Investigation Report

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

Identification

Type of Occurrence: Serious Incident
Date: 8 July 2016
Location: Near Paris
Aircraft: Airplane
Manufacturer / Model: Airbus Industry/A320-200
Injuries to Persons: None
Damage: Aircraft not damaged
Other Damage: None
State File Number: BFU16-0919-6X
Factual Information

History of the Flight

At the day of the occurrence, the Airbus A320-200 was on a flight from Berlin-Schönefeld Airport to Tenerife Sur Reina Sofia. On board were 178 passengers and 6 crew members.

At about 1417 hrs\(^1\) during cruise flight, in the vicinity of the radio beacon Pontoise (PON), at Flight Level (FL) 350 cabin pressure loss occurred. The Pilot in Command (PIC) was Pilot Flying (PF) and the co-pilot Pilot Monitoring (PM).

According to the Flight Data Recorder (FDR) data, the cabin pressure altitude climbed to approximately 8,800 ft to 9,000 ft. At the time, the Electronic Centralized Aircraft Monitoring (ECAM\(^2\)) generated a cabin pressure advisory which the FDR recorded.

The flight crew applied the checklist ECAM Advisory Condition CAB PRESS with CAB Altitude >= 8,800 ft. According to the checklist, the co-pilot tried to adjust the cabin pressure altitude manually. However, he could not control the cabin pressure altitude manually with the toggle switch. As a result the cabin pressure altitude climbed to approximately 11,000 ft. Then ECAM generated the cabin pressure excessive cabin altitude warning. The flight crew declared emergency and donned their oxygen masks. The PF initiated the descent and steered the airplane several degrees toward north-west, a few nautical miles away from the original route, because traffic in that sector below the aircraft was dense. The traffic the Traffic Alert and Collision Avoidance System (TCAS) picked up was indicated on the navigation display. Both pilots included this indication in the determination of the heading for the descent.

The air traffic controller approved the new heading and descent. The descent ended at FL 300, after the crew was able to stabilise the cabin pressure altitude manually at about 6,500 ft. According to the FDR recording, the emergency descent lasted about 2.5 minutes. In agreement with the PF, the PM switched the mode selector for the cabin pressure outflow valve back to Auto. During the rest of the flight it was possible

\(^{1}\) All times local, unless otherwise stated.

\(^{2}\) A system for the depiction of warnings and failure reports for aircraft systems and the procedure for handling of warnings.
to control the cabin pressure altitude. The flight crew decided to conduct a precautionary landing on runway 23L at Dusseldorf Airport.

Personnel Information

Pilot in Command

The 56-year-old PIC held an Airline Transport Pilot’s Licence (ATPL(A)) issued on 4 April 2014 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 320 in accordance with instrument flight rules (PIC IR). The rating was valid until 30 November 2016. The BFU was provided with a class 1 medical certificate valid until 7 November 2016.

According to the operator’s Flight Safety Department, the PIC had a total flying experience of 15,800 hours, of which 2,200 hours were on Airbus A320.

Co-pilot

The 34-year-old co-pilot held an Airline Transport Pilot’s Licence (ATPL(A)) issued on 10 December 2015 by the Luftfahrt-Bundesamt in accordance with Part-FCL. The licence listed the ratings as co-pilot for Airbus 320 in accordance with instrument flight rules (COP IR). The rating was valid until 31 October 2016. The BFU was provided with a class 1 medical certificate valid until 29 September 2016.

According to the operator’s Flight Safety Department, the co-pilot had a total flying experience of 4,000 hours, of which 3,600 hours were on Airbus A320.

Aircraft Information

The Airbus A320-2200 is a twin-engine transport aircraft in midwing configuration and mixed construction. The aircraft had a German Certificate of Registration and was operated by a German operator.
Manufacturer: Airbus Industry
Year of manufacture: 1998
Manufacturer’s Serial Number (MSN): 905
Operating time: 59,342 hours
Flight cycles: 20,749
Engine type: CFM 56-5A
Maximum take-off mass: 77,000 kg
Maximum landing mass: 64,500 kg

Technical Status Prior to the Flight
For 7 July 2016, the Techlog showed a Minimum Equipment List (MEL) entry. This entry - ATA³ Chapter 36-11-01A - means that for the flight the engine bleed air of engine number 2 had been deactivated by the operator’s maintenance organisation. It was a C-Item which allows the aircraft being operated for 10 days.

Meteorological Information
At the time of the occurrence daylight prevailed. According to the aviation routine weather report (METAR) of Dusseldorf Airport of 1250 hrs visibility was more than 10 km, the wind came from 260°, 16 kt. Clouds with a cloud cover of 1/8 to 2/8 at 3,000 ft AGL⁴ and of 5/8 to 7/8 at 5,000 ft AGL were reported. Temperature was 23°C, the dewpoint 14°C, and the barometric air pressure (QNH) 1,015 hPa. The forecast for the next two hours predicted no significant change.

Communication
Radio transmissions with the respective air traffic control unit were conducted in the English language. The Local Safety Unit LFEE – CRNA – Est provided the BFU with a radio transmissions transcript.

³ Systematic of the individual systems of an aircraft
⁴ Above Ground Level
Aerodrome Information

The information regarding Dusseldorf Airport was copied from the Aeronautical Information Publication (AIP). Dusseldorf Airport (EDDL) is located 7.4 km north of Dusseldorf city. Aerodrome elevation is 147 ft AMSL.  

Runways

<table>
<thead>
<tr>
<th>Runways</th>
<th>Dimensions</th>
<th>Surface</th>
<th>Approach Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>05R/23L</td>
<td>3,000 m x 45 m</td>
<td>Concrete</td>
<td>Both runways ILS Cat II / III</td>
</tr>
</tbody>
</table>

Flight Recorder

Flight Data Recorder and Cockpit Voice Recorder Information

<table>
<thead>
<tr>
<th>Manufacturer CVR</th>
<th>Honeywell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>980-6022-001</td>
</tr>
<tr>
<td>Serial number</td>
<td>14 830</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer FDR</th>
<th>Honeywell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>980-4700-042</td>
</tr>
<tr>
<td>Serial number</td>
<td>09 465</td>
</tr>
</tbody>
</table>

The CVR and the FDR were seized by the BFU and read out at the BFU facility. A transcript was prepared from the two hours of mixed channel recording of the CVR. The graph of the FDR analysis (Fig. 1) shows the time of the cabin press altitude warning and the subsequent descent. All times are UTC. During descent the High Pressure Bleed Valve (HPV) of engine No. 1 was open.

---

5 Above Mean Sea Level
Findings on the aircraft

The maintenance organisation of the operator examined the left engine and identified the damaged Solenoid Thermostat and an incorrect functioning pressure regulating valve as cause for the failure. Both components were replaced. The maintenance organisation provided the BFU with the documentation regarding the maintenance actions conducted.

Fig. 1: Cabin pressure warning

Source: BFU

Investigator in charge: Norman Kretschmer
Assistance: Hans-Werner Hempelmann

Braunschweig, 3 December 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.

Published by:

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