CIAIAC

COMISIÓN DE
INVESTIGACIÓN
DE ACCIDENTES
E INCIDENTES DE
AVIACIÓN CIVIL

Second interim statement A-008/2013

Accident occurred to aircraft Boeing B-757-300, registration D-ABOC, operated by Condor Flugdienst GmbH, at Gran Canaria Airport on 22 March 2013 (Las Palmas de Gran Canaria, Spain)

GOBIERNO DE ESPAÑA
MINISTERIO DE FOMENTO

Second interim statement

A-008/2013

Accident occurred to aircraft Boeing B-757-300, registration D-ABOC, operated by Condor Flugdienst GmbH, at Gran Canaria Airport on 22 March 2013 (Las Palmas de Gran Canaria, Spain)

GOBIERNO DE ESPAÑA
MINISTERIO DE FOMENTO
SUBSECRETARÍA
COMISIÓN DE INVESTIGACIÓN DE ACCIDENTES E INCIDENTES DE AVIACIÓN CIVIL

Edita: Centro de Publicaciones
Secretaría General Técnica
Ministerio de Fomento ©

NIPO: 161-15-014-7

COMISIÓN DE INVESTIGACIÓN DE ACCIDENTES E INCIDENTES DE AVIACIÓN CIVIL

Tel.: +34 91 597 89 63
Fax: +34 91 463 55 35
E-mail: ciaiac@fomento.es
http//www.ciaiac.es
C/ Fruela, 6
28011 Madrid (España)

Important notice

This document constitutes the interim statement envisioned in Article 16.7 of Regulation (EU) no. 996/2010 of the European Parliament and of the Council, as well as in paragraph 6.6 of Annex 13 to the Convention on International Civil Aviation. The statement includes the details of the progress of the investigation and the most important operational safety issues revealed to date. The information provided herein is subject to change as the investigation proceeds.

Pursuant to the contents of Regulation (EU) no. 96/2010 of the European Parliament and of the Council and of Annex 13 to the Convention on International Civil Aviation, the investigation is purely technical in nature and is not intended to determine or apportion blame or liability. The investigation is being conducted without necessarily resorting to evidentiary procedures and for the sole purpose of preventing future accidents.

Consequently, the use of this information for any purpose other than to prevent future accidents may result in faulty conclusions or interpretations.

Abbreviations

APU	Auxiliar power unit
ATPL(A)	Air transport pilot license (Aircraft)
BFU	German Federal Bureau of Aircraft Accident Investigation
CPL(A)	Comercial pilot license (Aircraft)
EDDH	Hamburg airport ICAO code (Germany)
ft	foot
GCLP	Gran Canaria airport ICAO code (Spain)
h	Hour(s)
HEPA	High Efficiency Particulate Air
FA	Flight attendant
TVOC	Total of volatile organic compound
TWR	Tower
UTC	Universal Time Coordinated
VOC	Volatile organic compound

DATA SUMMARY

LOCATION

Date and time	**Friday, 22 March 2013, 16:10 local time[1]**
Site	**Gran Canaria Airport (Las Palmas de Gran Canaria, Spain)**

AIRCRAFT

Registration	**D-ABOC**
Type and model	**BOEING B-757-300**
Operator	**Condor Flugdienst GmbH**

Engines

Type and model	**Rolls-Royce RB 211**
Number	**2**

CREW

	Captain	First Officer
Age	**35 years**	**39 years**
License	**ATPL (A)**	**CPL (A)**
Total flight hours	**7346 h**	**597 h**
Flight hours on the type	**544:46 h**	**343:24 h**

INJURIES

	Fatal	Serious	Minor / None
Crew		**1**	**7**
Passengers			**242**
Third persons			

DAMAGE

Aircraft	**None**
Third parties	**N/A**

FLIGHT DATA

Opeation	**Commercial Air Transport - Scheduled - International - Passenger**
Phase of flight	**Approach**

REPORT

Date of approval	**25 February 2015**

[1] At the date of the accident the local time is the same as UTC.

1. SUMMARY OF THE FLIGHT

Aircraft Boeing B-757-300, registration D-ABOC, took off at 10:44 UTC on 22 March 2013, from Hamburg airport (EDDH, Germany) to cover flight DE 5944 with destination Gran Canaria airport (GCLP, Spain). The aircraft was subjected to an deicing treatment right before the take-off. On board there were 8 crew members and 233 passengers.

The take-off, ascent and cruise phases went uneventful and the aircraft started its approach to destination airport. While descending, at some 6000 ft height, crew noticed a strong smell that seemed to be originated in the air conditioning system outlets. Immediately afterwards the purser called the cockpit to state that in the passengers' cabin a strong smell was being perceived too.

About 2 minutes later, the first officer communicated the captain that he felt a bit physically unsecure as he noted a slight dizziness. The captain suggested him to use the oxygen mask. The first officer agreed and donned it noticing an immediate improving. The crew performed the landing without further notice and the first officer took out his mask during taxi.

The passengers were disembarked and the tasks for the new flight were started, with destination Hamburg. In the meantime, the crew contacted the company's maintenance department, which gave instructions to their technicians to check the engines for a possible bird impact and also the oil and hydraulic levels, the water/waste driving lines and the HEPA filters, without finding any anomalies. After that, the crew decided to undertake a test of the air conditioning system.

They coordinated with TWR, which authorized them to perform the tests at R1 position, close to 03L runway threshold. A tractor towed the aircraft to that position as this was only having the APU on. Onboard were the whole crew, a maintenance technician and an operator from the company's base in Gran Canaria. Each member of the crew was at their pertinent position to immediately report any anomalous circumstance they could notice. Once at R1 they connected the APU bleed and the left pack of the air conditioning system. Right after that a strong smell was noticed, and seconds later the crew reported that the two FA at 2L/R were having physical problems.

They immediately disconnected the air conditioning pack and the APU bleed and opened all the aircraft's doors to ventilate. Oxygen was given to the two FA and they requested an ambulance to TWR. The affected members of the crew were evacuated to the airport medical services where they were attended first, being transferred to a hospital afterwards. They stayed there until first hours of the next day.

2. STATUS OF THE INVESTIGATION

The consequent flight to Hamburg had to be cancelled and a new one was scheduled for the next day, with a different aircraft coming from Germany. Onboard this last aircraft there were some company's technicians carrying the appropriate equipment, in order to deeply check the airplane with the smell problem.

These technicians, in presence of 2 CIAIAC investigators, performed an exhaustive inspection of the aircraft, without finding any anomalies. After that, it was decided to repeat the tests made with the crew onboard to check if the smell would appear again. An "aerotracer" smell detection system was used during this test, which had been brought by the operator's technicians. A first test was made with this equipment connected only to recirculation fan, registering glycol and "Pattex" (adhesive material) traces.

Once at R1, with the APU on, the APU bleed and the air conditioning left pack were connected. None of the person onboard noticed any strange smell, or suffered a physical alteration. The smell sensor did not detect any anomalies either, not even the material traces detected before.

The next step was to test the air conditioning system with the remaining possible combinations of engines/APU bleed and air conditioning packs, in all the engines power range (from idle to take off thrust), noticing nothing abnormal. These tests lasted for 50 minutes.

The engines, the air conditioning conducts, the hydraulic lines, APU, etc. were checked again. The only noticeable finding was 5 glycol liters spilled in the APU compartment that were removed. Possible they were part of the unfreezing treatment performed to the aircraft in Hamburg.

An inquiry was conducted into the foods eaten by the members of the crew to determine whether the physical symptoms experienced by some of them could have been caused by some type of food.

On 26 March, four days after the event, a positioning flight was made by a full crew, different from the one involved in the event, to transport the airplane to Frankfurt, where the operator is based. Onboard were also airline technicians who had traveled to inspect the aircraft, as well as all the equipment they had taken with them, which included Aerotracer and GrayWolf sensors, which were in use the entire flight.

Around 1:40 h into the flight they entered an area of slight turbulence, immediately after which an odor filled the entire cabin that was so intense that the pilots decided to don their oxygen masks.

Even so the copilot felt his tongue going numb and irritation in his throat. These same symptoms were also reported by the purser.

The turbulence stopped after about 10 minutes, with the odor disappearing immediately afterwards. The pilots removed their oxygen masks. The symptoms affecting the tongue and throat of the copilot and purser likewise disappeared.

While descending into the Frankfurt Airport the odor returned, and both pilots once more donned their oxygen masks. The purser felt her fingers go numb. The odor cleared up by the time they reached 6000 ft and the landing was completed without further incident.

None of the other people onboard noticed any physical symptoms during either of the two odor events that occurred during the flight.

Neither the GrayWolf nor the Aerotracer sensor indicated the presence of TVOCs and/or compounds from aviation products at any point during the flight.

Subsequently several more flights were made without any problems with the exception of a flight where the airplane was deiced before take-off, causing fumes to enter the cabin, both on the ground with the APU supplying air to the air conditioning packs and in the air with the packs being supplied from the engines, though no one onboard reported any discomfort.

Following this flight the operator requested assistance from the aircraft manufacturer, Boeing, which deployed a team of specialists to the operator's base at the Frankfurt Airport.

This team inspected the aircraft again by taking readings during a flight, which included collecting air samples in the cabin. These samples were later analyzed in the laboratory. None of these actions provided any insights into the cause of the physical symptoms that had affected the crewmembers.

Four samples of the different liquids used to deice airplanes were also sent to a laboratory, where they were analyzed using a gas chromatograph in an effort to determine what volatile organic compounds (VOC) they released when heated.

In April 2013 the health of one of the flight attendants who had been onboard during the flight of 22 March 2013 worsened, requiring hospitalization. The symptoms presented were overall muscle fatigue, in particular of the lower limbs, difficulty walking, sensory disorder, trouble concentrating and general fatigue.

She was released from the hospital and continued treatment on an out-patient basis. The symptoms persisted and her health did not show improvement, even worsening at times

to the point where she had to be hospitalized. As of the date of this interim report, she still has not been able to return to work.

Although the tests performed on her have not been able to identify the cause of the symptoms afflicting her, the medical report from the hospital indicated poisoning caused by some type of neurotoxin.

A blood sample taken from the flight attendant was sent to a laboratory in the United States that specializes in neurotoxin poisoning, specifically in devising methods to identify the presence of damage to the nervous system that is usually caused by these substances. The analysis of the sample concluded that it exhibited characteristics consistent with damage to the nervous system.

The other flight attendant who was also affected during the same event has likewise been unable to return to work.

In most aircraft the cabin is pressurized by bleeding air from the engine compressor stage. As a result, it is possible that a leak somewhere in the engine could have reached the compressor stage, and that part of the leaked fluid entered the cabin with the bleed air.

None of the inspections of the aircraft detected any leaks in the engines. The only substance found was deicing fluid in the APU tray.

The APU was disassembled and sent to the manufacturer facilities, where it was subjected to bench functional tests. Air samples were taken both from the engine inlet and from the bleed. These samples were analyzed and compared with each other.

Besides APU, other main elements of the air conditioning system were replaced. Also it was performed a cleaning of the cabin. Afterwards several test flights were undertaken with no incidences and thus it was decided to return the aircraft to service. No similar incidence has occurred since then.

The applicable regulations in Spain, in the European Union and in the United States have been revised concerning the exposition limits to chemical products. The values indicated therein have been compared to those detected in the air sample from the inside of the cabin and from the APU bleeding.

At the same time it has been tracked the medical status of both flight attendants, who were still suffering from the accident.

3. NEXT STEPS

Collect and complete all the medical information concerning the FAs affected by the accident.

Revision, analysis and assessment of all the information gathered during the investigation.

At the end of the investigation a final report will be published.