

# Interim Report

## Identification

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

## Factual Information

### History of the Flight

The Airbus A320, which had 178 passengers and 6 crew members on board, was on a flight from Berlin-Schönefeld (EDDB) to Tenerife Sur Reina Sofia (GCTF).

At about 1417 hrs<sup>1</sup> during cruise flight, in the vicinity of the radio beacon Pontoise (PON), at Flight Level (FL) 350 cabin pressure loss occurred.

The Cockpit Voice Recorder (CVR) recording transcribed by the BFU shows that the co-pilot had told the Pilot in Command (PIC) that cabin pressure altitude was increasing.

It increased to approximately 8,800 to 9,000 ft. At that moment the Electronic Centralized Aircraft Monitoring (ECAM) generated a cabin pressure advisory. The crew completed the ECAM Advisory Condition CAB PRESS with CAB Altitude  $\geq$  8 800 ft checklist. According to the checklist the co-pilot switched the Mode Selector to manual and tried manually to adjust the cabin pressure altitude with the toggle switch. In the further course of events the cabin pressure altitude increased to approximately 11,000 ft. The ECAM generated the warning Cabin Pressure Excessive Cabin Altitude. Both crew members decided to don their oxygen masks.

At about 1418 hrs the co-pilot declared emergency: “Mayday, Mayday, Mayday, [...], Emergency Descent, descending 12 000 feet.”

The PIC initiated the descent and steered the airplane several degrees toward northwest, a few nautical miles away from the original route. Traffic in this sector below the airplane was dense. The Traffic Alert and Collision Avoidance System (TCAS) indicates traffic on the navigation display and both pilots included this information in their determination of the heading during the descent.

The air traffic controller approved the new heading and descent. The descent ended in FL300 after the crew was able to stabilise the cabin pressure altitude at about 6,500 ft. In agreement with the PIC, the co-pilot switched the mode selector for the cabin pressure controller outflow valve back to auto.

The co-pilot informed the controller: “[...] we are on heading of two eight zero now at flight level tree hundred. Our altitude in the cabin just went away, seems that we have a problem with bleed systems. We try to recover our systems now.”

According to the CVR recording the crew used the FORDEC procedure (Facts, Options, Risks and Benefits, Decision, Execution, Check) for their decision making process. The result was a precautionary landing at Dusseldorf Airport. Subsequently, the responsible air traffic control until was informed accordingly.

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<sup>1</sup> All times local, unless otherwise stated.

The approach was flown to runway 23L at Dusseldorf Airport where the airplane landed. The passengers disembarked the airplane via two stairs.

## 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.

He held a class 1 medical certificate valid until 7 November 2016 which was provided to the BFU. He had a total flying experience of approximately 15,800 hours; of which about 2,200 hours were flown on type.

### 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.

He held a class 1 medical certificate valid until 29 September 2016 which was provided to the BFU. His total flying experience was approximately 4,000 hours; of which about 3,600 hours were flown on type.

## Aircraft Information

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

Manufacturer	Airbus
Year of manufacture	1998
Manufacturer's Serial Number (MSN)	905
Operating hours	59,342
Flight cycles	20,749
Engine type	CFM 56-5A

It had a German certificate of registration and was operated by a German operator.

### Technical Status Prior to the Flight

The Techlog showed a Minimum Equipment List (MEL) ATA Chapter 36-11-01A entry. It means that prior to the flight the engine bleed air of engine number 2 had been deactivated by the operator's maintenance organisation. It is a so-called C-Item which allows the aircraft being operated for the next 10 days.

The MEL lists all instruments, equipment and functions of an aircraft, which can have a defect, but do not affect airworthiness. It also stipulates how long, to what extent, and under which conditions the aircraft can be operated with the defect.

### Meteorological Information

According to the aviation routine weather report (METAR) of Dusseldorf Airport (EDDL) of 1250 hrs visibility was more than 10 km, the wind came from 260°, and wind velocity was 16 kt. Clouds with a cloud cover of 1/8 to 2/8 at 3,000 ft and of 5/8 to 7/8 at 5,00 ft 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.

### Radio Communications

Radio transmissions with the respective air traffic control were conducted in the English language.

### Aerodrome Information

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

#### Runways

Runway	Dimensions	Surface	Approach system
05R / 23L	3,000 m x 45 m	Concrete	Both runways Cat II & III
05L / 23R	2,700 m x 45 m	Concrete	05L (Cat I); 23R (Cat II & III)

## Flight Recorder

### Flight Data Recorder and Cockpit Voice Recorder Information

Manufacturer CVR	Honeywell
Model	980-6022-001
Serial number	14 830

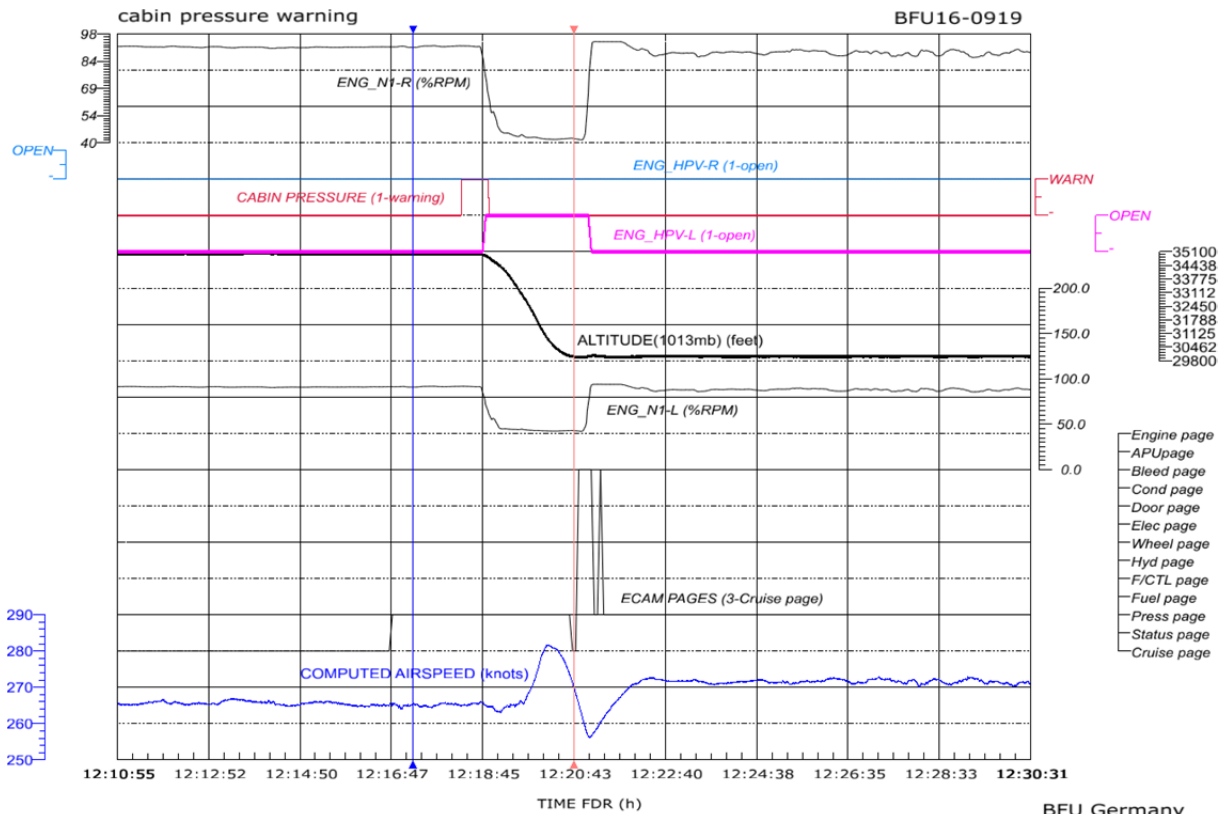
Manufacturer FDR	Honeywell
Model	980-4700-042
Serial number	09 465

The CVR and the FDR were seized by the BFU and read out at the avionics laboratory at the BFU facility.

A transcript was prepared from the two hours of mixed channel recording of the CVR.

### Flight Data Recorder and CVR Parameters

The graph of the FDR analysis shows the time of the cabin altitude warning.



Cabin pressure warning

Source: BFU

## Wreckage and Impact Information

While the aircraft was at cruising level at FL350 north of Paris, the Pressure Regulating Valve (PRV) malfunctioned. In addition, there was an error in the Thermostat Solenoid. In this combination the two malfunctions caused the pressure fluctuation in the engine bleed air system of engine No 1. The cabin pressure altitude increased and the ECAM generated a cabin pressure advisory. At that time neither of the two aircraft air conditioning systems (PACK) was supplied with engine bleed air.

Investigator in charge: Norman Kretschmer

Assistance: Hans-Werner Hempelmann

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.

## Published by:

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