The Investigation Report was written in accordance with para 18 Law Relating to the Investigation into Accidents and Incidents Associated with the Operation of Civil Aircraft stating facts only.

**Identification**

**Type of Occurrence:** Accident

**Date:** 24.06. 2018

**Location:** Schwalmtal

**Aircraft:** Hot air balloon

**Manufacturer / Model:** Ultramagic / N-180

**Injuries to Persons:**
- One passenger seriously injured
- Three passengers suffered minor injuries
- Three passengers remained uninjured
- Pilot remained uninjured

**Damage:** Aircraft not damaged

**Other Damage:** Minor crop damage

**State File Number:** BFU18-0829-CX
Factual Information

History of the Flight

At about 2000 hrs¹ the pilot, his ground crew, and 7 passengers met in Arcen, Netherlands, at the take-off site of the balloon operator for the preparation of a commercial balloon flight. According to witnesses, the pilot familiarised the passengers with the conduct of a balloon ride. Together they then rigged the hot air balloon. According to the pilot’s statement he had checked prior to take-off, if there would be any showers in the expected flight direction. He stated that he had determined a small area of rain in the vicinity of Nijmwegen, but in flight direction everything had been free of precipitation. He estimated that the wind speeds in the take-off area were between 9 and 12 kt.

The passengers were distributed to the different passenger partitions and at about 2040 hrs take-off took place. The balloon drifted south. After about an hour, the hot air balloon reached the region north-west of Schwalmtal, which is located about 25 km from the take-off site. Witnesses stated that the pilot had made attempts to land, but had to abort them. The pilot stated that the weather conditions had continued to worsen. In addition to the precipitation the surface wind speed had increased considerably. He noticed severe gusts, because of the tree tops’ heavy movement.

After about 1:20 hours the hot air balloon crossed the Autobahn A 52 south-west of Schwalmtal and a small forest right behind it. Landing approach occurred beyond the trees, which were about 15 m high. The pilot stated that the hot air balloon descended by 1-2 m/s and even though the fast deflation system was open the balloon ascended again due to the gusts. He also stated that the balloon ascended 5-10 m above the ground. He estimated that the balloon would touch down hard because the fast deflation system was open. Therefore, he had made his passengers aware of the expected hard landing and instructed them to hold on tight.

Witnesses, who had observed the landing hot air balloon, saw how the wind pushed the envelope inward and how it approached the ground with a great rate of descent. The basket touched down a second time 40 m from the initial touch-down point. After the hard landing, the basket toppled over and was dragged along the ground for about 22 m. During the hard landing one passenger suffered severe and three passengers minor injuries. The hot air balloon was not damaged.

¹All times local, unless otherwise stated.
Personnel Information

The 41-year-old pilot in command held a Commercial Pilot Licence for hot air balloons (CPL(FB)) issued by the Civil Aviation Authority Netherlands. According to the listings he held the ratings for commercial passenger transport. His class 2 medical certificate without restrictions was valid until 1 December 2018. According to his pilot logbook, he had a total flying experience of 469 hours. In the last 90 days he had conducted 5 flights.

Aircraft Information

The hot air balloon was registered in the Netherlands and operated by a Dutch operator.

Manufacturer: Ultramagic
Type: Ultramagic N 180
Envelope volume: 5,100 m³
Manufacturer’s Serial Number (MSN): 180/57
Year of Manufacture 2006
MTOM¹: 1,754 kg
Basket: Size C-5 WNR. C-5/91
Burner: Double burner MK-21, WNR. 1158
Compressed gas cylinder: Ultramagic M40D No. UM4-105, M30D No. UM3-0467, M40D No. UM4 - 0486

The pilot had calculated the lifting capacity with the result that at an air temperature of 16°C maximum take-off mass was 1,654 kg. The BFU calculated an actual take-off mass of 1,161 kg, based on the weight of the passengers and the payload.

The hot air balloon was equipped with a Fast Deflation System (FDS). According to the manufacturer's flight manual the envelope could be swiftly deflated during landing by pulling the red line.

The last airworthiness review certificate was issued on 19 May 2018. Total operating time was 483 hours.

¹ Maximum Take-Off Mass
Meteorological Information

The pilot stated that at 1800 hrs he had last accessed the Dutch weather service to obtain a weather update. In addition, at the take-off site he used weather radar images from the internet.

The flight weather report Area West of Deutscher Wetterdienst (German meteorological service provider, DWD), of 1700 UTC and the GAFOR for balloon pilots forecast for the region of the intended balloon ride that at about 2000 hrs, surface wind would have to be expected from a north-west direction with 5-10 kt, after thermal had ended. The expected gusts were forecast with 12-15 kt. It was noted that after sunset a reduction to 12 kt could be expected. The notifications for balloon pilots informed that sporadic showers had to be expected.

The DWD weather charts showed for the time of the balloon ride the influence of a precipitation band with little rain which moved from north to south.

At the time of the accident a weather station south-east of the landing site measured a mean wind speed of 14 kt. Cloud base was at 1,000 ft AMSL.

Aids to Navigation

The pilot conducted the balloon flight with basic instruments and corresponding charts. He used a satellite navigation system, which did not record the flight path.

Radio Communications

The pilot and his ground crew were in radio contact. Radio communications were not recorded.
Wreckage and Impact Information

The accident site was located about 34 km south of the take-off site on a potato field south of Schwalmtal. The hot air balloon approached the ground behind a row of tree which were 15 m high. Another gust caused it to ascend again. A hard landing occurred after 40 m and the basket toppled over. The ground traces showed a skidding distance of 22 m before the hot air balloon reached its final position.

Three compressed gas cylinders were in the basket. The investigation showed that one cylinder was still full, and the two others were filled by 26% and 23%, respectively. This means, at the time of the landing a total of approximately 100 litre remained.

The examination of the hot air balloon did not reveal any damages or technical malfunctions.
Fire

There was no fire at the accident site

Investigator in charge:  Stahlkopf
Field Investigation:  Hartmann

Braunschweig 21 October 2019
This investigation was conducted in accordance with the regulation (EU) No. 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and the Federal German Law relating to the investigation of accidents and incidents associated with the operation of civil aircraft (Flugunfall-Untersuchungs-Gesetz - FlUUG) of 26 August 1998.

The sole objective of the investigation is to prevent future accidents and incidents. The investigation does not seek to ascertain blame or apportion legal liability for any claims that may arise.

This document is a translation of the German Investigation Report. Although every effort was made for the translation to be accurate, in the event of any discrepancies the original German document is the authentic version.

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Bundesstelle für Flugunfalluntersuchung
Hermann-Blenk-Str. 16
38108 Braunschweig

Phone  +49 531 35 48 - 0
Fax  +49 531 35 48 - 246
Mail  box@bfu-web.de
Internet  www.bfu-web.de