

Interim Report

Identification

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| Type of Occurrence: | Accident |
| Date: | 15 February 2013 |
| Location: | Berlin-Schönefeld |
| Aircraft: | Airplane |
| Manufacturer / Model: | Embraer / EMB-500 |
| Injuries to Persons: | No injuries |
| Damage: | Aircraft severely damaged |
| Other Damage: | None |
| Information Source: | Investigation by BFU |
| State File Number: | BFU CX001-13 |
| Published: | April 2013 |

Factual Information

The airplane rolled to the left during the flare phase while flying an Instrument Landing System (ILS) approach to runway 07L of Berlin-Schönefeld Airport. After the airplane had ground contact with the left wing tip, the aircraft's right main landing gear impacted the ground. The airplane came to a complete stop at the right edge of the runway after the landing gear had fractured.

History of the Flight

The airplane had taken off from Kortrijk-Welvelgem Airport, Belgium, at 0738 hrs¹ to a flight to Berlin-Schönefeld Airport. The Pilot in Command (PIC), the co-pilot and one passenger were aboard. The co-pilot was Pilot Flying (PF) during this flight.

According to the flight data recordings, at 0742 hrs while the airplane was in Flight Level (FL) 70 in climb the engine anti-ice systems of both engines were activated for 46 seconds. Forty seconds later the autopilot was activated. At about 0813 hrs the airplane reached FL390. Twenty minutes later the aircraft began to descend.

During the descent the crew listened to ATIS information Z of Berlin-Schönefeld Airport on the respective frequency. The runway in use was reported to be runway 07L. Regarding the weather information the report included the following: "... moderate icing reported below 3,000 feet ...".

The flight data recordings show that at about 0856 hrs the engine anti-ice systems for both engines were activated for three minutes. At that time the aircraft was in 3,000 ft AMSL flying horizontally before it entered descent at 0857 hrs. At 0858 hrs the autopilot was deactivated. At about 0900:24 hrs, at an indicated airspeed (IAS) of 102 kt, pitch attitude had exceeded 0° and continued to rise. During the subsequent nine seconds IAS decreased to about 90 kt while pitch attitude increased to about +6°. At about 0900:33 hrs the airplane began to roll left and, within two seconds, reached a left bank angle of 30°. Simultaneously with the roll, normal acceleration decreased from approximately 1 g to approximately 0.8 g.

The pilots stated that during the flare above the threshold the left wing had suddenly dropped and touched the runway. Subsequently the airplane rolled right and the right main landing gear had come down hard. The landing gear fractured and the aircraft slid along the runway toward the right runway edge and came to a stop there.

Personnel Information

Pilot in Command (PIC)

The 48-year-old pilot held a Commercial Pilot's License (CPL-A) initially issued by the Belgian Civil Aviation Authority (BCAA) on 15 February 2000 and valid until 20 October 2013. His license carried the following entries: Single-Engine Piston (SEP) land valid until 30 June 2014, BE90/99/100/200 valid until 31 August 2013,

¹ All times local, unless otherwise stated.

EMB500 valid until 30 June 2013, Instrument Rating (IR(A)) valid until 30 June 2013, Class Rating Instructor (CRI(A)) valid until 31 January 2016 and Flight Instructor (FI(A)) valid until 31 December 2013.

His total flying experience was about 4,500 hours, about 800 hours of which were on the type.

Prior to this duty period he had more than 36 hours off.

Co-pilot

The 22-year-old co-pilot held a Commercial Pilot's License (CPL-A) initially issued by the BCAA on 12 August 2011 and valid until 12 August 2016 with the ratings Multi-Engine Piston (MEP) land, EMB500 and IR(A).

She stated she had a total flying experience of about 260 hours; 32 hours of which on the type. Within the last 90 days prior to the accident she had conducted 22 flights. In the last 30 days she had flown 29 hours.

Aircraft Information

The airplane EMB-500 is a twin-jet, low-wing aircraft in all-metal construction, with T-tail configuration and six seats. The aircraft was certified in accordance with FAR/CS 23 for single-pilot operation.

The aircraft had a valid Belgian certificate of registration and was operated by a Belgian business aviation operator.

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|-------------------------------------|---------------------------------|
| Manufacturer: | Embraer |
| Type: | EMB-500 |
| Manufacturer's Serial Number (MSN): | 50000196 |
| MTOM: | 4,750 kg |
| Engines: | Pratt & Whitney Canada PW617F-E |

Total operating time of the aircraft was approximately 562 hours and 534 landings.

On 14 February 2013 the last 600-hour-inspection was conducted.

Ice and Rain Protection System

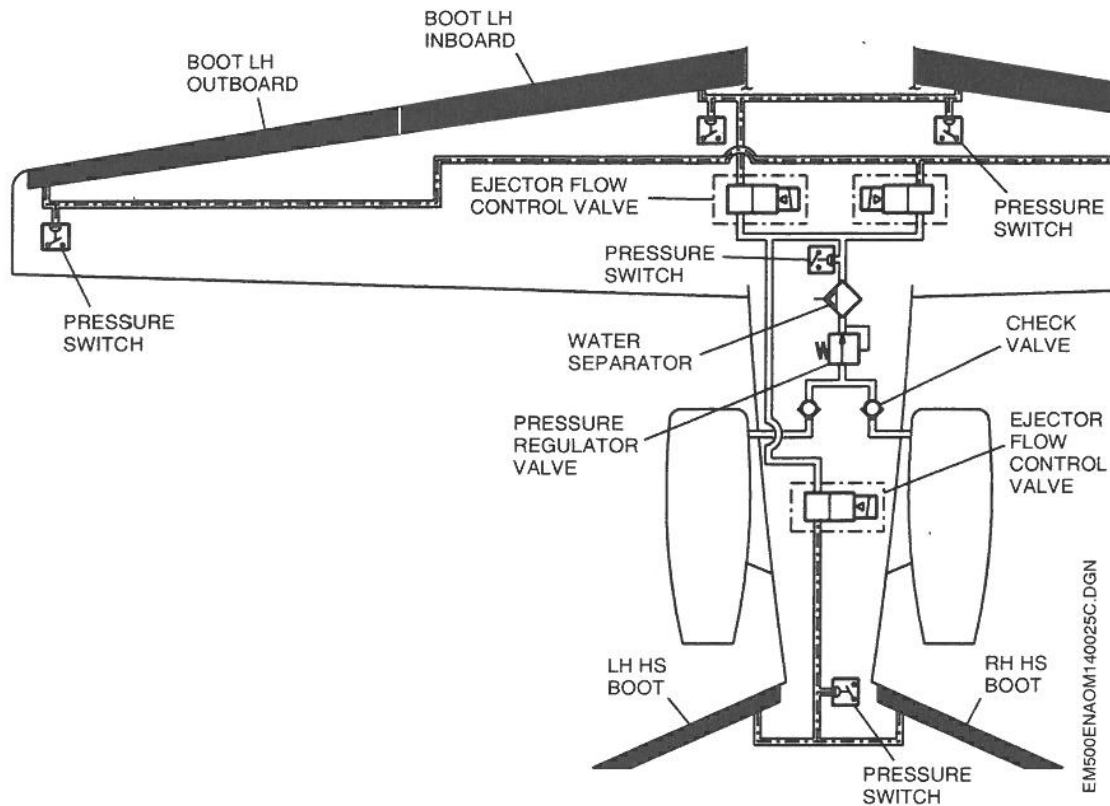
The airplane was equipped with a pneumatic engine anti-ice system, a de-icing system for the leading edges of the wings and the horizontal stabiliser, electrical wind

shield heating and an air data heating system (pitot, static port and AoA vane heating). The panel for the systems is located at the right of the left control column.



Panel of the ice and rain protection system

Photo: BFU



Ice protection system

Source: Embraer

Meteorological Information

The accident occurred at daylight.

According to the aviation routine weather report (METAR) of 0750 hrs UTC the following weather conditions prevailed:

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|--------------------------------|---------------------------|
| Wind: | 090° 7 kt |
| Visibility: | 4,800 m / mist |
| Clouds: | 5-7 oktas in 1,400 ft AAL |
| Temperature: | -0°C |
| Dewpoint: | -2 °C |
| Barometric air pressure (QNH): | 1,018 hPa |

Communication

The radio communications conducted in English were recorded by the air traffic control service provider and made available to the BFU.

Aerodrome Information

Berlin-Schönefeld Airport has a runway with the orientation 069°/249°. The asphalt runway 07L/25R is 3,600 m long and 45 m wide.

At the time of the accident runway 07L was in use. The threshold of runway 07L is at an elevation of 146 ft AMSL. Landing Distance Available (LDA) is 3,300 m.

Flight Recorder

The airplane was equipped with a Cockpit Voice Data Recorder (CVDR) to record flight parameters, conversations and sounds. The BFU seized and read out the CVDR.

The pilots talked either in English or in Dutch. The Adviser of the Belgian Air Accident Investigation Unit prepared a transcript and translation of the CVR recordings at the BFU facilities in Braunschweig.

Wreckage and Impact Information

The airplane had initial ground contact with the left wing tip about 4 m left of the runway centre line of runway 07L and about 7 m prior to the displaced threshold which is marked with a white bar. About 4 m behind the threshold, rubber deposit from the nose landing gear was found. Further 6 m, along rubber deposit of the right main landing gear was found.

The airplane had come to a stop about 447 m away from the threshold beyond the right runway edge marking but still on the asphalt area.



Initial ground contact

Photo: BFU

The outer 2 m of the left wing were bent upwards by about 10°. The lower surface of the wing, the left aileron and the outer rear end of the left flap showed scratch marks and deformations.

The right flap was deformed. The right main landing gear had fractured and folded back. Parts of the landing gear had penetrated the upper surface of the wing. The wheel of the right main landing gear was destroyed. About 20% of the wheel rim and parts of the flap track and carriage were abraded.

It was determined that the airplane carried ice of a thickness of up to 10 mm on the nose, the wing leading edges and the horizontal stabilizer.



Ice accretion on the left wing leading edge

Photo: Aviation Supervision Office

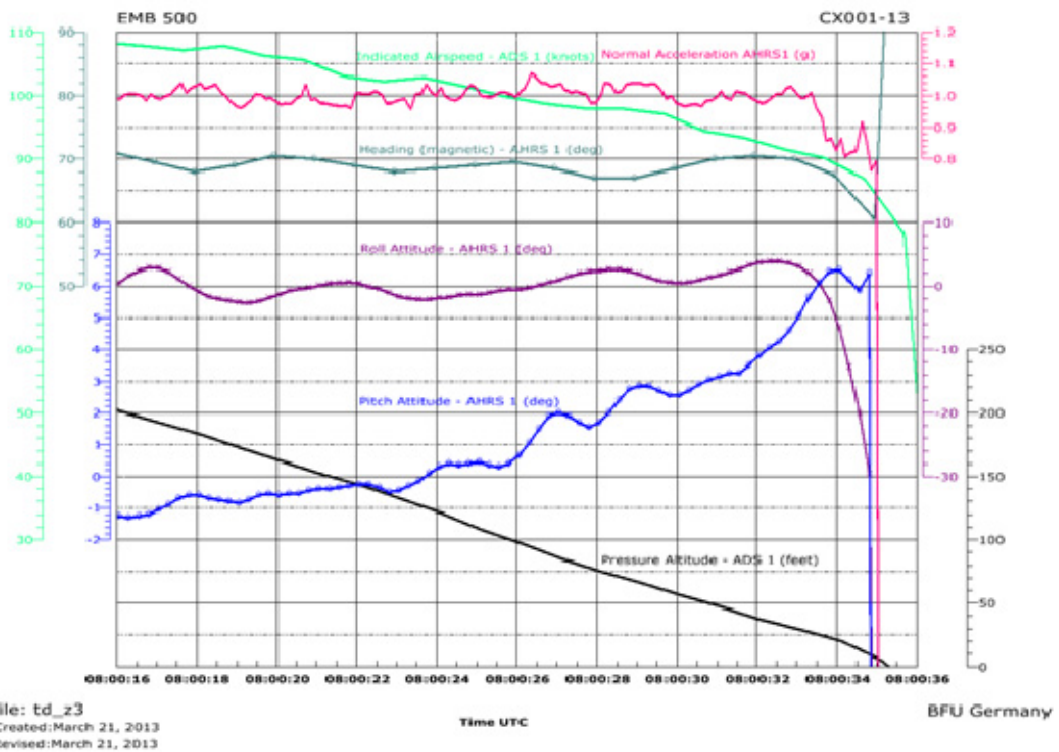
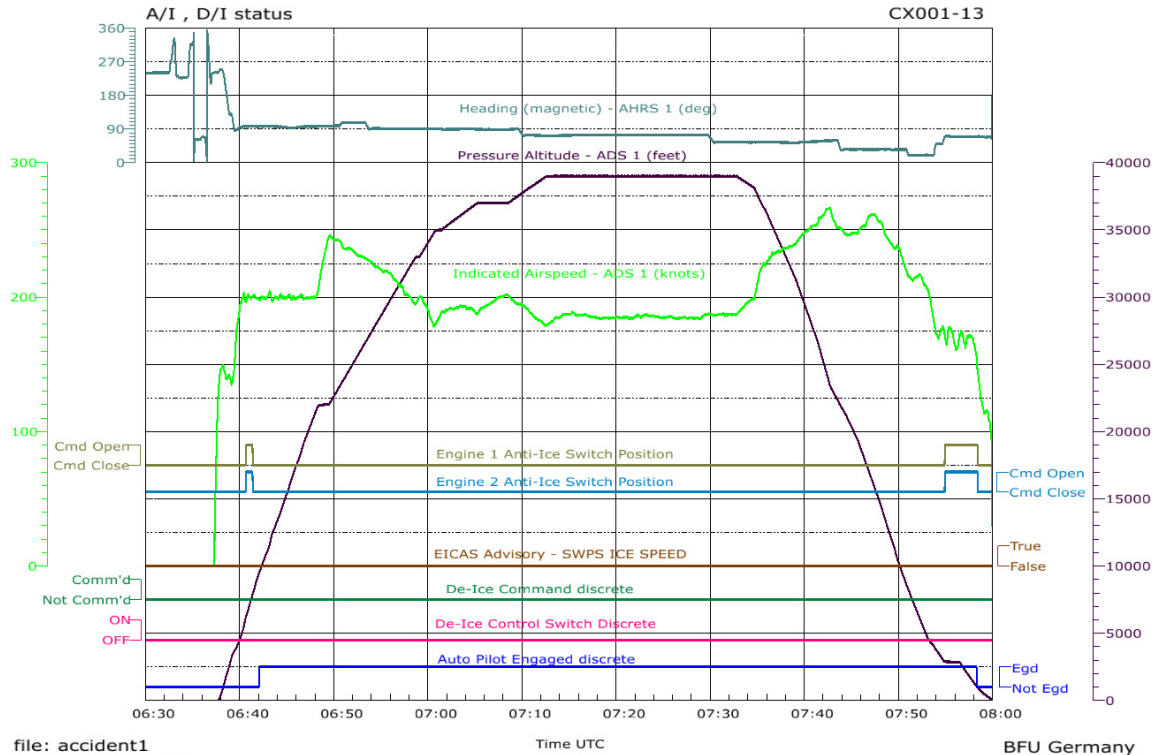
The data of the Central Maintenance Computer (CMC) were read out. These contained the CAS messages and the maintenance messages of the accident flight as well as past flights and incidents.

Investigator in charge: Jens Friedemann

Field Investigation: Uwe Berndt, Thomas Karge, Jens Friedemann

Appendices

Excerpt flight data recorder data



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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