Havarikommissionen
Accident Investigation Board Denmark

BULLETIN

Serious incident

18-11-2016

involving

BOEING 737 800

YL-PSD

Certain report data are generated via the EC common aviation database

FOREWORD

This bulletin reflects the opinion of the Danish Accident Investigation Board regarding the circumstances of the occurrence and its causes and consequences.

In accordance with the provisions of the Danish Air Navigation Act and pursuant to Annex 13 of the International Civil Aviation Convention, the investigation is of an exclusively technical and operational nature, and its objective is not the assignment of blame or liability.

The investigation was carried out without having necessarily used legal evidence procedures and with no other basic aim than preventing future accidents and serious incidents.

Consequently, any use of this bulletin for purposes other than preventing future accidents and serious incidents may lead to erroneous or misleading interpretations.

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BULLETIN

General

File number:	HCLJ510-2016-319
UTC date:	18-11-2016
UTC time:	17:15
Occurrence class:	Serious incident
Location:	Enroute to Billund (EKBI)
Injury level:	None

Aircraft

Aircraft registration:	YL-PSD
Aircraft make/model:	BOEING 737 800
Current flight rules:	Instrument Flight Rules (IFR)
Operation type:	Commercial Air Transport Passenger Airline
Flight phase:	En route
Aircraft category:	Fixed Wing Aeroplane Large Aeroplane
Last departure point:	Canary Islands (Spain) GCRR (ACE): Arrecife/Lanzarote
Planned destination:	Denmark EKBI (BLL): Billund
Aircraft damage:	None
Engine make/model:	CFM International - CFM56-7B27

SYNOPSIS

Notification

All times in this report are UTC.

The Aviation Unit of the Danish Accident Investigation Board (AIB) was notified of the serious incident by the Danish Transport and Construction Agency (DTCA) on 21-11-2016 at 10:43 hours.

The European Aviation Safety Agency (EASA), the Directorate-General for Mobility and Transport (DG MOVE), the American National Transportation Safety Board (NTSB) and the Transport Accident and Incident Investigation Bureau of Latvia (TAIIB) were notified on 23-11-2016. The International Civil Aviation Organization (ICAO) was notified on 12-1-2017.

The NTSB and the TAIIB appointed non-travelling accredited representatives to the AIB safety investigation.

Summary

After departure, the first officer was served a hot meal. Overhead France the first officer felt nauseous and started vomiting.

The commander performed the remaining part of the flight as a single pilot operation.

Food poisoning most likely led to incapacitation of the first officer.

The serious incident occurred in dark night and under visual meteorological conditions (VMC).

FACTUAL INFORMATION

History of the flight

The serious incident occurred during a commercial IFR flight from Arrecife/Lanzarote (GCRR) to Billund (EKBI).

It was the second flight of the day for the commander and the first officer.

During the first flight, the first officer felt all right.

After departure from GCRR, the flight crew were served hot meals. The flight crew had different meals.

Overhead France and approximately 90 minutes before arrival in EKBI, the first officer had a controlled rest period.

Approximately 10 minutes into the rest period, the first officer felt nauseous. After five minutes and without warning the commander, the first officer had to rush to the forward lavatory to vomit.

The commander called the senior cabin crew member to the flight deck, and asked other cabin crew members to check on the first officer.

When the first officer returned to the flight deck, the flight crew and the senior cabin crew member discussed the situation. Since there was only 15 minutes until top of descent, the commander decided that the flight should continue to EKBI.

The commander performed the remaining part of the flight as a single pilot operation.

Due to her condition, the first officer used a jump seat instead of her pilot seat until the final approach phase of the flight.

The cabin crew pulled the curtain in the forward galley to allow the first officer exclusive right to the forward lavatory and ensured that at least two cabin crew members were present in the forward galley for the remaining part of the flight.

Approximately every five minutes, the first officer continued vomiting.

The commander informed Air Traffic Control (ATC) of the medical situation and requested an ample approach with radar guidance (vectoring) in order to complete required tasks and checklists without any stress.

During the final approach and just before landing gear down selection, the first officer returned to her pilot seat. The seat was secured in the rearmost position, because the first officer only acted as an observer.

The commander performed a standard approach and landing.

Arriving at the gate, the first officer got medical assistance.

Injuries to persons

Injuries	*Crew*	*Passengers*	*Others*
Fatal			
Serious			
None	6	180	

Personnel information

The commander

License and medical certificate.

The commander (male - 35 years) was the holder of a valid Danish Airline Transport Pilot License (ATPL (A)).

The ATPL contained the following type rating: B737 300-900/IR.

The latest Operator Proficiency Check (OPC) was valid until 30-4-2017.

The type rating B737 300-900/IR was valid until 31-10-2017.

The EU Part-FCL medical certificate class 1 was valid until 1-10-2017.

The medical certificate contained the following limitations: *VDL "Correction for defective distant vision"*.

Flying experience

(Block hours)	Last 90 days	Total time
All aircraft	230	6180
This type	230	5800

The first officer

License and medical certificate.

The first officer (female - 35 years) was the holder of a valid Danish Commercial Pilot License (CPL(A)).

The CPL contained the following type rating: B737 300-900/IR CO-PILOT.

The latest Operator Proficiency Check (OPC) was valid until 31-3-2017.

The type rating B737 300-900/IR was valid until 31-3-2017.

The EU Part-FCL medical certificate class 1 was valid until 5-2-2017.

The medical certificate contained the following limitations: *VDL "Correction for defective distant vision"*.

Flying experience

(Block hours)	Last 90 days	Total time
All aircraft	150	3500
This type	150	3250

The night before the serious incident flight, the first officer slept well.

Aircraft information

Registration:	YL-PSD
Type:	Boeing 737
Model:	86N
Manufacturer:	The Boeing Company
Serial number:	28618
Year of manufacture:	2000
Engine manufacturer:	CFM International
Engine type:	CFM56-7B27

Meteorological information

Terminal aerodrome forecast (TAF)

EKBI 181507z 1815/1912 18010kt 9999 sct020 tempo 1815/1908 20015g25kt 4000 shrasn bkn010

sct020cb prob40 1815/1904 tsrags tempo 1908/1912 bkn008=

Aviation routine weather report (METAR)

EKBI 181650z 19007kt cavok 03/02 q0990=
EKBI 181720z auto 21005kt 180v260 9999ndv sct032/// bkn090/// bkn120/// 03/02 q0991=
EKBI 181750z auto 20010kt 170v230 9999ndv bkn061/// bkn087/// 05/01 q0991=

Operations manual

The operator's operations manual - part A (extract) - incapacitation of crew members.

See appendix 1

Medical information

Upon arrival at the gate in EKBI, medical personnel and an ambulance were available. The medical conclusion was that the first officer was subjected to food poisoning.

The first officer went home and went to bed. Until 4 o'clock the next morning, she continued vomiting.

The symptoms that she experienced were similar to the symptoms, she had while being subjected to food poisoning approximately 20 years earlier.

A chef subsequently informed the first officer that a part of her flight crew meal (cabbage stew) most likely was the source of the food poisoning. Because the cabbage grows in contact with soil, and since it most likely was only heated and not cooked during preparation, live microbiological bacteria might have been present in the hot meal. Nausea and repeated vomiting were typical reactions to food poisoning.

Additional information

The catering company, which prepared the hot meal, delivered seven identical hot meals to four different flights on the day of the serious incident.

The catering company did not receive other reports of food poisoning related to the seven hot meals.

ANALYSIS

Incapacitation

Due to the symptoms and reactions of the first officer, food poisoning most likely led to the incapacitation of the first officer.

Even though, the catering company did not receive other reports regarding seven identical meals, the AIB considers the cabbage stew as the most likely source of the food poisoning.

Safety effect and risk mitigation implementation

The incapacitation of the first officer reduced the number of flight crew members below the minimum required. According to the operator's procedures, it was an emergency.

With reference to the operator's procedures, the commander made use of available internal (other crew members/automatic flight control) and external (ATC/medical assistance upon landing) resources which,

- reduced the overall on-board workload
- kept the on-board flight safety at an acceptable level
- made the medical assistance to the first officer effective.

CONCLUSIONS

Food poisoning most likely led to incapacitation of the first officer.

APPENDIX 1

The operator's operations manual - part A (extract) - incapacitation of crew members.
Return to chapter

8.3.14.1 General

In-flight pilot incapacitation is an important safety hazard and has already caused many accidents.

Incapacities have occurred more frequently than other emergencies, which are the subject of extensive training (such as engine failure, cabin fire etc). Aviation history and statistics indicate that incapacities may occur in all age groups and during all phases of the flight. There are many forms of incapacitation ranging from obvious sudden death to a lingering and difficult to detect partial loss of functions.

8.3.14.2 Succession of Command

If the Commander should become incapable of holding command, command will be assumed by another flight crew member in accordance with OM-A section 4.

If the SCCM is incapacitated, the Commander shall liaise with the remaining CCMs to choose a new SCCM in accordance with OM-A section 4.

8.3.14.3 Types of Incapacitation

Obvious incapacitation

Total functional failure and loss of capabilities. This generally will be easily detectable and will be a prolonged condition. Among the possible causes are heart disorders, severe brain disorders, severe internal bleeding, etc.

Subtle incapacitation

This may be considered a more significant operational hazard, because it is difficult to detect and the effects can range from partial loss of functions to complete unconsciousness. Possible causes might be minor brain seizures, hypoglycaemia (low blood sugar), other medical disorders or preoccupation with personal problems. Since the crew member concerned may not be aware of, or capable of rationally evaluating his situation, this type of incapacitation is very dangerous.

8.3.14.6 Actions to be taken - Flight Crew

First Step

- *Take over control of the aeroplane by announcing "My Controls",*
- *Engage autopilot,*
- *Declare an urgency or emergency - whichever is applicable,*
- *If possible have the incapacitated flight crew member removed from his seat. In any case his seat should be moved fully back to prevent obstruction of flight controls, switches, levers, etc. The help of other crew members might be required. If the flight crew member is not removed from his seat, his shoulder harness shall be locked as a minimum.*

Second Step

- *Take care of the incapacitated crew member by trying to provide first aid (ask if doctors or other medical*
- *personnel are onboard),*
- *Arrange a landing as soon as practicable after considering all pertinent factors, Arrange medical assistance after landing - giving as many details about the condition of the affected crew member as possible.*

Third Step

- *Prepare for landing (cockpit and cabin), but do not press for a hasty approach.*
- *Perform approach checklist earlier than normal (request assistance from other crew members or "capable" persons),*
- *Request radar vectoring and make an extended approach, where possible, to reduce workload,*
- *For landing do not change seats - fly the aeroplane from your normal position,*
- *Organize work after landing; this will include:*
    - *Depending on the situation, a change of seats for taxiing in, but only after the aeroplane has come to a complete stop,Arrangements for the parking of the aeroplane.*
    - *Having the incapacitated crew member off-loaded to the ambulance as quickly as possible;*