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Safety Investigation Report

Ref. AAIU-2025-05-01-02
Issue date: 21 November 2025
Status: Final

Scope: Data-collection only

As per ICAO Annex 13 and EU regulation EU 996/2010, decisions regarding whether to conduct a civil aviation safety investigation, and the extent of an investigation, are based on many factors, including the level of safety benefit expected to be drawn from such an investigation.
For this occurrence, a data-collection only report has been produced, detailing the factual information as received in the initial notification and any follow-up enquiries. In the absence of a real investigation, they allow for awareness amongst the aviation community of potential safety issues and possible safety actions. The AAIU did not verify the accuracy of all information.

SYNOPSYS

Occurrence class	Accident
Occurrence category	Collision with obstacle(s) during take-off and landing (CTOL)
Date and time[1]	Thursday 01 May 2025 18:35 UTC
Location	Tongeren – Borgloon 50°47'39.42"N - 5°20'35.92"E
Aircraft	Kubicek BB 92Z
Aircraft category	Lighter-than-air - Hot Air Balloon
Location of departure	Ordingen (Sint-Truiden)
Planned destination	Not determined
Type of operation	Commercial Passenger Ballooning
Phase of flight	Landing
Injuries	1 serious, 1 minor
Aircraft damage	No damage

[1] All time data in this report are indicated in UTC, unless otherwise specified

1. THE OCCURRENCE

The balloon took off from a field bordering the castle of Ordingen, Sint-Truiden for a commercial flight executed by a declared operator (as per rule BOP.ADD.100) with 16 passengers and 1 pilot on board. After about 50 minutes, the landing was initiated with the intention of approaching a grass field located behind a fruit orchard. The passengers assumed the backwards landing position in the basket. Reportedly, due to descending too quickly, a misjudgement of the angle of descent was made, causing a wooden pole in the orchard to be hit and the basket to be slung against a fruit tree, which slowed the balloon down. 2 passengers were injured during that sequence. However, all the passengers remained in the basket after the impact upon the final touchdown.

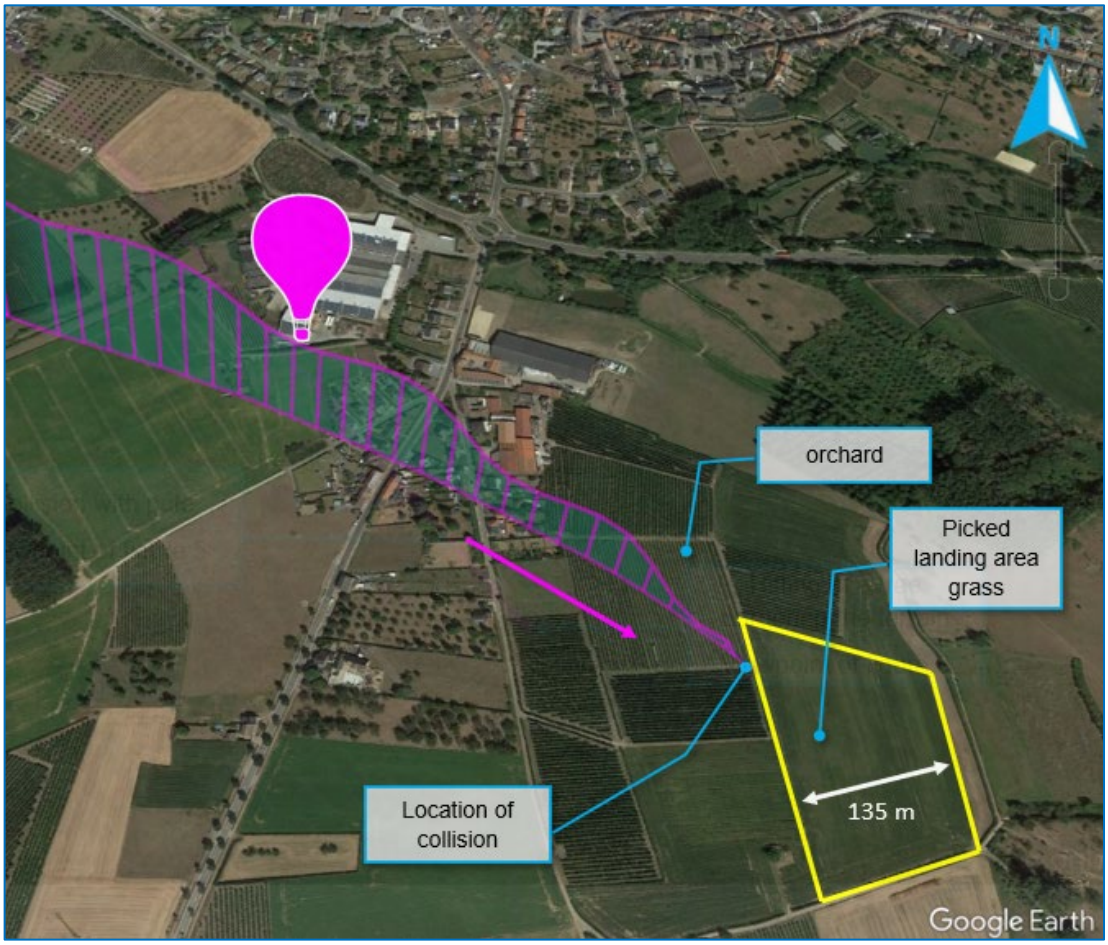

Figure 1 : last portion of the flight, retrieved from the recording via the app 'Hot Air'

2. CONTEXTUAL INFORMATION

2.1 Personnel information

Table 1 : General pilot data

Age	53
License	EASA BPL initially issued by Belgian CAA on 21 November 2006
Ratings	Hot-air balloon group D[2] Commercial operation hot-air balloon
Medical	Class 2 (PPL) valid until 31 October 2025 LAPL valid until 31 October 2026

Table 2 : Declared experience

Total time:	382,25 hours
Total previous 180 days:	6,2 hours, 6 flights
Total previous 30 days:	4,2 hours

2.2 Aircraft information

Table 3 : General aircraft data

General	
Manufacturer	BALÓNY KUBÍČEK spol. s r.o.
Model	BB 92Z
Volume	9 200 m³ (Group C hot-air balloon[3])
Year of built envelope	2022
Registration	Registered since 31 March 2022 by the Belgian Civil Aviation Authority
Burner type	Kubicek Ignis Plus - 4 burner units
Basket model	Double T-partitioned K60TT - 380 cm x 160 cm
Year of built basket	2023

Figure 2 : K60TT basket (Source : Kubicek)

[2] Group D: hot-air balloons with an envelope capacity of more than 10 500 m³

[3] Group C: envelope capacity between 6 001 m³ and 10 500 m³

Weight

There was fuel on board for a flight of one hour + 30 minutes reserve.

Table 4 : Weight calculation

Empty mass:	Envelope Basket Burner	290 kg 400 kg 77 kg
Payload:	Passengers + pilot Fuel cylinders	1399 kg 260 kg
Total mass:		2426 kg

Minimum landing weight (MLW) is 1450 kg. The balloon was certainly high above at landing.

2.3 Meteorological information

The ballooning bulletin issued by Skeyes at 14:30 UTC for the period between 2 hours before and 1 hour after sunset (which was on 19:03 that day in Brussels) gave the following general weather info:
Partly cloudy with a few cumulus and altocumulus clouds between 6000 and 8000 feet, and dry weather overall. A convergence line was expected along the Tournai–Turnhout axis to form between the sea breeze and inland winds, bringing a slight (20%) risk of isolated rain showers. The wind for the region northwest of that line was forecasted to be 340-020/06-09 kt, with maxima to 14-16 kt, becoming 000-040/04-06 kt around sunset. Southeast of that line was the wind expected to be 190-230/04-07 kt, becoming 150-190 and 04 kt or 2-3 kt from a variable direction around sunset.

Table 5 : Actual decoded meteo reports from aerodromes in the vicinity

Source:	**METAR Beauvechain (EBBE)**	**METAR Liège (EBLG)**	**METAR Maastricht (EHBK)**
Distance from site:	21 nm west	10 nm south-southeast	17 nm northeast
Time:	18:25 UTC	18:20 UTC	18:25 UTC
Average wind directions and speed:	Variable wind direction 2 kt	300° 3 kt	Variable wind direction 2 kt
Visibility and sky condition:	NCD: No Cloud Detected	CAVOK: Ceiling and visibility OK	Visibility 10 km or more No significant clouds
Temperature	24°C	23°C	24°C
Dew point	06°C	08°C	07°C
Altimeter (QNH)	1015 hPa	1016 hPa	1015 hPa
Trend forecast	No significant change	No significant change	No significant change

The predicted convergence line was therefore located a bit further. The local conditions were clearly influenced by the sea breeze.

2.4 Impact information

The impact sequence, as described by the pilot, is outlined below and illustrated in Figure 3:

1. The balloon approached the terrain with the longer side of the basket aligned with the flight direction. All passengers (marked in green) were in a backward-facing position. The pilot (marked in blue) was standing in the central compartment, which also housed the gas cylinders.

2. The pole was hit at the right-hand site of the basket, causing the basket to pivot clockwise.

3. The basket shifted its position relative to the flight direction and was reportedly slowed down by the fruit trees below. As a result, three passengers fell onto passenger P1, causing serious injuries. Passenger P2 struck his head against the basket.

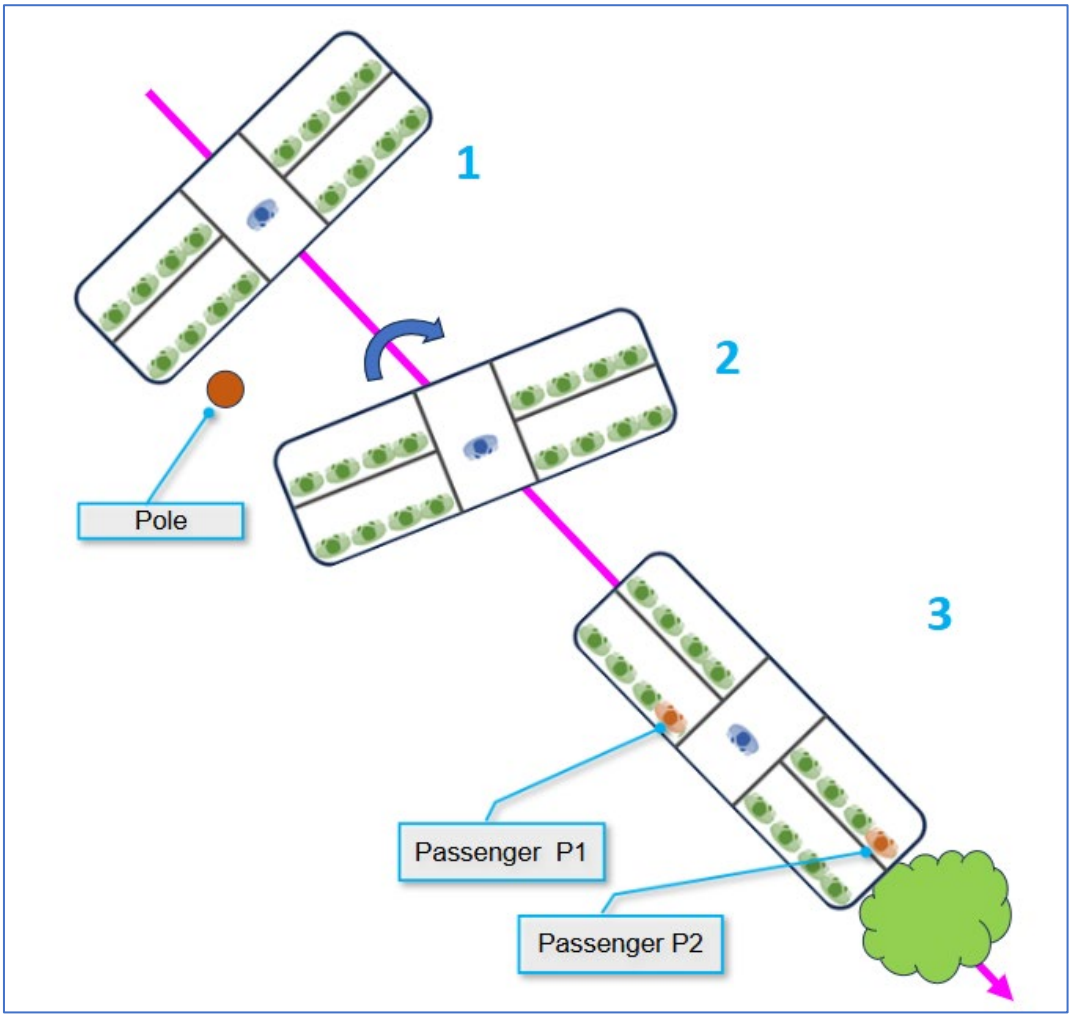

Figure 3 : impact sequence (looked from above)

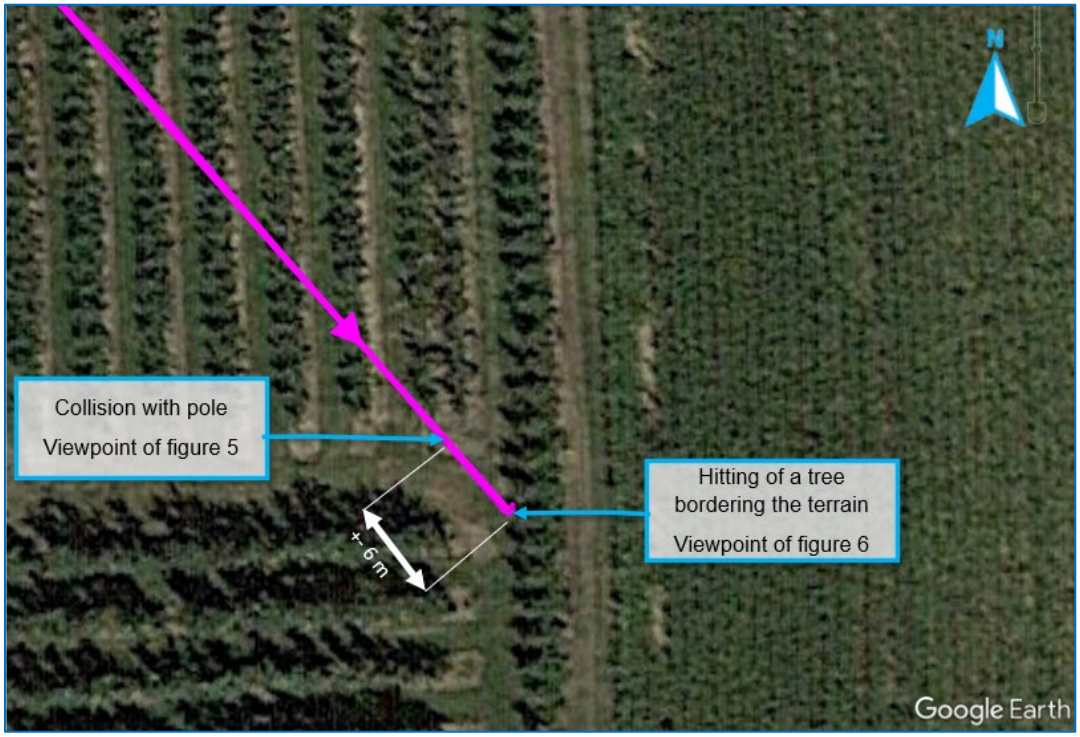

Figure 4 : zoomed-in image of the last portion of the flight

Figure 5 : pole

Figure 6 : broken tree (both pictures provided by the pilot)

2.5 Pathological information

Passenger P1, a 60-year-old woman, sustained broken ribs and a fractured collarbone, injuries classified as serious. She reported having no pre-existing medical conditions that could have increased her risk.

Passenger P2, also 60 years old, struck the interior of the basket due to the lateral impact. Wearing glasses at the time, he suffered an ear injury that required surgical intervention.

2.6 Regulation

Some relevant extracts from the European initial airworthiness rules concerning the safety of occupants;

CS 31HB.59 Baskets

(a) The basket may not rotate independently of the envelope unless:

(1) the rotation is under control of the pilot; and

(2) entanglement of operating lines is prevented. (See AMC 31HB.59(a))

(b) Each projecting object on the basket, that could cause injury to the occupants, must be padded. (c) Occupants of a basket must be protected during hard or fast landings against:

(1) falling from the basket;

(2) serious injuries. (See AMC 31HB.59(c))

(d) When more than six occupants are carried, the basket must be divided into compartments, each containing not more than six occupants.

(e) Where basket proportions and compartmentation are such that more than one occupant may fall on top of another during landing, there must be means to minimise this possibility. (See AMC 31HB.59(e))

Figure 7

AMC 31HB.59(e)
Baskets

Alignment of the basket for landing using turning vents or a drag rope or an equivalent feature and Flight Manual instructions specifying that the basket should be aligned to land on one of its longer sides can be used to show compliance to this requirement. No more than two occupants may be positioned in the landing direction without means to prevent them from falling on top of each other.

Figure 8

3. DISCUSSION

3.1 Causal factors

From the recordings via the 'Hot Air' app, it appears that the impact occurred at a final ground speed of 5 knots, which is also confirmed by the pilot. The pilot stated that he made a misjudgement, which led to a rush of action at the end, forcing him to descend too quickly and resulting in a higher speed.
As an influencing factor/precursor, he mentioned that he was likely somewhat distracted ('interruption of attention'), as just before landing they were still searching for a landmark: the artwork *Reading Between the Lines*, a ten-metre-high see-through church, located slightly further downwind.

3.2 Consequences

The regulations specify that no more than two occupants may be positioned in the landing direction without means to prevent them from falling on top of each other. This requirement was met during the approach. It was only due to the collision with the pole that the basket rotated, causing the seriously injured passenger P1 to bear the weight of three other passengers due to inertia.
The regulation was primarily designed with the most common scenarios in mind—such as heavy landings and tip-overs—and the associated occupant kinematics.
Requiring a separate compartment for each passenger would not outweigh the safety benefit.

The posture (backwards landing position) before the collision was also deemed adequate according to the UK CAA Paper No. 2006/06, *Evaluation of and Possible Improvements to Current Methods for Protecting Hot-Air Balloon Passengers During Landings*, which examined various scenarios, including hitting an obstacle at a corner of the basket. Although the backwards landing position was considered less safe when an obstacle is hit during landing, the study concluded that for most scenarios considered, the backwards landing position in a double T-partitioned basket is safer than the sideways position.

The referenced study also recommended to let the most vulnerable passengers in a double T-partitioned basket be in the front compartments of the basket and the strongest passengers in the back compartments. Passenger P1 was therefore theoretically in a safer position.

4. SAFETY ACTIONS AND RECOMMENDATIONS

*A **safety issue** is a safety factor that (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organization or a system, rather than a characteristic of a specific individual, or characteristic of an operational environment at a specific point in time.*

*A **safety action:** the steps taken or proposed to be taken by an organization or agency on its own initiative in response to a safety issue.*

*A **safety recommendation** is a proposal by the safety investigation authority in response to a safety issue and based on information derived from an investigation and/or study. It's aimed to improve the safety of an organisation and/or system and therefor always addressed to an organisation and/or agency, never to a specific individual. The sole purpose of a safety recommendation is the prevention of accidents or incidents and the reduction of the consequences of such occurrences. It, in no case has the purpose of creating a presumption of blame or liability for an accident or incident. Neither does it reflect the level of contribution to a specific accident or incident.*

*A **safety lesson learned** is the knowledge and insight gained through an individual's experience, intended to be applied to prevent similar events from occurring in the future.*

*A **safety message:** An awareness which brings to attention the existence of a safety factor and the lessons learned. AAIU can distribute a safety message to a community (of pilots, instructors, examiners, ATC officers), an organization or an industry sector for it to consider a safety factor and take action where it believes it appropriate. There is no requirement for a formal response to a safety message.*

Afterwards, the pilot shared the following personal safety lessons learned from the accident:

- To make the descent in this approach more gradual, as was done in all previous approaches/landings.
- Fly longer at a lower altitude to further reduce speed before landing.
- Pay attention to obstacles along the landing path and ensure sufficient altitude.

The operator stated that after the accident it first had the pilot accompany another pilot a few times. After that, he continued flying solo for the rest of the season.

The AAIU didn't identify any systemic safety issue and therefore has no additional safety recommendations.

ABOUT THIS REPORT

General	
What?	Safety investigation reports are a technical document that reflects the views of the investigation team on the circumstances that led to the accident or serious incident and is conducted in accordance with Annex 13 to the Convention on International Civil Aviation and Regulation (EU) No 996/2010.
Objective	**The sole objective of safety investigations is the determination of the causes, and to define safety recommendations in order to prevent future accidents and incidents. It is not the purpose of this investigation to apportion blame or liability.** In particular, Article 17-3 of Regulation (EU) 996/2010 stipulates that the safety recommendations made in this report do not constitute any suspicion of guilt or responsibility.
Investigation authority	The Air Accident Investigation Unit of Belgium (AAIU for the rest of this publication). It is the Belgian permanent national civil aviation safety investigation authority as defined in Article 4 of Regulation (EU) No 996/2010 and established in accordance with the Royal Decree of 26 December 2022. This unit is part of the Federal Public Service Mobility and Transport and is functionally independent from the Belgian Civil Aviation Authority and other interested parties.
This investigation	
Investigation initiation	AAIU was notified of the occurrence via a report via e-mail the day after. There was no deployment on site.
Scope	Data-collection only For this occurrence, a data-collection only report has been produced, detailing the factual information as received in the initial notification and any follow-up enquiries. In the absence of a real investigation, they allow for awareness amongst the aviation community of potential safety issues and possible safety actions. The AAIU did not verify the accuracy of all information.