke and partially tore the envelope. Electric arcs burned some of the envelope's panels.

[3] The balloon was not equipped with a rapid deflation device.

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2 - ADDITIONAL INFORMATION

2.1 Accident site information

A 20,000 V power line at a height of approximately six metres, comprising three cables, crosses the uncultivated field practically perpendicularly to the balloon's path. The poles are spaced around one hundred metres apart. This power line is located approximately 500 m from the area flown over at low height two minutes earlier.

Source: operator

Accident site

2.2 Meteorological information

The pilot stated that he had consulted the meteorological forecasts using the Hot Air application on his tablet, the day before and on the morning of the accident flight. The forecasts indicated a slight ground wind at less than 10 km/h, gusting and picking up to around 20 km/h at altitude.

The aerological conditions estimated by Météo-France between 08:00 and 09:00 were:

- on the ground, 5 to 10 km/h north-easterly wind;
- at 2,000 ft of height, 20 to 30 km/h east-north-easterly wind.

The analysis of the path recorded by the Hot Air application shows the following:

- During the first minute of flight (height approx. 10 m), the wind had an average strength of 5 km/h.
- During the last two minutes of flight (between the low-height flyover and landing), the wind had an average strength of 15 km/h.

The balloon flight manual specifies that the maximum wind speed permitted for a commercial flight should not exceed 10 kt (slightly less than 20 km/h), even less for novice pilots, during take-off and landing.

2.3 Pilot information

The 40-year-old pilot held a free hot air balloon pilot licence issued in 2011. At the time of the accident, he had logged 220 ascents, essentially for sightseeing flights, 19 of which in the last three months.

2.4 Pilot's statement

The pilot explained that he had not taken the time to brief the passengers on the safety instructions before the flight, as they had already been called upon to implement the balloon. With the wind being calm, he had planned to give this briefing during the flight.

During the briefing that he gave after regaining a little height, the pilot let the balloon lose altitude. He stated that the basket had turned perpendicularly to the path, and that he was no longer facing the direction of flight. He stated that the balloon's forward speed had taken him by surprise. When he finished briefing the passengers on the safety instructions, he observed that the balloon was very close to the power line. He therefore decided to land before the power line. He estimated that activating the burners would not have enabled him to avoid collision with the power line. He asked the passengers to adopt the safety position and had time to shut-off the gas cylinders.

2.5 Operator

Sightseeing flights carried out by the operator fall within the framework of a commercial operation in accordance with the provisions of regulation (EU) 2018/395 on the operation of balloons. The operator has an operating manual in compliance with the requirements of Subpart ADD of the regulation. The operator only operates one balloon. The operating manual specifies that the pilot-in-command must ensure that passengers are briefed on normal, abnormal and emergency procedures before and, as required, during the flight.

2.6 Safety briefing

The Fédération Française d'Aérostation (French Aerostation Federation (FFAé)) urges pilots to give the safety briefing before the flight. On the ground, it is easier to demonstrate the position and to check that passengers have correctly understood the instructions.

In flight, a reminder of the safety positions then suffices. The ground and obstacle overflight height is 150 m except for the purposes of take-off or landing. Giving the briefing at a sufficient height relieves the pilot of any constraint, in particular obstacles, as well as the noise of the burners.

2.7 Collision with a power line

The Guide Pratique du Pilote de Montgolfière (Practical Guide for Balloon Pilots) [(4)], the balloon flight manual and the FFAé during the "Training and Exchange Days" recommend the same procedure if a collision with a power line seems unavoidable, i.e. if the balloon passes under the path of the power line or if the power line is just ahead. Pilots are advised to pull immediately on the valve line to lose height. The landing will be hard, but it is better that the power line comes into contact with the balloon envelope rather than with the basket or risers as this could cause more extensive damage (e.g. explosion of gas cylinders). This could be the case if an attempt is made to clear a power line.

[(4)] Published by Cépaduès, 2nd edition.

The Balloon Flight Manual specifies that:

- It is easier to maintain or to increase the horizontal climbing and descending movement of a balloon rather than to reverse the direction of the movement.
- In stable horizontal level flight, the balloon reacts quicker in descent than in climb.

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

The pilot made a sightseeing flight with two passengers in a hot air balloon. He did not give a safety briefing on the ground before the take-off and planned to give the briefing during the flight.

Shortly before landing, he made an overflight at low height to, according to him, assess the strength of the wind. He had noticed the presence of a power line in the balloon's flight path earlier. He observed that the strength of the wind had increased. He activated the burners to regain height, then gave the safety instructions to the passengers with a view to landing.

During the briefing, he was not concentrating on the path of the balloon which, pushed by the wind and in descent, closed in on the power line. The basket had turned and the pilot was no longer facing the direction of travel. After the briefing, estimating that it would not be possible to avoid collision with the power line, the pilot decided to land before this line by pulling on the valve line.

The balloon envelope came into contact with the power line after the basket had touched down.

Contributing factor

The pilot's decision to continue with the landing phase whilst giving the safety instructions to the passengers contributed to the collision with a power line during landing. In doing so, the pilot was distracted and was not aware of the risk of imminent collision with the power line early enough.

Safety lessons

Safety instructions
The safety instructions for landing must be presented before take-off then repeated during the flight when preparing for landing, at a height that is sufficient enough to enable the balloon to clear any obstacles.

Collision with an obstacle
The pilot's decision to pull on the valve line instead of attempting to fly over the obstacle, in this case the power line, lessened the consequences of the collision. Indeed, clearance of the obstacle was not guaranteed given the inertia of the balloon with a descent path.