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ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2008-004
Final

Crew incapacitation – Brisbane Airport, Qld 11 January 2008

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Abstract

At approximately 1224 Eastern Standard Time on 11 January 2008, a Boeing 737-200 aircraft, registered VH-OBN, was intercepting the localiser for an instrument landing system approach to runway 01, Brisbane Airport, Qld. The operating crew for the passenger flight included two flight crew (pilot in command (PIC) and copilot) and three cabin crew. The copilot was the handling pilot.

The copilot had reported to the PIC that he was feeling a bit uncomfortable. Shortly after, the copilot handed over control of the aircraft to the PIC and vacated the cockpit due to pain and discomfort.

The PIC continued the approach and landing, without the copilot. Following the landing, as the aircraft entered the taxiway, the copilot returned to the cockpit and resumed support duties until the aircraft reached the gate.

Following the event, the copilot was diagnosed with and received treatment for diverticulitis

FACTUAL INFORMATION

History of the flight

At 1010 Eastern Standard Time[1] on 11 January 2008, a Boeing Company 737-200 (737) aircraft, registered VH-OBN, departed Norfolk Island on a passenger flight to Brisbane, Qld. The operating crew for the passenger flight included two flight crew (pilot in command (PIC) and copilot) and three cabin crew. The copilot was the handling pilot for the flight. At about 1224, while on an instrument landing system (ILS) approach to runway 01 at Brisbane Airport, the copilot became incapacitated due to pain and discomfort and handed over control of the aircraft to the PIC. The copilot vacated the cockpit until after the aircraft landed and was taxiing from the runway.

The flight crew reported that the flight to Norfolk Island was due to a number of weather cancellations and diversions over the preceding 2 weeks. The crew signed on at approximately 0545. The PIC was the handling pilot for the sector to Norfolk Island. During that flight, the copilot informed the PIC that he had recently returned to work following a week's leave due to diverticulitis[2]. The copilot had flown the previous day on a Brisbane to Honiara return flight. The copilot indicated that he had had no medical problems on that flight.

The copilot later reported that on the incident flight, when the aircraft was approximately 50 NM (80 km) from Brisbane at an altitude of 15,000 ft above mean sea level (AMSL), he started getting mild abdominal pains, which he discounted as wind. The approach to Brisbane was to be via a runway 19 ILS approach[3]. A change to runway 01 occurred and the crew briefed the runway 01 ILS approach.

The copilot reported that he was feeling more uncomfortable. When the aircraft was at approximately 3,000 ft, he indicated that he really

1 The 24-hour clock is used in this report to describe the local time of day, Eastern Standard Time (EST), as particular events occurred. Eastern Standard Time was Coordinated Universal Time (UTC) + 10 hours.

2 A form of colon infection.

3 A ground-based precision instrument approach that provided pilots with azimuth and glide path information.

wasn't feeling well and that he may need to hand control of the aircraft over to the PIC and leave the cockpit. Shortly after, the copilot handed over control of the aircraft to the PIC. He remained in the right seat until the PIC could see the airport (but before the ILS was captured) before reiterating he needed to leave and then vacated the cockpit. The PIC advised the cabin manager of the copilot's situation. Both the copilot and PIC were surprised by the swiftness of illness onset.

The PIC later reported that, as the aircraft was positioned for the turn onto final approach, he elected to continue the approach on the basis that to either hold or go around would be more complicated, and that he didn't know how long the copilot would be absent. The PIC extended the landing gear, set flaps to 15°, read the landing checklist unilaterally and carried out the necessary actions.

As the aircraft passed 1,500 ft, the PIC informed air traffic control (ATC) that a flight crew member was incapacitated. The controller asked whether medical assistance was required, which the PIC declined. The PIC received a landing clearance and was advised to vacate the runway on a high speed taxiway.

The copilot remained absent from the cockpit for the landing and, on hearing the reverse thrust being stowed, returned to the cockpit. That was at about the time the aircraft entered the taxiway. He then continued to fulfil his duties as the support pilot.

The copilot subsequently visited his regular medical general practitioner (GP), who prescribed a course of antibiotics. The copilot was admitted to hospital 2 days later and was subsequently released on 18 January 2008.

Air traffic control information

Information from Brisbane Operations air traffic control audio tapes indicated that at 1226, the approach controller advised the PIC that the 737 had passed through the localiser and gave further instruction to turn right onto 040° to re-intercept the localiser and to descend to 2,000 ft.

At 1227:42, the PIC stated that the aircraft was established on the localiser. The approach controller then instructed the PIC to contact the aerodrome controller (ADC).

The ADC had intended to depart an aircraft from runway 01 prior to the 737 landing. On being advised by the PIC that the aircraft was without the copilot, the ADC provided immediate priority to the 737 and issued a landing clearance.

Flight crew information

At the time of the incident, the copilot held an Airline Transport Pilot Aeroplane Licence (ATPL(A)) and a current Class 1 medical certificate. He was correctly endorsed on the 737-100/200. The copilot had 14,887.5 total flying hours and 342.6 on type.

The PIC had held an ATPL(A) since 1993. At the time of the incident, he held a current Class 1 medical certificate and was correctly endorsed on the 737-100/200. The PIC had 10,016.5 hours total flying time and 639.7 hours on type.

Copilot medical history

The copilot first became ill on 2 January 2008 and was diagnosed as having diverticulitis the next day, following an ultrasound. He reported that he reacted to the antibiotics prescribed and that the doctor he consulted was not his regular GP, or a Designated Aviation Medical Examiner (DAME). The copilot indicated that little information was provided regarding what he needed to do for the illness. He believed that once the antibiotics were completed and the symptoms were eliminated he could return to work. He subsequently returned to work on 10 January 2008 and did not experience any of the previous symptoms until the incident flight.

There were no reports from other crew members of symptoms that may have indicated food contamination before or during the flight.

The copilot stated that at the time of the event, he was on Tritace for blood pressure and Lipitor for cholesterol. He had been using both medications for approximately 15 years.

The copilot reported that he had never had diverticulitis before. A review of his aviation medical records found no history of abdominal issues during his flying career.

Reporting requirements

The Civil Aviation Safety Regulations 1998 (CASR) effectively required pilots who held a Class 1

medical certificate and a licence to contact the Civil Aviation Safety Authority (CASA) or a DAME if they:

- knew they had a medically significant condition, and
- that condition impaired their ability undertake an act that was authorised by their licence, and
- the condition continued for longer than 7 days[4].

Gastrointestinal illnesses

An Australian Transport Safety Bureau (ATSB) research report related to medical conditions[5] found that between 1975 and 2006, 98 pilot incapacitation or medical events had occurred. The majority (21.43%) were due to gastrointestinal illnesses, the most common of which was food poisoning.

In relation to the copilot's illness, many people have small pouches in the lining of the colon, or large intestine that bulge outward through weak spots. Multiple pouches are called diverticula. When the pouches become inflamed the condition is called diverticulitis. The most common symptom of diverticulitis is abdominal pain. Usually, the pain is severe and comes on suddenly, but it can also be mild and become worse over several days. The intensity of the pain can fluctuate. A person may experience cramping, nausea, vomiting, fever, chills, or a change in bowel habits. An attack of diverticulitis can develop suddenly and without warning[6].

Company procedures

The operator had in place standard operating procedures (SOP's) for conducting operations with an incapacitated flight crew member[7]. Those procedures required a member of the cabin crew to be present in the cockpit to monitor the sole pilot, and to enable access to the cockpit. The procedures also required flight crew to advise ATC of the incapacitation once a safe flight condition was assured, and if the flight crew compliment had reduced below the minimum, to make a PAN[8] call. At the time the copilot left the cockpit, the PIC did not apply the requirements of the SOP's due to other higher priority tasks.

ANALYSIS

Copilot illness

Incapacitation of a pilot has long been a concern and there are processes that have been implemented to reduce that risk, including medical standards and procedures. However, a large proportion of incapacitation events are unforeseeable. In the current incident, the copilot experienced a recurrence of a previous illness that he believed had been cured. His symptoms were consistent with the previous diagnosis of diverticulitis. While food contamination was a possibility, a lack of reports from other crew members and the symptoms experienced by the copilot, make it more likely that he was suffering the previously diagnosed condition of diverticulitis.

Prior to the incident, the copilot had been ill for 6 days and had reacted adversely to the medication prescribed. Had the copilot sought more information or consulted a DAME in relation to his illness and recovery requirements, it is likely he would not have returned to work.

Management of incapacitation events

Due to the timing of the copilot's incapacitation, and the aircraft's location in the approach, the pilot in command (PIC) needed to make a quick decision to either continue the approach and land, or to execute a missed approach and hold until the copilot could return to the cockpit and/or confirm whether he could resume his duties. The PIC's decision to continue the landing probably minimised his workload, given that the aircraft was already largely configured for the landing. Whereas, the conduct of a missed approach and

4 CASR Subpart 67.D Responsibilities of medical certificate holders.

5 Pilot incapacitation: Analysis of medical conditions affecting Australian pilots involved in accidents and incidents 1 January 1975 to 31 March 2006. ATSB Research and Analysis Report B2006/0170, January 2007.

6 http://digestive.niddk.nih.gov/ddiseases/pubs/diverticulosis.

7 Operations Manual Part A – General. Standard Operating Procedures – Chapter 9. Air Crew Incapacitation.

8 A radio call indicating uncertainty or alert, general broadcast to widest area but not yet at the level of Mayday.

holding would likely have placed significantly more demands on the PIC, increasing his already high single-pilot workload, with an unknown prospect for the copilot to return and resume his duties. Under the circumstances, the PIC's decision to continue the approach and land the aircraft was probably the better option. The PIC was unable to comply with the requirements of the company flight crew incapacitation procedures. However, at the earliest opportunity, he notified the aerodrome controller and was consequently provided with landing priority. The copilot's actions in remaining absent from the flight deck until after the landing probably further reduced risk by minimising sources of distraction for the PIC during the approach and landing.

FINDINGS

From the evidence available, the following findings are made with respect to the in-flight incapacitation of the copilot and should not be read as apportioning blame or liability to any particular organisation or individual.

Contributing safety factors

- The copilot became incapacitated due to diverticulitis shortly before the aircraft turned onto final. The illness onset was rapid with little warning.
- The copilot did not seek or receive adequate information in relation to his condition before returning to flying duties.

Other safety factors

- The pilot in command was unable to comply with company incapacitation procedures due to workload.

SOURCES AND SUBMISSIONS

The main sources of information included:

- the flight crew
- the operator
- the Civil Aviation Safety Authority (CASA)
- Air Services Australia.

References

Reference material referred to in report:

- Civil Aviation Safety Regulations 1998 (CASR) Subpart 67.D Responsibilities of medical certificate holders.
- Pilot incapacitation: Analysis of medical conditions affecting Australian pilots involved in accidents and incidents 1 January 1975 to 31 March 2006. ATSB Research and Analysis Report B2006/0170, January 2007.
- http://digestive.niddk.nih.gov/ddiseases/pubs/diverticulosis/
- Operators' Operations Manual Part A – General. Standard Operating Procedures – Chapter 9. Air Crew Incapacitation.

Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the Transport Safety Investigation Act 2003, the Executive Director may provide a draft report, on a confidential basis, to any person whom the Executive Director considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the Executive Director about the draft report.

A draft of this report was provided to the flight crew, the operator, and CASA. A submission was received from CASA. The submission was reviewed and where considered appropriate, the text of the report was amended accordingly.