

# **FINAL REPORT No.4-02/5-13 (1-2015)**

## **Flight crew incapacitation involving a Bombardier DHC-8-403, YL-BAJ, during cruise, 130 NM from Riga International airport on 13 October, 2013**

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### **Abbreviations**

UTC - Universal Time Coordinated

NM - Nautical mile

FT - Feet

FL - Flight Level

FDP – Flight Duty Period

TAIIB -Transport Accident Investigation Bureau

## **Synopsis**

### **Unless stated otherwise the time in this Report is UTC**

On Sunday, October 13, 2013 an occurrence had taken place, crew member incapacitation involving a scheduled flight of aircraft Bombardier DHC-8-403, registration YL-BAJ, flight BTI-416. The aircraft was operating a scheduled passenger service from Riga (EVRA) to Moscow, Domodedovo.

On first contact at 20:44 with Riga ATC the pilot reported to ATC about food poisoning with crew member and his intention to proceed back to Riga International airport (EVRA). Later the pilot declared Mayday and requested a diversion to Riga airport due to a medical emergency. ATC was advised that the Captain was incapacitated.

The aircraft landed safely at Riga where medical assistance was waiting to meet the aircraft.

## **Notification**

The Transport Accident and Incident Investigation Bureau of the Republic of Latvia (TAIIB) were notified at next day of the incident, on Monday, October 14, 2013 by fax message from ARCC at 01:11AM local time.

## **Investigation**

TAIIB Authorities classified the occurrence as a serious incident and initiated an investigation under the provisions of Annex 13 to the Convention on International Civil Aviation (Chicago 1944) and 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, as well as forwarded request to airline “airBaltic” for providing any relevant available information regarding to the incident and personnel data of pilots involved in the incident.

### **1. Factual information**

During cruise at FL250, approximately 130NM from Riga near to FIR BDRY (IGORO, **562136N; 0281200E**) the Captain said to First Officer that his stomach is not feeling well and went to lavatory. On the way to the lavatory he fell on the floor and fainted. Cabin crew No1 was at front station at that time and provided immediate assistance to Captain as well as called aircraft passengers for a doctor on board.

Upon considering Captain’s condition the FO made decision to return back to Riga airport. Declared emergency, and requested from ATC medical assistance as well as short radar vectors.

As the descent was commenced the Passengers were informed that an early descent was to be made and diversion to Riga due to a medical emergency. The descent, approach and landing were uneventful. The aircraft landed on RWY 36 at 21:23 hrs, after landing in about 20 min remained on runway for ambulance and passenger disembarkation and then was towed and parked on stand at Riga airport.

### **1.1. Subsequent events**

The flight was met by a medical service who rendered assistance to the ill crewmember. The Captain was medically assessed at Riga on arrival and then transferred to Paula Stradiņa Hospital for treatment. The Captain was remained under hospital care for 4 days where a gradual improvement in his condition was made.

Upon receipt of the information on emergency and PIC health status CAA Aeromedical department immediately suspended the pilot's medical certificate

### **1.2. Injuries to persons**

There were no injuries.

### **1.3. Damage to aircraft**

Not damage occurred.

### **1.4. Other damage**

Objects other than aircraft not damaged.

### **1.5. Personnel information**

#### **PIC**

Male, 44 years old.

The Commander was the holder of an Airline Transport Pilot's Licence (Aeroplanes) issued by CAA Republic of Latvia on 19 February 2009. This licence was valid for multi-engine aeroplanes, and included a type rating on the F50 and DHC8.

His medical certificate (Class 1) was dated 09 November 2012.

Total flight experience -4288 hrs;  
Flying experience as captain (PIC)- 2583 hrs;  
Flight experience on aircraft DHC8-Q400-1870 hrs;  
Flight time last 7 days -9 hrs 44min.;  
Flight time last 28 days -47 hrs 57min;  
Flaying hours in incident day – 2hrs 25min.  
Flight time last 24 hours -7 hrs 56min;  
Rest time before flight 19hrs  
Rest time last 48 hrs before incident 42hrs 27min.

#### **First Officer**

Male, 30 years old.

The First Officer was the holder of an Commercial Pilot's Licence (Aeroplanes) issued by issued by CAA Republic of Latvia on 21 May 2013. This licence was valid for ME IR(A) and included a type rating on the F50 and DHC8 as Co-Pilot.

His medical certificate (Class 1) was dated 04 December 2012.

Total flight experience - 2527 hrs;  
Flying experience as captain (PIC)- 121 hrs;  
Flight experience on aircraft DHC8-Q400-965 hrs;

Flight time last 7 days -4:43 hrs;  
Flight time last 28 days -54:18 hrs;  
Flaying hours in incident day – 4hrs 43min.  
Flight time last 24 hours -4 hrs 43min;  
Rest time before flight –holiday unit  
Rest time last 48 hrs before incident holiday unit.

## **1.6. Aircraft information**

Aircraft type – Bombardier DHC-8-402, owner of aircraft airBaltic;

## **1.7. Meteorological information**

NIL

## **1.8. Aids to Navigation**

NIL

## **1.9. Communications**

NIL

## **1.10. Aerodrome information**

NIL

## **1.11. Flight recorders**

NIL

## **1.12. Wreckage and impact information**

Not damage

## **1.13. Medical and pathological information**

### **1.13.1. Root diagnosis**

Patient was hospitalized for acute basis with an array of watery diarrhea and vomiting, which followed the loss of consciousness. Such episodes the patient has not previously experienced. There are also high-temperature subfebrile, rhinitis. NMC stage tests were performed and a heightened blood sugar level was stated. Patient was placed in the hospital for diabetes therapy and training.

The patient started insulin therapy, as well as training on diabetes nutrition principles, glycemic self-control, insulin injection technique and insulin dose adaptation. In dynamics condition of the patient stabilized, glucose corrected and the patient was discharged with recommendations for further treatment of the family doctor and endocrinologist supervision.

### 1.13.2. Regulation requirements

According to Item **MED.A.015 “Medical confidentiality ”** of COMMISSION REGULATION (EU) No 1178/2011 of 3 November 2011 all persons involved in medical examination, assessment and certification shall ensure that medical confidentiality is respected at all times.

#### **MED.A.040 Issue, revalidation and renewal of medical certificates**

Revalidation and renewal:

**(1) Class 1 and Class 2 medical certificates shall be revalidated or renewed by an AeMC or an AME.**

(2) The AeMC, AME or GMP shall only issue, revalidate or renew a medical certificate if:

(3) (1) the applicant has provided them with a complete medical history and, if required by the AeMC, AME or GMP, results of medical examinations and tests conducted by the applicant’s doctor or any medical specialists; and

(4) (2) the AeMC, AME or GMP have conducted the aero-medical assessment based on the medical examinations and tests as required for the relevant medical certificate to verify that the applicant complies with all the relevant requirements of this Part.

**(5) MED.A.045 Validity, revalidation and renewal of medical certificates**

(6) (a) *Validity*

(7) (1) Class 1 medical certificates shall be valid for a period of 12 months.

(8) (2) The period of validity of Class 1 medical certificates shall be reduced to 6 months for licence holders who:

**(9) (i) are engaged in single-pilot commercial air transport operations carrying passengers and have reached the age of 40;**

The validity period of a medical certificate, including any associated examination or special investigation, shall be:

(i) determined by the age of the applicant at the date when the medical examination takes place; and

(ii) calculated from the date of the medical examination in the case of initial issue and renewal, and from the expiry date of the previous medical certificate in the case of revalidation.

Applicants for and holders of a commercial pilot licence (CPL), a multi-crew pilot licence (MPL), or an airline transport pilot licence (ATPL) shall hold a Class 1 medical certificate.

### 1.13.3. PIC medical certificate renewal process

By hospital indicated treatment patient received only a short time to treat and stabilize in the hospital until the final diagnosis was clarified and the related complications and related illnesses, which was suddenly exacerbated the pilot health. The future course of treatment of insulin therapy was canceled, replaced by other therapies.

After discharge from the hospital and subsequent patient treatment completion, within aviation medical examination was prescribed medical examination plan to objectively assess PIC compliance as the holder of a pilot's medical requirements with the Class 1 medical certificate. Medical examination was completed 03/07/2014.

Evaluating the medical examination and the results of the opinion, as well as on the basis of the requirements of Items MED.B.025 (b) MED.B.025 (c) (2) and AMC1 MED.B.025 (g) (2) of COMMISSION REGULATION (EU) No 1178/2011 of 3 November 2011 at 7. March, 2014 the decision was made that health status is in compliance with the requirements laid down by Regulation and he was given appropriate medical certificate, as well as provided with additional recommendations and health inspection requirements.

#### **1.14. Fire**

There was no fire

#### **1.15. Survival aspects**

NIL

#### **1.16. Tests and research**

NIL

#### **1.17. Organizational and management information**

##### **1.17.1. Company airBaltic procedures**

###### **1.17.1.1. Crew Resource Management**

Crew Resource Management (CRM) is an essential element in the operation of commercial aircraft. Both Flight Crew were trained in CRM procedures, which involve good crew co-ordination, effective communications, good situational awareness and conflict resolution techniques. The use of CRM make optimum use of all available resources resulting in safe and effective operation of the aircraft.

###### **1.17.1.2. FLIGHT CREW INCAPACITATION**

airBaltic, responsible for the regulation of transport provide guidance on flight crew incapacitation under a document “**air Baltic Operations Manual Part A**” entitled “**Flight Crew Incapacitation**”. The following is the extract from that document:

Incapacitation is defined as any physical or mental condition that renders a crewmember incapable of performing normal operation or emergency procedures.

If the Commander becomes incapable to perform his duties during the flight another pilot shall take over controls and Commanders authority for the remainder of the flight. His main task is to bring the aircraft to a safe landing using all available means and crew resources.

Detailed instructions concerning Flight Crew incapacitation are given in OMA 8 and OMB 3.

##### **Crew Incapacitation**

###### **a) General**

Incapacitation can be classified into two categories:

- Obvious;
- Subtle

Once the incapacitation is identified, follow these **general procedures**:

- Keep the airplane from crashing (take over);
- Take care of the incapacitated pilot (restrain and remove);

- Prepare for the landing (reorganize the cockpit).

*NOTE: Once pilot has suffered incapacitation and afterwards recovered, he may no longer take the controls nor act as the Commander for the rest of the flight.*

### **b) Obvious Incapacitation**

Obvious incapacitation could be sudden, prolonged, and usually results in a complete loss of operating function. By definition, they are immediately apparent to the remaining crewmembers, for example:

- Severe brain disorders (stroke, fits, and haemorrhage);
- Heart disorders (heart attack);
- Severe internal bleeding;
- Severe and sudden kidney or gallstone attacks.

### **c) Subtle Incapacitation**

Subtle incapacitation could be partial in nature and usually transient. It is significant operational hazard because it is difficult for other crew members to detect. The affected pilot may look well and be conscious with only partially functioning brain. He may not be aware of or capable of rationally evaluating problem, if for example the following occurs:

- Minor brain seizures or tumours;
- Hypoglycaemia (low blood sugar).

Early recognition of incapacitation can be achieved by:

- Strict use of standard operating procedures (note deviations);
- Routine monitoring and cross-checking of flight instruments.

Subtle incapacitation is the most dangerous. It occurs most frequently and its effects range from partial loss of function to complete unconsciousness or death. Procedural deviation is the first sign of incapacitation and any inappropriate verbal response associated with it should be enough to raise suspicion.

### **Meal Precautions**

The flight shall not be started on an empty stomach, so that the crew member is fit for flight duties during the first 6 hours of FDP.

If meals are taken during the flight:

- The flight crew normally take their meals in the cockpit and pilots should not eat simultaneously;
- The cabin crew normally have their meal at their working stations after the passenger service and out of passenger sight;

### **Precautions:**

- Both pilots shall not take the same meals as general precaution to avoid food poisoning;

- The meals shall not be taken by both pilots simultaneously;
- Food and drinks in cockpit should be carefully handled to avoid spillage with associated risk for electrical and other equipment;

**In case of suspicions for poisoning with crew meal:**

- Inform Senior Cabin Crew;
- Sample of suspected food should be taken to Crew Support;
- Submit Voyage Report and Cabin Flight report;
- If a doctor is visited - provide medical statement of food poisoning diagnosis.

**1.18. Additional information**

Not applicable

**1.19. Useful or effective investigation techniques**

*NIL*

**2. Analysis**

During the pre-flight preparations there were no indications or symptoms of a potential possibility of PIC illness. The PIC did not report that he was under considerable pressure. During the cruise when the PIC on the way to the lavatory fell on the floor and fainted it was not clear the reason of such event and the FO suspected it was the food poisoning.

Cabin crew No1 was at front station at that time and provided immediate assistance to Captain as well as called aircraft passengers for a doctor on board.

FO contacted ATC Riga International airport informed about food poisoning of crew member and declared his intention to proceed to Riga airport.

The decision to divert to the nearest suitable Aerodrome was prudent and according to requirements of company airBaltic Operations Manual.

Later FO declared emergency, and requested from ATC medical assistance as well as short radar vectors for landing.

Operations were briefed via data link of standard VHF communications and the situation was made known to Riga ATC who arranged for Medical personnel to meet the aircraft on arrival.

Incapacitation of a member of flight crew is a serious incident. The onset of subtle incapacitation is sometimes difficult to detect, and then in all probability more difficult to deal with. The FO realising he was faced with a difficult and serious situation used understanding and kept control of the situation. The situation was dealt with in a professional manner, employing the principles of Crew Resource Management (CRM). As such the FO and Cabin Crew should be commended for their professionalism in the handling of this event.

**3. Conclusions**

During process of investigation were made the following conclusions:

**3.1. Findings**



- The Flight Crew were properly licensed for the flight undertaken;
- As the flight progressed, it became apparent that the Commander was suffering from stomach condition feeling of an unknown reason;
- On the way to the lavatory he fell on the floor and fainted;
- Cabin crew No1 was at front station at that time and provided immediate assistance to Captain as well as called aircraft passengers for a doctor on board;
- The First Officer utilised the principles of CRM to deal effectively with a difficult situation;
- The Cabin Crew (Flight Attendants) assisted the FO in dealing with the situation and facilitated in the safe outcome of this event;
- The flight was diverted to the nearest suitable airport Riga International, where a safe landing was made;
- The decision to divert to the nearest suitable Aerodrome was prudent and according to requirements of company airBaltic Operations Manual;

### **3. 2. Causes**

#### **3.2.1. Main Cause**

It is estimated that this serious incident was caused, when the aircraft was cruising the Commander (PIC) in duty of pilot flying became incapable of performing his duty normally by a loss of consciousness, which followed after sudden stomach upset as result of *Acute Respiratory Viral Infection, Acute Gastroenterocolitis, Decompensated Diabetes and Hyperglycemia*. Concerning that the appearance of these symptoms was not predicted, it is estimated to contribute the PIC did not have any subjective symptoms before flight or under current aviation medical examinations is difficult if no subjective or objective symptoms are observed.

### **4. Safety Recommendations**

This Investigation does not sustain any Safety Recommendations.

Riga

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Investigator in charge

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