Air Accident Investigation Unit (Belgium)
Federal Public Service Mobility and Transport
info.aaiu@mobilit.fgov.be
www.aaiu.belgium.be

Safety Investigation Report

Ref. AAIU-2022-06-04-01
Issue date: 20 August 2025
Status: Final

Scope: Limited

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 limited-scope, fact-gathering investigation and analysis was conducted in order to produce a short summary report. The investigation mainly focussed on the actions and conditions directly relating to the occurrence and might not cover all aspects of the aircraft operation and/or possible underlying safety factors due to the expected safety benefit of it and/or the extent of evidence/resources available.

SYNOPSYS

Occurrence class	Accident
Occurrence category	Abnormal runway contact (ARC)
Date and time[1]	Saturday 4 June 2022 19:47 UTC
Location	In a field on the eastern edge of the village Xhendremael (Ans), Belgium
Aircraft	Schroeder Fire Balloons G 34/24
Aircraft category	Lighter-than-air - Hot Air Balloon
Location of departure	A field in Landgraaf, The Netherlands
Planned destination	Gronsveld (Eijsden-Margraten), The Netherlands
Type of operation	Non-commercial - Cross-country
Phase of flight	Landing
Injuries	1 passenger seriously injured
Aircraft damage	No damage

What happened

A hot air balloon made a hard landing in Ans, resulting in a passenger being seriously injured.

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

1. THE OCCURRENCE

This narrative is based on witness accounts of the pilot and the passengers, and radar data.

The hot air balloon took off in Landgraaf, The Netherlands, around 18:00 UTC with 3 passengers and the pilot on board after a start where, as witnessed by the pilot, wind gusts occasionally flared up. The intention was to eventually land at the southern part of Maastricht (Gronsveld – Eijsden). The pilot always flies for an hour before looking for a landing spot.

Since Gronsveld was reached faster than expected, the pilot decided to cross the Maas towards Eben-Emael to try to find a suitable spot there. However, no suitable spot was immediately found due to cement quarries and agricultural crops. After several attempts to land the balloon on a road, the flight continued due to the high ground wind.

According to the pilot, this lasted for over half an hour. Then they encountered power lines, both medium voltage (at house height) and high voltage. The passengers were warned and briefed to take the safety position. The basket was orientated with the long side perpendicular to the direction of travel. The landing near the village of Xhendremael was quite hard, with the passengers falling over each other. Reportedly, there was a drag of about 30 meters before the balloon came to a stop. The passengers left the basket after the pilot's signal. Eventually, one passenger suffered a complex ankle fracture.

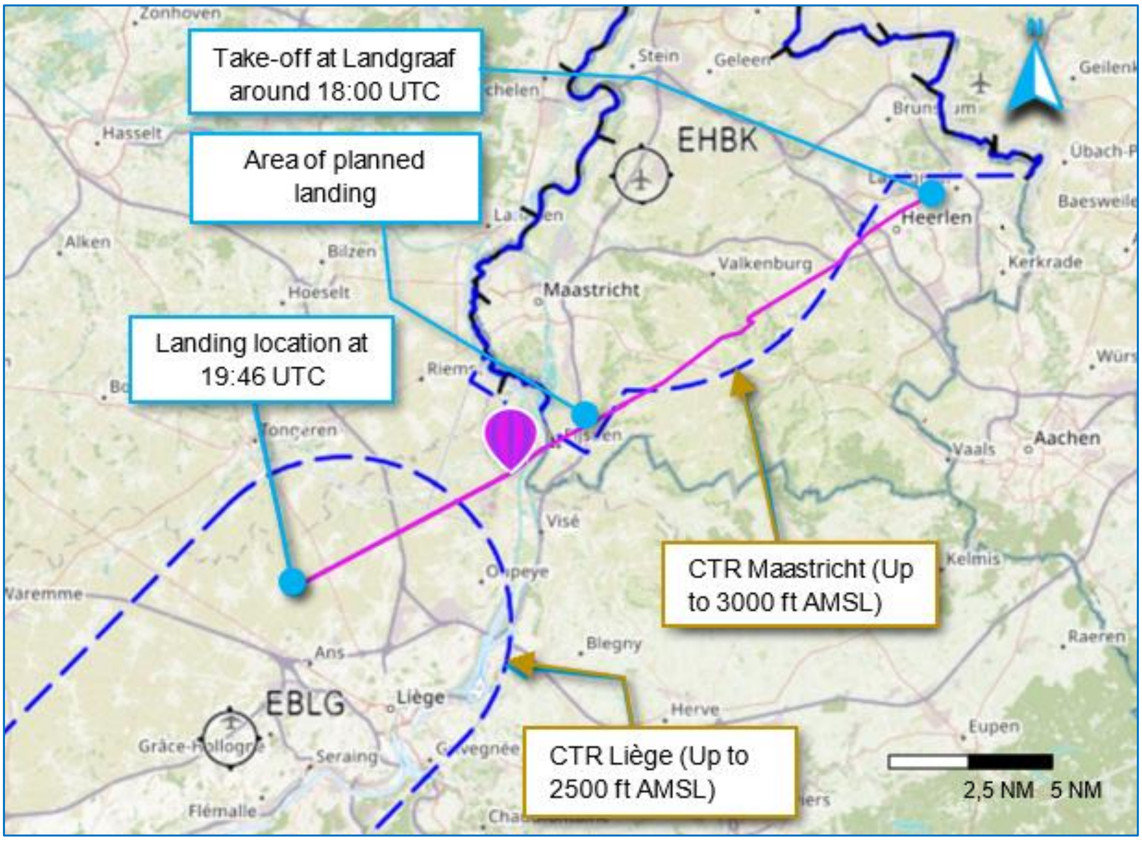


Figure 1 :flight reconstructed with radar data

Figure 2: last portion of the flight and location of the landing

Not long after crossing the Maas, the balloon entered and infringed the control zone of EBLG. The control tower tried to contact the pilot, also via the tower of EHBK with whom the pilot had previously been in contact, but to no avail. One departing aircraft was warned and asked to maintain a good climb rate, but ultimately this had no further impact on air traffic.

Witness account of a passenger

The flight was with a friend. They didn't know the pilot beforehand and had found the balloon flight via Google. They contacted a local company with good reviews. The flight was booked about 2 months in advance.
They had to help inflate the balloon. There was a brief briefing beforehand; when the pilot said so, they had to get in immediately. Upon landing, they had to slightly bend their knees. There were also rope handles provided to hold onto.
The lift-off was different than the passenger had expected. The balloon was initially tethered to the car and immediately swayed from left to right... there was a lot of wind. Her friend panicked right away. The pilot said he would ascend quickly to get out of the ground wind gusts. The flight itself went well.
It was said beforehand that they would land after an hour. However, the pilot didn't immediately find a suitable landing spot. An hour became an hour and five minutes, an hour and ten minutes... there was some unrest in the basket.. Eventually, after a voltage line, they attempted to land in what she thinks was a barley field (her hair was full of grains afterward). The pilot didn't announce anything before this landing. The descent itself was still calm. The basket tipped over, causing her friend to fall. Then they went back up, three times.

Suddenly, they saw another high-voltage line approaching. She ducked because she didn't want to see them hit the high voltage. Eventually, the pilot gave a lot of gas and they got over it. When asked if this was normal, the pilot said it was due to the wind.
The next landing attempt was much harder. They went back up from the ground seven times. Her friend wanted to jump out, but the pilot said everyone had to stay in the basket. Eventually, the balloon kept dragging until the air was out. No idea when the third passenger sustained the fracture. Her friend was also lying down and had someone on her stomach. Everyone was ultimately injured and had abrasions with bleeding. There were witnesses who immediately came over and offered to call an ambulance. Both the male passenger and the pilot didn't think it was necessary.

2. CONTEXTUAL INFORMATION

2.1 Personnel information

Table 1 : General pilot data

Age	78
Licence	EASA BPL issued by the Dutch Civil Aviation Authority on 7 April 2021 Before transition to EASA-BFCL, he was holder of a national Commercial Pilot License (CPL) with Free balloon (FB)-rating, initially issued in 2003
Ratings	Hot Air Balloons Group A[2]
Medical certificate	LAPL

Table 2 : Flying experience pilot

Total time:	1032,15 hours
Total Past 90 Days:	22,3 hours
Total Last month:	4,45 hours

2.2 Aircraft information

Table 3 : General aircraft data

General	
Manufacturer	Theo Schroeder fire balloons GmbH
Model	G 34/24
Volume	3400 m³
Year of built envelope	2005
Registration	Registered since 10 July 2019 by the Dutch Civil Aviation Authority
Burner type	Double burner – Schroeder FB6
Basket model	VI/6 - 175 cm x 125 cm
Year of built basket	1996

EASA Type certificate datasheet no.: EASA.BA.016 and EASA.BA.010.

The envelope was provided with turning vents and a simple parachute (deflation) system.

[2] Group A: hot-air balloons with a maximum envelope capacity of 3 400 m³

Weight and balance

The pilot reported he had four 'VA 50' fuel cylinders on board, each weighing 36 kg when filled. Fuel capacity of each cylinder is 21.2 kg.

Table 4

Empty mass:		240 kg
Payload:	*Passengers:*	*225 kg*
	Pilot:	*100 kg*
	Fuel cylinders:	*144 kg*
		469 kg
Total mass:		709 kg

Maximum mass is 1040 kg.

Minimum landing mass (MLM) including fuel reserve is 495 kg. With an estimated fuel consumption of 35 kg/hour, the final mass was well above this MLM.

Relevant information flight manual

3.4. Wind speed

The balloon flight is to be cancelled when the ground wind speed at the take-off site exceeds 15 knots or gusts occur with a velocity of more than 10 knots above average wind velocity or when on excess during landing is probable. Of course the maximum velocity stated in the permission for take-off is authoritative.

The values stated above are absolute maximum values. The pilot should set the maximum limit to 10 knots for take-off and landing at usual sports flights and commercial balloon flights (beginners even less). The statistics of accidents shows that the very most of the heavy accidents happen at landing speeds above 10 knots. Inexperienced passengers often have difficulties already at a landing speed of 10 knots even if they have been instructed beforehand. The maximum limit of 15 knots has been set for e. g. competitions at which experience pilots take-off in small balloons alone or with competition-experienced occupants (co-pilots or observers).

Figure 3

5.6.1. Landing site selection

- free of power lines, buildings and animals
- The landing site should be accessible to vehicles if possible
- the faster the wind on the ground possibly the longer is the required landing site.
- Is the landing site suitable for a possible landing abort?
- Do not land towards obstacles

5.6.2. Instruction of passengers

- Hold tight with both hands and bend knees slightly
- Give notice that the basket might tip over at a drag landing
- Do not position head above cylinders to avoid injuries during touch down
- The passengers should also look out for obstacles especially power lines (The urgency of this instruction should be adjusted to the prevailing weather and ground conditions)
- The passengers must not leave until instructed to do so by the pilot.

5.6.3. Descent for landing

For descending towards the selected landing site, let the balloons cool and initiate the descent. The rate of descent is controlled by short burner operation, sufficient distance to possible obstacles should always be maintained at the same time.

The rate of descent also depends on the wind speed.

At calm weather a low rate of descent may be chosen, whereas at stronger winds one should be prepared for a harder landing. Whereby the basket can tip over and can also drag over the ground. This is less dangerous if the passengers obey the instructions of the pilot. The rate of descent is also controlled by operation of the burner and the valve system of the envelope.

The landing side of the basket is turned across to flight direction by short operation of the turning vent of the envelope, if fitted. Shut pilot light and cylinder valves immediately before touchdown. The rip line is operated by the pilot who also holds tight during touchdown.

Figure 4

2.3 Meteorological information

2.3.1 Synoptic

On the flank of a high-pressure system over Scotland, a northeasterly flow was bringing in polar air. A depression system over northern France was slowly moving northward. The associated warm front was located just south of the French/Belgian border at 18 UTC.

Sunset was 21:44, end of civil twilight (=beginning of night) was at 22:28.

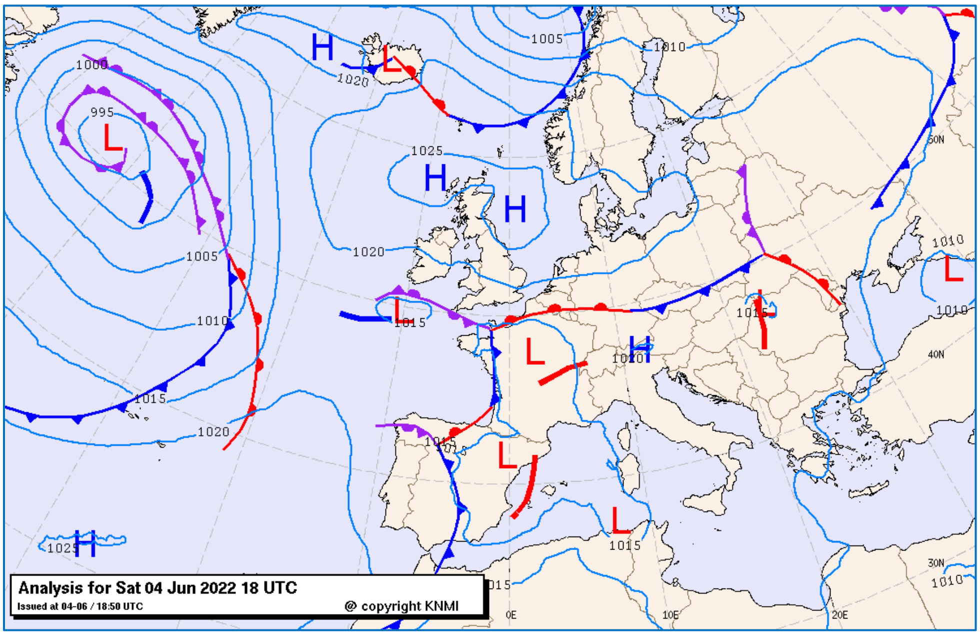


Figure 5 : Surface analysis chart

2.3.2 Actual conditions

Near take-off site

Source:	**METAR Maastricht Aachen Airport (EHBK)**	
Distance from take-off site:	Approx. 9 nm west	
Time:	17:25 UTC	17:55 UTC
Average wind directions and speed:	50° - 11 kt	50° - 10 kt
Variable wind directions:	20 to 80°	Not indicated
Visibility and sky condition:	Visibility 10 km or more No significant clouds[3]	Visibility 10 km or more No significant clouds
Temperature	25°C	25°C
Dew point	14°C	14°C
Altimeter (QNH)	1017 hPa	1017 hPa
Trend forecast	No significant change	No significant change

The decoded SYNOP[4] data gave a wind gust speed of about 13.6 knots at 18:00 UTC for EHBK.

[3] No clouds below 5000 feet and no cumulonimbus or towering cumulus clouds

[4] SYNOP (surface synoptic observations) is a standard code managed by the World Meteorological Organization (WMO) for reporting weather and climate observations, similar to METAR reports, used around the world to share data from manned and automated weather stations

Near landing site

Source:	**METAR Liège Airport (EBLG)**	
Distance from take-off site:	Approx. 4 nm south-southwest	
Time:	19:20 UTC	19:50 UTC
Average wind directions and speed:	60° - 11 kt	60° - 11 kt
Variable wind directions:	20 to 80°	Not indicated
Visibility and sky condition:	CAVOK	CAVOK
Temperature	23°C	22°C
Dew point	14°C	14°C
Altimeter (QNH)	1017 hPa	1017 hPa
Trend forecast	No significant change	No significant change

No information on wind gust speeds at the time of landing was provided in the SYNOP report.

2.3.3 Weather forecasts for hot air balloons

The Netherlands

For the territory of the Netherlands, the Royal Netherlands Meteorological Institute (Dutch: Koninklijk Nederlands Meteorologisch Instituut, KNMI) issues the Balloon Flight Forecast (Dutch: Ballonvaartverwachting).

The forecast area covers the whole of the Netherlands, except for areas over open water (North Sea, IJsselmeer, Wadden Sea). The forecast can be zoomed in on three regions: North, Central, and South.
The forecast is updated four times a day and is available at 03, 09, 15, and 21 UTC. It consists of a graphical wind forecast obtained directly from model output. Both a morning and an evening forecast are available.
During a large part of the daylight period, the evening forecast is provided with an additional explanation, the so-called regional forecast. This regional forecast (made at 09, 12, and depending on the length of the day, also at 15 UTC) is monitored and amended if necessary.

The complete Balloon Flight Forecast issued on 14:49 UTC is in appendix 1 of this report, but some relevant extracts:

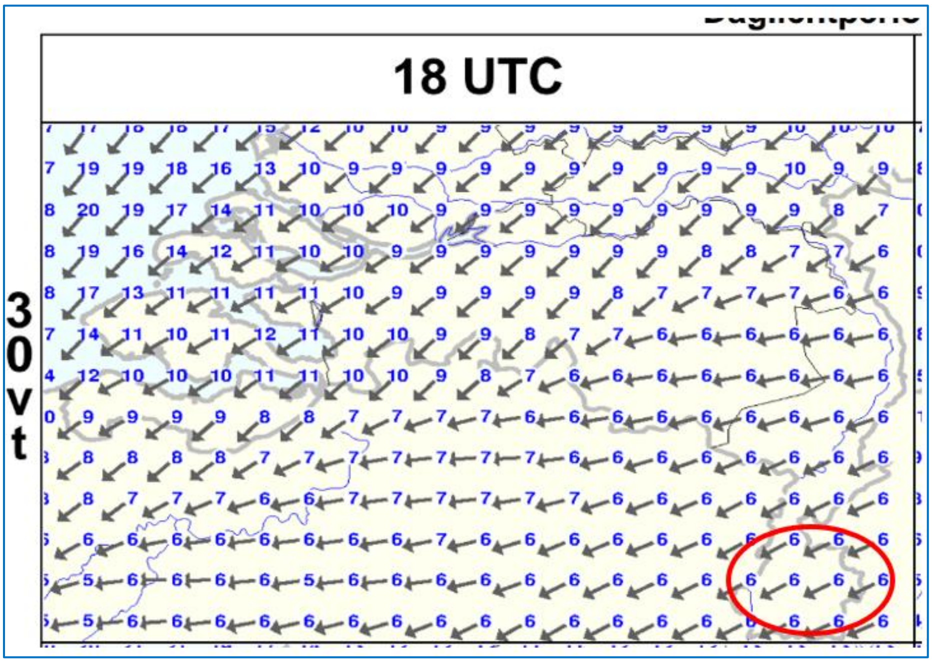


Figure 6 : forecast wind graph for 18 UTC at 30 feet. Area of take-off is red encircled

Next to the graphic forecast there was also the following written warning:

- More than 15 knots at 250 feet
- The wind remains gusty for an extended period.

<u>Belgium</u>

For meteorological information destined for ballooning activities in Belgium, Skeyes issues the "Ballooning Bulletin". This is a forecast bulletin in plain language containing information like expected surface and upper-air wind, temperature inversions and an outlook. This forecast bulletin is issued twice a day (in summertime 3 times a day). For the evening flights it is valid for the period 2 hours before and 1 hour after sunset.

The complete Ballooning Bulletin issued at 14:30 UTC is in appendix 2 of this report but hereunder already a relevant extract;

SURFACE: 060 09-10KT MAX15-17KT BECMG 060 07-09KT MAX13-14
COAST AND WESTHOEK: 040 10-12KT MAX17-20 BECMG 040 09-11KT
MAX14-17 AT COAST.
IN WESTHOEK TEMPO 20/21Z VRB 02-03KT BUT RISK
FOR THUNDERY SHOWERS WITH GUSTS UP TO 25-30KT!

250 FT: 050-060 15KT; 15-18KT ALONG COAST
BECMG VRB 05KT IN WESTHOEK AND W OF HAINAUT

2.4 Recorded data

Secondary surveillance radar (SSR) data was available and used to reconstruct the flight path. According to the pilot, he used an app on his phone to track the flight but lost the phone during the hard landing.

Nearby witnesses passing with a car filmed the last part of the flight (see also Figure 2 for their position).

Figure 7 : video stills of the landing showing a series of burns

:

Figure 8 : touchdown followed by a new lift-off/ascent

2.5 Regulations

The rules for hot air balloon operations in the EU are laid down via Commission Regulation (EU) 2018/395 of 13 March 2018.

Paragraph 2 of Article 3 specifies the conditions for commercial operations, which are defined as any operation of a balloon, in return for remuneration or other valuable consideration, which is available for the public or, when not made available to the public, is performed under a contract between an operator and a customer, where the latter has no control over the operator.

Some activities are exempt from this, including:

- Cost-shared operations by four individuals or less, including the pilot, provided that the direct costs of the flight of the balloon and a proportionate part of the annual costs incurred for the storage, insurance, and maintenance of the balloon are shared by all those individuals;
- Introductory flights with four individuals or less, including the pilot, performed either by a training organization or by an organization created for the purposes of promoting aerial sport or leisure aviation, provided that the flight does not generate profits distributed outside the organization and that such flights represent only a marginal activity of the organization;

Furthermore, the term ‘commercial passenger ballooning’ (CPB) is defined as a form of commercial air transport operation with a balloon whereby passengers are carried on sightseeing or experience flights for remuneration or other valuable consideration.

Some relevant rules:

<u>BFCL.065 of Annex III (Part-BCFL)</u>
BPL holders who have attained the age of 70 years shall not act as pilots of a balloon engaged in commercial passenger balloon operations.

<u>BOP.BAS.110 Fuel and ballast supply and planning</u>
The pilot-in-command shall only commence a flight if the reserve fuel or ballast carried on board the balloon is sufficient to ensure a safe landing.

<u>AMC1 BOP.BAS.110 Fuel and ballast supply and planning</u>
(a) The pilot-in-command should only commence a flight if the reserve fuel or ballast is sufficient for 30 minutes of flight

BOP.BAS.130 of Annex II (Part-BOP)
Before commencing the flight, the pilot-in-command shall be familiar with the available meteorological and aeronautical information appropriate to the intended flight which includes both of the following:

(a) a study of available current weather reports and forecasts;
(b) the planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned.

BOP.BAS.150 and .155
respectively state that the pilot-in-command shall be satisfied, according to the latest available information,

- before commencing take-off of the balloon that the weather at the operating site permits a safe take-off and departure; and
- before commencing an approach to land that the conditions at the intended operating site permit a safe approach and landing.

BOP.BAS.165 In-flight fuel management
The pilot-in-command shall check at regular intervals during the flight that the amount of usable fuel or ballast remaining in flight is not less than the fuel or ballast needed to complete the intended flight and the reserve planned for landing.

2.6 Previous accident

Although the purpose of safety investigations is absolutely not to assign any blame, the AAIU finds it relevant to mention that the pilot involved also had another accident in 2019 (with the same balloon) at Swalmen, The Netherlands, especially to evaluate whether any safety lessons were learned from it. The accident was investigated by the Dutch Safety Board. The summary of the investigation report with reference 2019073 reads as follows:

"The pilot of the hot air balloon, which had three passengers on board, was forced to make a landing due to rapidly deteriorating weather conditions. In doing so, the balloon ended up in weather conditions that endangered the safety of the occupants. After several landing attempts, the balloon eventually came to a halt with the envelope against a tree line after a landing in which the basket skidded over the ground. During the landing, first the passengers fell out of the balloon's basket. Hereafter, the pilot partly fell out of the balloon's basket. The passengers sustained minor injuries. The weather conditions caught the pilot by surprise because he had paid insufficient attention to the weather forecast during the flight preparations. The weather forecasts specifically prepared for hot air ballooning mentioned high-risk weather conditions. These weather forecasts were not consulted by the pilot. Sources he did consult also indicated unfavourable circumstances, but these were not interpreted as such by him. The decision to carry out the flight was therefore based on an incomplete and outdated weather forecast."

At the time of the accident, European regulations were not yet applicable, and the pilot held a valid national commercial license to conduct the commercial flight.

As a safety action, the following safety recommendation was issued to the Koninklijke Nederlandse Vereniging voor Luchtvaart (KNVvL - Royal Netherlands Aeronautical Association):

Bring the lessons from this accident to the attention of your members and inform them of the procedures to be followed when consulting weather conditions in preparation for a balloon flight. Indicate which sources should be used in the context of good ballooning practice and include them in the standard format of the Operations Manual Ballooning.

In response to the report, the pilot said the following:
"*The wind at the launch site was according to the tables 7 knots with the direction NE. So not 10 knots or more. It states that no balloon flights may be conducted if the ground wind exceeds 15 knots*."

3. ANALYSIS

3.1 Direct cause

The direct cause of the hard landing is likely the high wind speed at ground level. From the radar data, we can deduce that the ground speed during the final moments of the flight was a good 13 knots, which is relatively high for a balloon landing. The flight manual states that the very most of the accidents happen at landing speeds above 10 knots.
This, combined with the high-voltage lines and an approaching forest, probably led the pilot to descend very quickly after having crossed the voltage lines. The various burns filmed by the witnesses (see Figure 8) indicate that the pilot subsequently likely tried to reduce the descent rate at the very end.
However, this filled the balloon with hot air, causing the balloon to ascent again after a first touchdown.

3.2 Meteorological forecasts and conditions

3.2.1 At take-off location

The pilot himself stated that the meteorological information did not match reality. He based this on the balloon forecast issued at 11:41 UTC, which indeed predicted a ground wind of 5 knots in the tables. The subsequent balloon forecast issued at 14:49 UTC indicated 6 knots (see also Figure 6). The METARs from EHBK reported 11 and 10 knots at 17:25 and 17:55 UTC, respectively, which corresponds to the TAFs issued at 11:14 and 17:14.

KNMI was contacted to explain this discrepancy. They acknowledged that the winds calculated by the weather model were lower than the actual winds. According to them, this is because the model sometimes underestimates, and it is therefore important to read the text in the regional forecast carefully. Additionally, this will also be mentioned during telephone contact. Furthermore, the text also stated that at 250 feet, the wind was 15 knots or more, which was also higher than the model winds indicated in the balloon forecast.

Finally, at the bottom of these wind charts, there is a note: "Note: this is direct model output, always consult the regional forecast."

3.2.2 At landing location

According to the radar, the final speed was 13 knots, which corresponds to the statement from the meteorological services that the wind observed there was locally east-northeast and around 9 knots with occasional gusts up to 14 knots. The METAR from EBLG reported a wind of 11 knots at 19:50.
These wind conditions are consistent with what was expected and forecasted in the Ballooning Bulletin issued by Skeyes (060 09-10KT MAX15-17KT becoming 060 07-09KT MAX13-14).

3.2.3 Partial conclusion on the meteo

The wind tables/graphs from the balloon forecast issued by the KNMI indeed indicated a lower wind than ultimately observed. However, besides the text in the regional forecast, there were sufficient other and more current sources (METARs from EBHK as well as apps that provide current wind conditions) that indicated an average ground wind around 10 knots (and even higher) and gusts. It has to be kept in mind that the wind values in the graphs and METARs are averages, usually over the last 10 minutes. They are not maximum values.
The gusts were also noticeable during take-off. Knowing that gusts are not included in the METAR if they not exceed the average by at least 10 knots, a gust of 5 knots above the average wind speed was certainly not unforeseeable with the prevailing conditions.

3.3 Flight preparation and airmanship

The pilot based his decision to proceed with the flight on the balloon forecast from 11:49 UTC. This was not the most recent forecast, as another was issued at 14:49. The predicted wind was already slightly higher here but still underestimated. Although it probably wouldn't have made a difference in this case, the last available information was not used, as required by the regulation.

The previous chapter clearly shows that other, more current information was available indicating that the ground wind was 10 knots and higher. Additionally, KNMI was not called for an update. The investigation report from the 2019 accident also showed that this was not done. Although this is not mandatory, it is recommended in case of uncertainty about the weather conditions.

In the flight manual it is indicated that the pilot should set the maximum limit to 10 knots for take-off and landing at usual sports flights and commercial balloon flights (beginners even less). The statistics of accidents shows that the very most of the heavy accidents happen at landing speeds above 10 knots. Inexperienced passengers often have difficulties already at a landing speed of 10 knots even if they have been instructed beforehand. The maximum limit of 15 knots has been set for e. g. competitions at which experience pilots take-off in small balloons alone or with competition-experienced occupants (co-pilots or observers).

This also emerged in the previous investigation. Therefore, questions arise about the safety lessons learned from the previous accident.

Furthermore, the decision not to land at the planned landing site and instead continue the flight is peculiar and not a sign of good airmanship. Even if they arrived sooner than expected, the forecasts indicated an increase in wind. It would have been better to land at that point instead of postponing it and flying longer into an area that he did not know well. The fact that no radio contact was made with the tower of Liège and thus the controlled airspace was entered without clearance are indications of insufficient preparation and the absence of a backup plan as provided for in the regulations (BOP.BAS.130).

3.4 About the nature of the operation

The pilot stated that it was a non-commercial flight; he flew with a maximum of 3 passengers and the contributions he asked for were, according to him, just enough to cover the costs. He did not profit from it.
Although we do not want to question this, we believe there was some deception involved as 2 of the 3 passengers did not know the pilot beforehand and had contacted him via a phone number on a company website. This appears to be the company the pilot previously used for commercial flights (before the transition to the EU regulation in April 2021) and which he had recently transferred to someone else.
There was at least the feeling of a commercial flight for these 2 passengers, and the AAIU therefore believes that the rules for a commercial flight should have been followed to ensure a higher degree of safety. The interview with the passengers also revealed that they expected this. According to radar data, the balloon arrived at the initially planned landing location (in Gronsveld – Eijsden, see also Figure 1 :flight reconstructed with radar data of this report) after a good 45 minutes. The fact that the flight continued to complete an hour without any consultation is an indication that there may have been some pressure and the passengers were considered as customers who needed to be accommodated and had no control over the pilot. Specifically, this means that the pilot should not have conducted the flight as he did neither have the proper license nor the right medical certificate.

3.5 Oversight

Given that the pilot had previously experienced an accident back in 2019 due to poor weather judgment (see report 2019073 from the Dutch Safety Board), the Civil Aviation Authority of the Netherlands (CAA NL) was contacted.

In response to our question whether they conduct targeted inspections on-site to ensure compliance with the rules, the answer was that they do. The involved pilot was also contacted when he landed on a football field in the Netherlands on 17 May 2022, an event which generated considerable media attention. At that time, it was found that he followed the rules for non-commercial flights and that he knew the 2 passengers. Something the AAIU doubts, as the press reported that the passengers had received the flight as a gift from friends. Again, there seemed to be some deception involved.

CAA NL further conducted an unannounced inspection on 22 May 2022, in Maastricht during the start of the balloon flight. The crew and passengers were interviewed. The passengers were friends and had shared the costs for this flight. Therefore, it was considered that they complied with the cost-sharing principle.

As the pilot has since the accident ceased his flying activities, the AAIU believes this was an isolated and temporary case of a pilot who had recently transferred his company but still conducted a few flights. The people who took over his company now only conduct commercial flights with pilots who have a valid license. There are no indications and/or reason to believe that other companies are not in compliance.

4. FINDINGS

4.1 Findings as to causes and contributing factors

- The direct cause was a fast and hard landing due to a ground wind of 13 knots.
- Not all latest available meteorological information was used to prepare the flight and to decide to proceed with the flight.

4.2 Findings as to risk

- Landing at groundspeeds higher than 10 knots holds a greater risk for inexperienced passengers.
- The wind graphs in the balloon forecast can sometimes be underestimated.
- Not learning from previous incidents.
- Conducting flights without a valid commercial license with unfamiliar passengers who otherwise expect a safe and controlled environment.
- Decision to continue the flight into an area not well known, which, in addition to an airspace infringement, also led to reduced ability to anticipate and difficulty in finding a timely and suitable landing site.

4.3 Other findings

None

5. 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 <u>prevention</u> of accidents or incidents and the <u>reduction of the consequences</u> 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 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.*

As no permanent safety issues related to design, an organisation and/or a system were identified during this investigation, no safety recommendations are issued.

However, the AAIU would like to issue the following safety reminder:

Safety message to all hot air balloon pilots:

To have the best possible view of the meteorological conditions, both at take-off and expected at landing, it is important not only to consult the weather forecasts from aviation meteorological services but also to consider the <u>latest available</u>, more current, information. This can be found via ATIS, SYNOPs and METARs from nearby airports as well as in various apps and websites that can provide a current picture of the wind conditions. Additionally, whenever there is the slightest doubt, it is highly recommended to contact the aviation meteorological services (KNMI for the Netherlands, Skeyes AIM-Meteo for Belgium) by phone for a briefing based on the latest available information.

ABOUT THIS REPORT

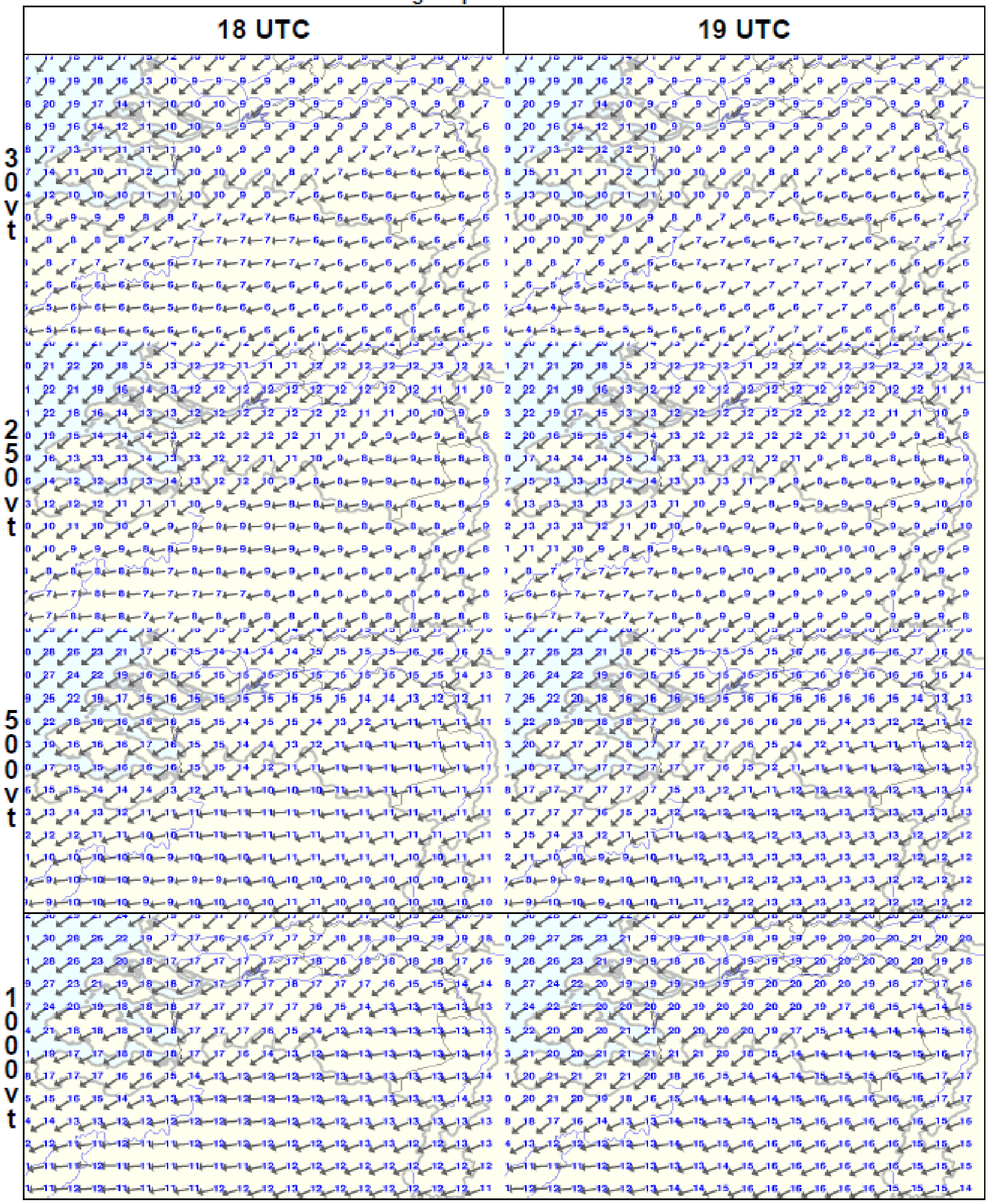
General	
What?	Safety investigation reports are a technical document that reflects the views of the investigation team on the circumstances that led to the accident or serious incident and is conducted in accordance with Annex 13 to the Convention on International Civil Aviation and Regulation (EU) No 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	The pilot has filed an occurrence report to the Dutch Safety Board on 8 June 2022, who immediately notified the AAIU Belgium of the accident. Because it had already been 4 days, no investigator went to the site.
Scope	Limited As per Annex 13 and EU regulation EU 996/2010, each safety investigation shall be concluded with a report in a form appropriate to the type and seriousness of the accident and serious incident. For this occurrence, a limited-scope, fact-gathering investigation and analysis was conducted in order to produce a short summary report. The investigation mainly focussed on the actions and conditions directly relating to the occurrence and might not cover all aspects of the aircraft operation and/or possible underlying safety factors due to the expected safety benefit of it and/or the extent of evidence/resources available.
Other parties involved	The Dutch Safety Board
	AAIU would like to thank the mentioned parties above and all other entities and individuals that have contributed to this safety investigation.

APPENDICES

Appendix 1: Balloon Flight Forecast issued by KNMI on 04 June 2022 at 14:49 UTC

Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

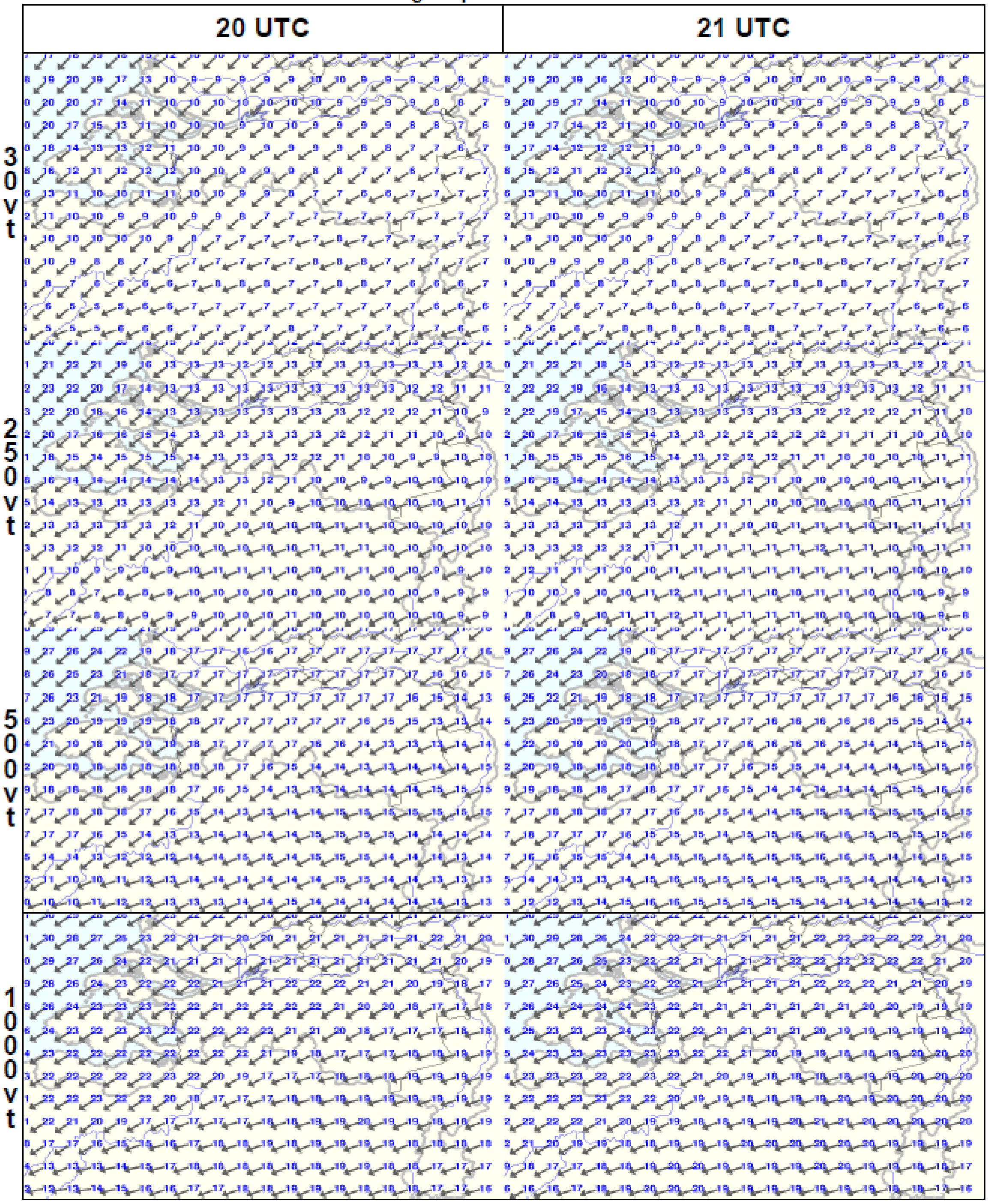
Regioverwachting Ballonvaart
Regio: ZUID - Saturday 04 June 2022 - avond
Uitgifte: 14:49 UTC
Berichttype: ORG
Run: ECB_20220604_06
Daglichtperiode: 03:09 - 20:08 UTC



Bestand aangemaakt: Sat 04 Jun 2022 - 14:49 UTC   Pagina 1 van 3   LET OP! Directe modeluitvoer. Raadpleeg Regioverwachting!

Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

Regioverwachting Ballonvaart
Regio: ZUID - Saturday 04 June 2022 - avond
Uitgifte: 14:49 UTC
Berichttype: ORG
Run: ECB_20220604_06
Daglichtperiode: 03:09 - 20:08 UTC



Bestand aangemaakt: Sat 04 Jun 2022 - 14:49 UTC

Pagina 2 van 3

LET OP! Directe modeluitvoer. Raadpleeg Regioverwachting!

Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

Regioverwachting Ballonvaart

Regio: ZUID - Saturday 04 June 2022 - avond
Uitgifte: 14:49 UTC
Berichttype: ORG
Run: ECB_20220604_06
Daglichtperiode: 03:09 - 20:08 UTC

WAARSCHUWINGEN:

-Meer dan 15 kn op 250vt
-Wind is lang vlagerig

OPMERKINGEN:

-

SIGNIFICANT WEER:

Geen.

KANS OP NEERSLAG:

0%.

WIND:

In het westen en het eerste uur ook in het midden en oosten van Brabant is de grondwind de gehele periode meer dan 10 kn. Tot einde daglichtperiode vlagerig. Daarnaast meer dan 15 kn op 250 vt (zie windkaarten).

BEWOLKING:

Geen significante bewolking.

ZICHT:

Meer dan 10 km.

EINDE/BEGIN THERMIEK:

18:15-18:30 UTC.

INVERSIE:

-

TEMPERATUUR:

Van 20 graden Celsius in het westen tot 24 graden Celsius in het zuidoosten.

Bestand aangemaakt: Sat 04 Jun 2022 - 14:49 UTC

Pagina 3 van 3

Appendix 2: Ballooning Bulletin issued by Skeyes on 04 June 2022 at 14:30 UTC

skeyes nice to guide you

EBBR Ballooning
Valid on 04/06/2022 15 UTC

EBBR Ballooning

FABX58 EBBR 041434
ANNEX: BALLOONING BULLETIN
ISSUED: 04/06/22 AT 14:30 UTC
PLEASE REFER TO THE GENERAL FORECAST ISSUED ON 04/06/22 AT 0346 UTC

PERIOD: 2 HOURS BEFORE AND 1 HOUR AFTER SUNSET

NEXT SUNRISE AT EBBR: 050330 UTC
NEXT SUNSET AT EBBR: 041949 UTC

1. WINDS: ONLY MENTIONED FOR THE N AND THE W-NW OF THE LINE EBCI-ELG

SURFACE: 060 09-10KT MAX15-17KT BECMG 060 07-09KT MAX13-14
COAST AND WESTHOEK: 040 10-12KT MAX17-20 BECMG 040 09-11KT
MAX14-17 AT COAST.
IN WESTHOEK TEMPO 20/21Z VRB 02-03KT BUT RISK
FOR THUNDERY SHOWERS WITH GUSTS UP TO 25-30KT!

250 FT: 050-060 15KT; 15-18KT ALONG COAST
BECMG VRB 05KT IN WESTHOEK AND W OF HAINAUT
500 FT: 060-080 15KT; 15-18KT ALONG COAST
BECMG VRB 05KT IN WESTHOEK AND W OF HAINAUT
1000 FT: 060-080 15-20KT BECMG VRB 05-08KT IN WESTHOEK AND W OF
HAINAUT
1500 FT: 060-080 15-20KT BECMG VRB 05-10KT IN WESTHOEK

2000 FT: 080 15-20KT BECMG 070-080 10KT IN WESTHOEK

3000 FT: 090 15-20KT BECMG 090-110 10-15KT IN WESTHOEK

2. WEATHER:

PARTLY CLOUDY TO CLOUDY AT THE E-SE OF THE LINE EBCI-EBLG WITH RISK
FOR THUNDERY SHOWERS.
ELSEWHERE, CLEAR TO PARTLY CLOUDY AND IN GENERAL DRY BUT AS THE
AIR MASS WILL BE POTENTIALLY UNSTABLE, SOME ISOL. TCU'S ARE NOT
TOTALLY RULED OUT.
FROM 20Z RISK FOR THUNDERY SHOWERS ALONG THE WESTERN PARTS OF THE
FRENCH BORDER (MAINLY WESTHOEK & W OF HAINAUT).

3. INVERSIONS: HEIGHT IN FEET [+ WIND SPEED ABOVE INVERSION]:

NIL
4. OUTLOOK FOR NEXT BALLOONING FORECAST PERIOD:

OCCLUDING FRONT CROSSING EBBU FROM THE S LEADING TO SHOWERY

Page 1 of 2

skeyes – Meteo Department
Tervuursesteenweg 303 B-1820 Steenokkerzeel

skeyes nice to guide you

AND THUNDERY ACTIVITY MAINLY ALONG THE FRENCH BORDER AND AT COAST;
INFLUENCING AT THE END OF THE OTLK PERIOD, ALL THE ARDENNES.

070-100 07-09KT MAX12-16; ALONG THE FRENCH BORDER, LCA VRB 01-03KT
BUT RISK FOR GUSTS UP TO 25-30KT IN SHRA/TSRA.
NEXT UPDATE OF BALLOONING BULLETIN: 02:30 UTC

Page 2 of 2

skeyes – Meteo Department
Tervuursesteenweg 303 B-1820 Steenokkerzeel