

Interim Report

Identification

Type of Occurrence:	Serious incident
Date:	30 September 2017
Location:	Sylt
Aircraft:	Airplane
Manufacturer / Model:	Airbus Industry/A320-214
Injuries to Persons:	No injuries
Damage:	Aircraft not damaged
Other Damage:	None
State File Number:	BFU17-1339-5X
Published:	January 2018

Factual Information

On 30 September 2017 at 0820 hrs¹ an Airbus A320 landed at Sylt Airport on runway 32 and overran the end of the runway. The airplane came to a stop about 80 m after the end of the runway. Neither of the 82 passengers or 6 crew members was injured. The aircraft was not damaged.

¹ All times local, unless otherwise stated.

History of the Flight

The Airbus A320 had been on a flight from Dusseldorf Airport (EDDL) to Sylt Airport (EDWX). The Pilot in Command (PIC) was Pilot Flying (PF) and the co-pilot Pilot Monitoring (PM).

During the pre-flight preparation the flight crew planned a Required Navigation Performance (RNP) approach to runway 14 due to the weather information at hand (wind direction 140°, wind speed 12 kt).

Prior to the approach the flight crew had the following weather information available.

Excerpt METAR:

0720 hrs: Wind 140°/11 kt; visibility 2,500 m; cloud base at 400 ft GND

0750 hrs: Wind 140°/11 kt; visibility 1,800 m; cloud base at 300 ft GND

Due to the low cloud base the flight crew decided to perform an ILS (Instrument Landing System) approach to runway 32. The Obstacle Clearance Altitude (OCA) for this ILS approach was 230 ft AMSL.

Using the calculation software on the tablet on board the airplane, the following data was entered into the software:

Landing mass	about 55.7 t
Remaining fuel (included in the landing mass)	about 8 t
Flap configuration	Full
Runway condition: water on the runway	more than 3 mm
Auto brake position	Medium
Wind: direction in degrees / speed in kt	140° / 12 kt

The resulting approach speed (V_{APP}) was 131 kt, the tail wind component 12 kt, and the landing distance required 1,990 m.

The description of the course of events was based on the recordings of the Cockpit Voice Recorder (CVR). According to which from 0756:56 hrs on the two pilots conducted the approach briefing for runway 32. The approach and the go-around procedures, the tailwind with the maximum allowable wind speed for the airplane, and the auto brake position were discussed.

At 0811:50 hrs the controller issued a clearance for an ILS approach to runway 32. At 0814:45 hrs at the PIC's request, the co-pilot put the flaps in position 1. About 20 seconds later he put the flaps in position 2. At approximately 0815:58 hrs the airplane had a distance to the runway threshold of about 11 NM and was stabilised for the ILS 32 approach. At 0816:27 hrs the flight crew received the instruction to change to the Tower frequency. At 0816:38 hrs the crew disengaged the autopilot. At that time the airplane had an altitude of about 2,500 ft AMSL. At 0816:48 hrs the Tower controller issued the landing clearance with the words: "[...] Sylt Tower wind one four zero degrees one one knots runway tree two cleared to land runway is wet water patches".

The two pilots discussed whether the previously selected auto brake position Medium should be changed but decided against it.

At 0817:12 hrs the landing gear was extended and about 23 seconds later the flaps put in position 3.

The PIC instructed the co-pilot to enter a speed increase of 5 kt to the V_{APP} ($V_{LS} + 5$ kt). The FDR data showed that the speed selected at the Flight Control Unit (FCU) remained constant. Then the PIC requested to put the flaps in position Full.

At about 0818:07 hrs the landing checklist was completed. At that time the airplane had a distance to the threshold 32 of about 4.6 NM.

When passing the altitudes listed below the FDR had recorded the following values:

1,000 ft radio altitude

- IAS (Indicated Airspeed) about 139 kt, ground speed about 158 kt, wind speed about 22 kt, and wind direction about 183°.
- Glideslope deviation +0.0 Dots, localizer deviation 0.9 Dots

500 ft radio altitude

- IAS about 139 kt, ground speed about 158 kt, wind speed about 22 kt, wind direction about 183°,
- Glideslope deviation +0.0 Dots, and localizer deviation 0.9 Dots.

At 0819:14 hrs the 400 ft AGL point was passed and the PIC said: "Land". The Tower controller once again gave the flight crew the current wind data (140°/10 kt).

At 0819:24 hrs the PIC had runway 32 in sight and one second later the OCA of 230 ft AMSL was reached. The PIC said: "Continue." At 0819:37 hrs the threshold was passed in about 50 ft radio altitude.

When passing the 50 ft radio altitude the FDR had recorded the following values:

- IAS about 151 kt, ground speed about 163 kt, wind speed about 12 kt, wind direction about 144°
- Glideslope deviation +0.3 Dots, and localizer deviation 0.1 Dots.

At 0819:43 hrs the PIC said: "Na komm, geh runter (Na come on, go down)." At 0819:44 hrs the automatically generated computer voice of the Enhanced Ground Proximity Warning System (EGPWS) announced: "Five", another two seconds later again: "Five".

According to the FDR data at 0819:49 hrs the airplane touched down on runway 32.

The co-pilot shouted: "[...] Spoilers [...] Reverse Green". At 0820:00 hrs the PIC asked: "Schaffen wir das? (Can we make it)" At 0820:03 hrs the co-pilot said: "Seventy". One second later the PIC said: "Nee (No)." After about five seconds the PIC pushed the pedals and therefore deactivated the auto brake function. The FDR data showed that the maximum brake pressure was reached. At 0820:12 hrs the airplane passed the threshold of runway 14 with a ground speed of approximately 44 kt. The distance between the threshold of runway 14 and the airplane standing on the grass strip was about 80 m.

Via the intercom the PIC instructed the cabin crew: "Attention crew on station, attention crew on station".

The fire brigade had observed the landing and drove to the airplane standing on the grass strip. At 0823:02 hrs, a fire fighter contacted the flight crew. The fire fighter informed the flight crew that there was a problem using the mobile stairs: "Bus ist unterwegs, wir haben bloß ein Problem mit der Fahrgasttreppe (The bus is on its way, we only have a problem with the stairs). Wir werden hier auch einsacken in den weichen Boden (We will sink into the ground because it is so soft). Müssen wahrscheinlich mit der Notrutsche [...] hier müssen die Gäste wohl raus (Must probably use the emergency slides [...] the passengers must perhaps leave here)." The PIC answered: "Nee, nicht über die Notrutschen, das geht nicht (No, not via the emergency slides, that is not possible)."

After the engines had been shut off, passengers and crew left the airplane via mobile stairs. Neither passengers nor crew members were injured.

During the interview the PIC stated that it had been his perception they had "etwas weit rein geflared (flared slightly too far)". After the spoilers and the thrust reverser had been activated the anti-skid warning had illuminated. He had tried to decelerate the airplane using the pedals. However he had had the impression that the deceleration had been insufficient. During the interview a possible go-around procedure was discussed. The PIC stated that he knew they had touched down slightly too late. But he had not seen the necessity for a go-around procedure. He also stated that he had not felt tired. Prior to this flight he had had two days off.

The co-pilot stated that he had had the impression that a go-around was imminent, but he had not intervened. He also stated that he had not felt tired. On the day before he had conducted a flight with four legs.

The controller stated that on the runway there were puddles of water due to depressions. He could not say how much water had been on the runway. His perception was that the airplane had touched down late and he had wondered why it did not decelerate.

Personnel Information

Pilot in Command

The 61-year-old PIC held an Airline Transport Pilot's Licence (ATPL(A)) issued on 2 March 2015 by the Luftfahrt-Bundesamt (German aviation authority, LBA) in accordance with Part-FCL (Flight Crew Licensing). The licence listed the ratings as PIC for Airbus A320 in accordance with instrument flight rules (PIC IR); valid until 31 March 2018.

The BFU had been provided with his class 1 medical certificate, valid until 25 February 2018, with the restrictions TML and VNL.

According to the statement of the operator the PIC had a total flying experience of approximately 17,000 hours; of which about 5,757 hours of flight time were flown on Airbus A320. This flight had been the first one that day.

Co-pilot

The 35-year-old co-pilot held a Commercial Pilot's Licence (CPL(A)) issued on 31 July 2015 by the Luftfahrt-Bundesamt in accordance with Part-FCL. The licence listed the ratings as co-pilot for Airbus A320 in accordance with instrument flight rules (COP IR); valid until 31 July 2018. The licence also listed the ratings as co-pilot for Airbus A330 and A350 in accordance with instrument flight rules (COP IR); valid until 31 January 2018.

He held a class 1 medical certificate valid until 30 April 2018, which was provided to the BFU.

According to the statement of the operator the co-pilot had a total flying experience of approximately 6,148 hours; of which about 4,038 hours of flight time were flown on A320. This flight had been the first one that day.

Aircraft Information

The Airbus A320-214 is a short and medium range transport aircraft equipped with two fan jets.

Manufacturer	Airbus Industry
Year of manufacture:	2009
Manufacturer's Serial Number (MSN)	3908
Operating time	25,501 hours
Flight cycles	18,826
Engine type	CFM56-5b4/3

Meteorological Information

At the time of the incident it was daylight. According to the METAR of 0820 hrs of Sylt Airport horizontal visibility was 1,200 m. The runway visibility range of runway 32 was more than 2,000 m. No changes were expected. Wind direction and velocity: 140°/11 kt. Cloud cover was 8/8 at 200 ft GND with mist and rain. Temperature was 15°C, the dewpoint 14°C, and the barometric air pressure (QNH) 1,015 hPa.

METAR

Current METAR:

300620Z 14011KT 1200 R14/P2000N RA BR OVC002 15/14 Q1015=

Previous METAR:

300550Z 14011KT 1800 BR OVC003 15/14 Q1015=

300520Z 14011KT 2500 BR OVC004 15/14 Q1015=

The Tower controller stated that at the time of the landing it was raining slightly.

Aids to Navigation

The approach to runway 32 of Sylt Airport was conducted using the Instrument Landing System (ILS). According to the Aeronautical Information Publication (AIP) chart, as of 10 December 2015, the minimum for the ILS CAT I (C) approach to runway 32 was 230 ft.

Required Navigation Performance

Required Navigation Performance (RNP) is a concept of the International Civil Aviation Organisation, which defines the required navigation performance of aircraft with Area Navigation (RNAV) for certain airspaces and flight procedures.

Radio Communications

Communications were conducted in the English language. A transcript of the radio transmissions between the Tower controller and the flight crew was made available to the BFU.

Aerodrome Information

Sylt Airport is located 3.3 km north-east of the city of Westerland. Aerodrome elevation is 51 ft AMSL. The airport has two runways in the directions 142°/322° (14/32), and 058°/238°. The runway 14/32 is covered with concrete. The runway is 2,120 m long and 45 m wide. Runway 32 is equipped with a Light Intensity High (LIH) lighting system.

Sylt Airport

The airport does not have an Airport Surface Friction Tester.

Flight Recorder

Flight Data Recorder and Cockpit Voice Recorder Information

Manufacturer CVR	Honeywell
Model	SSCVR
Part Number	980-6022-001
Serial number	18776

Manufacturer FDR	L-3COM
Model	FA 2100
Part Number	2100-4043-01
Serial number	403152

Recorder Condition

The BFU seized the FDR and the CVR. The avionic laboratory was able to read-out the data. Both recorders were undamaged.

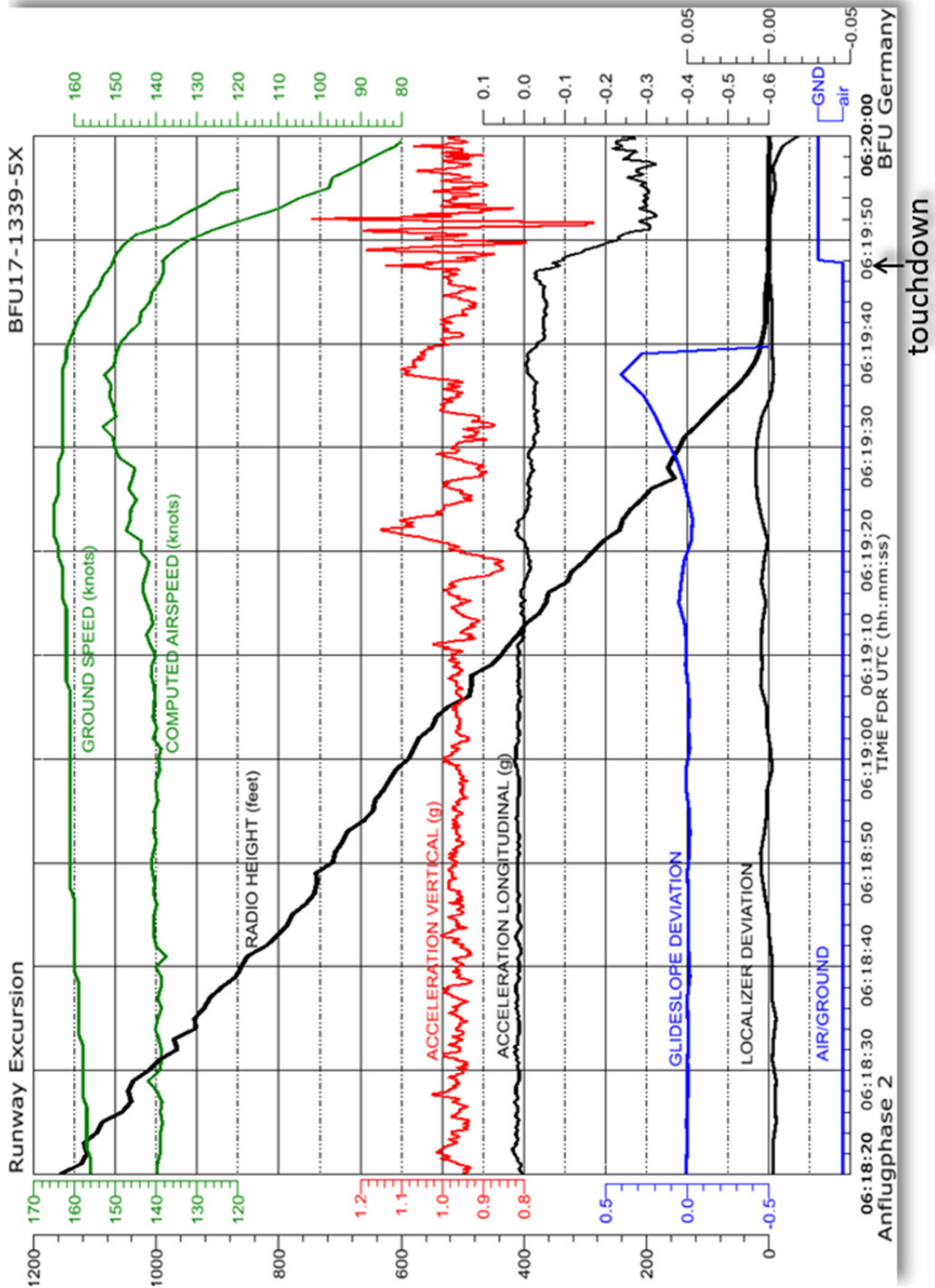
The quality of the CVR recording was good. A Flight Data Systems Handheld Multi Purpose Interface was used to download the FDR data. Then the data was imported on a Windows computer.

All relevant FDR data was analysed. Selected parameters are depicted in the graphs below.

FDR Graphs

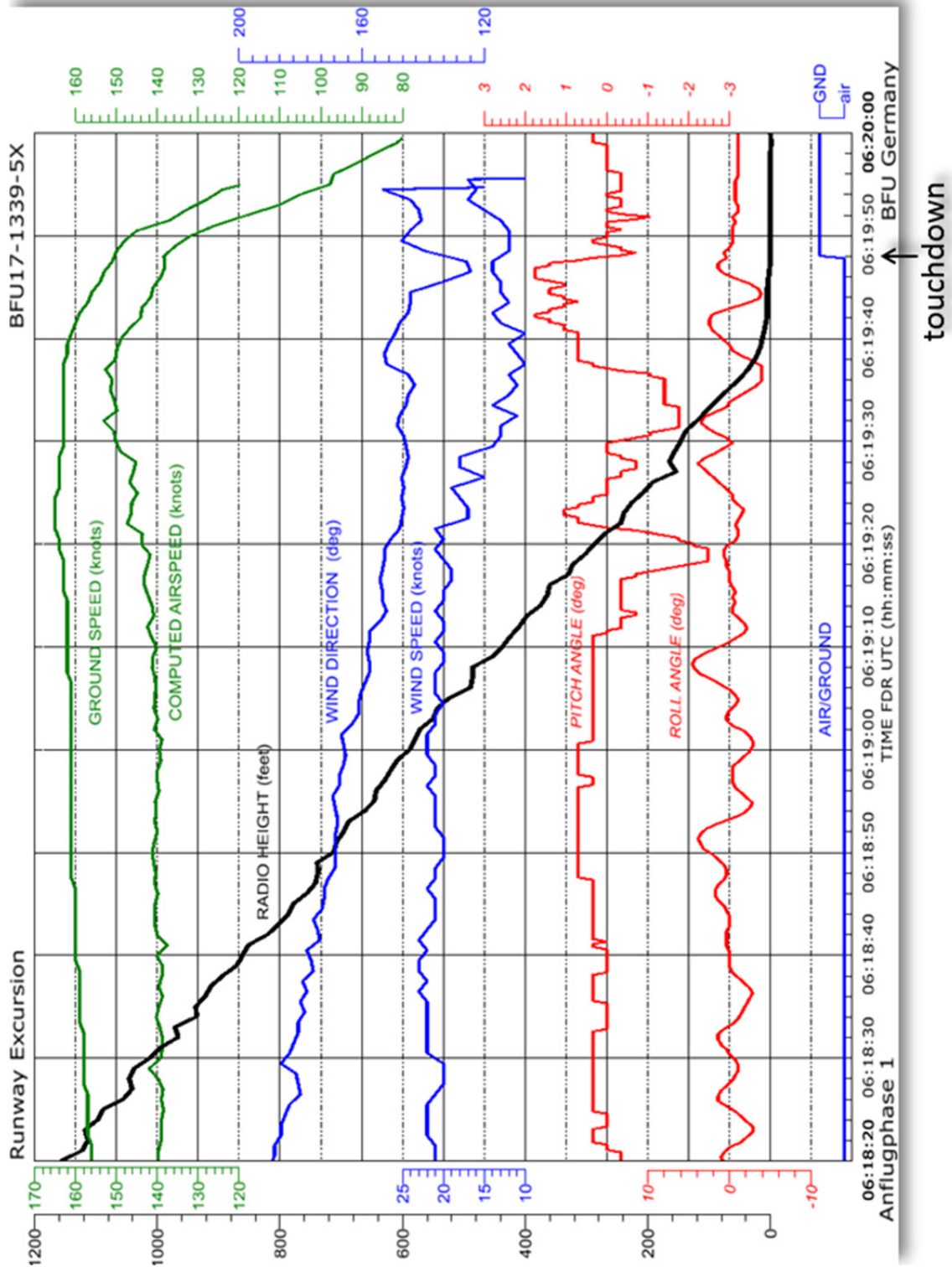
The first two graphs show the approach from about 1,200 ft radio altitude to the touch-down point.

The third graph shows the touch-down point with the subsequent runway excursion.



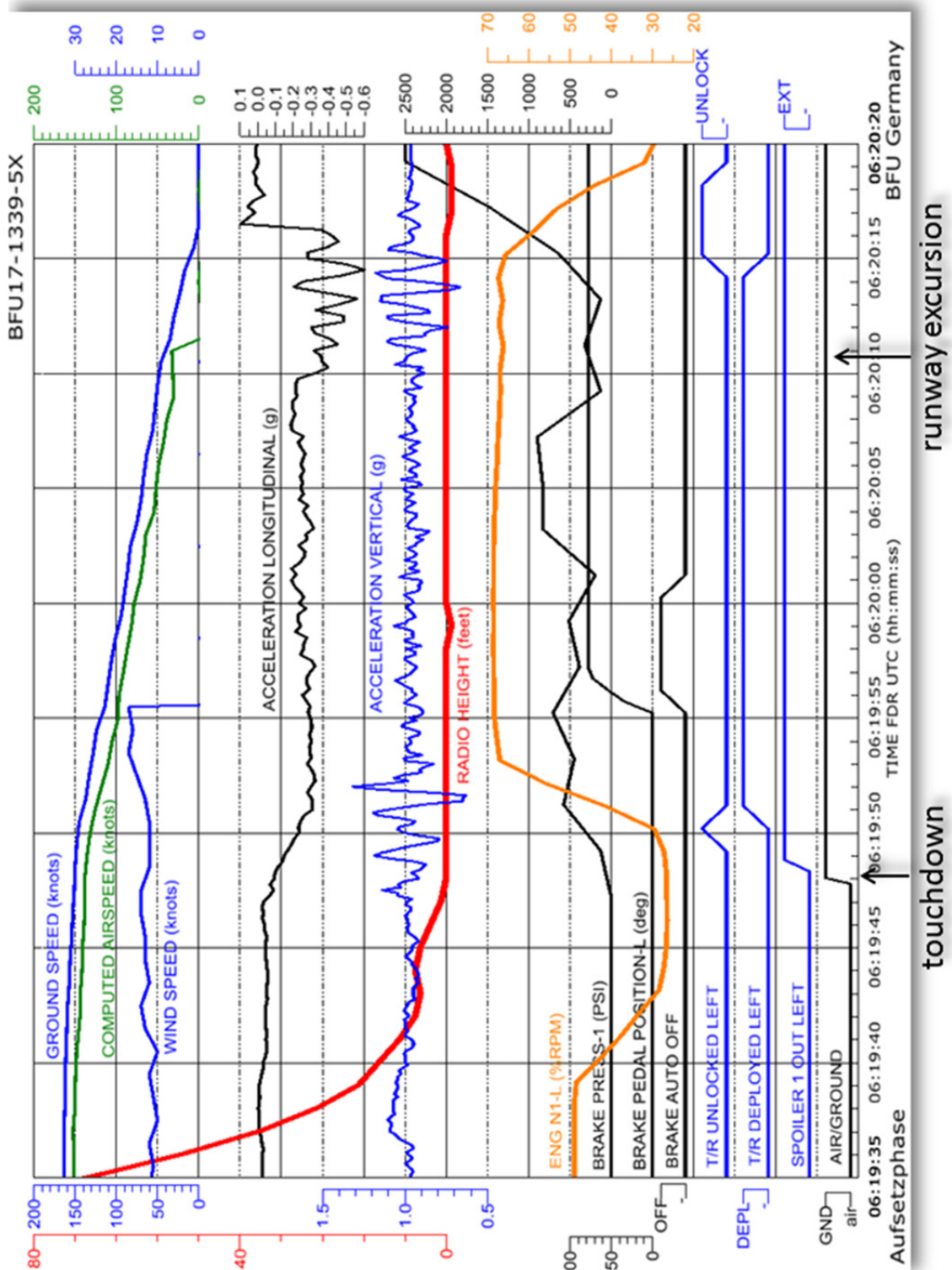
Approach phase

Source: BFU



Approach phase

Source: BFU

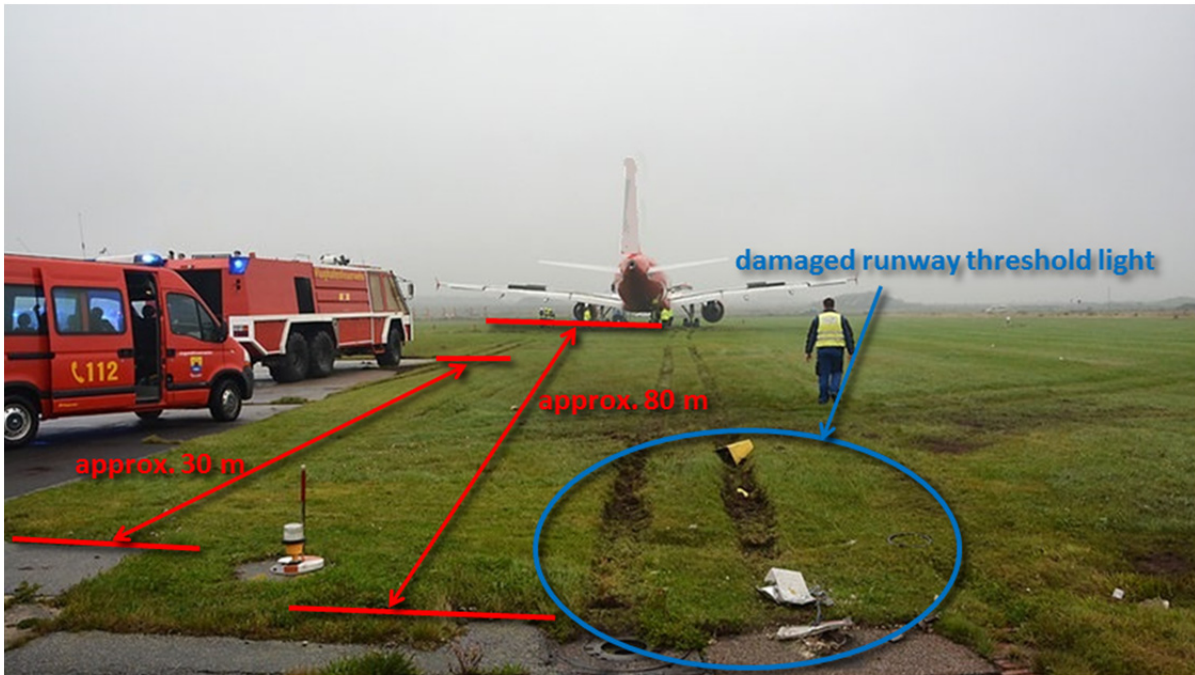


Touch-down phase

Source: BFU

Wreckage and Impact Information

The airplane had come to a stop in the grass about 80 m north of the end of the runway. One lamp of the runway threshold lighting of runway 14 had been damaged.

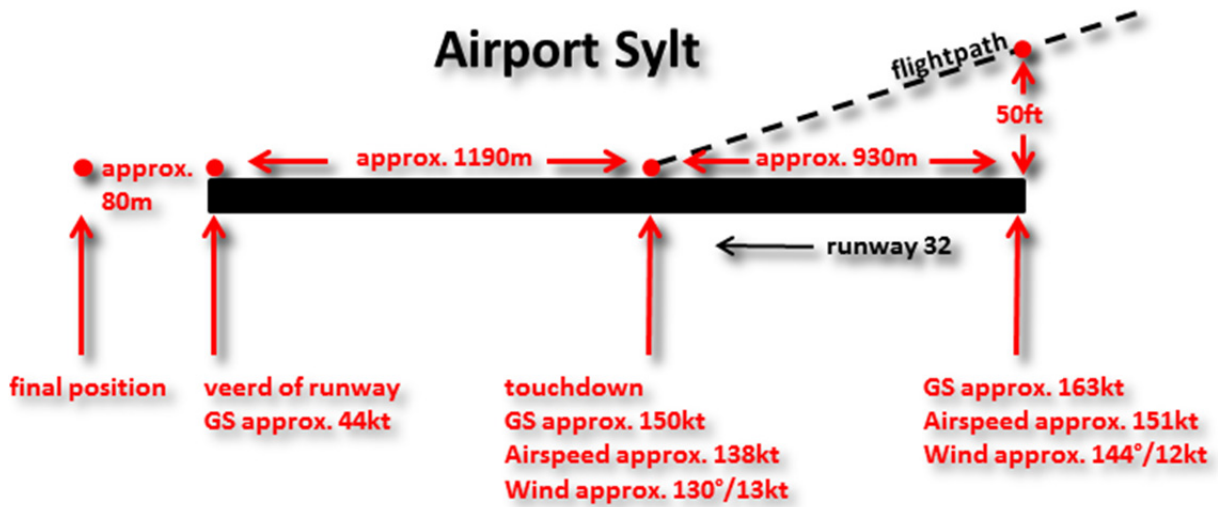


Airplane position and damaged lighting

Source BFU

On site the airplane had been examined for possible damage. Examined were the wings, the fuselage, the nose and main landing gears, and the engines, among other things. No damages were found.

The BFU instructed that the Brake Steering Control Unit (BSCU) was removed and seized.



Vertical view

Source: BFU

Investigator in charge:

Norman Kretschmer

Field investigation:

Thomas Karge, Uwe Berndt

Assistance - Avionic laboratory

Hans-Werner Hempelmann

Date:

5 January 2018

This investigation is 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 - FIUUG*) 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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