

FINAL REPORT

**Investigation into the incident
to Hawker 800 – H25B
in TMA PRAHA
on 25 November 2007**

Prague
January 2008

The present document is the translation of the Czech Investigation Report. Although efforts are made to translate it as accurate as possible, discrepancies may occur. In this case the Czech version is authentic.

A) Introduction

Operator: Elbe Air Lufttransport GmbH

Aircraft type: Raytheon / Hawker 800 - H25B
Registration: D-CLBD (Callsign „DCLBD“)

Location of incident: TMA PRAHA
Date and Time: 25 November 2007, at 14:05 (All times are UTC)

B) Synopsis

The incident of Hawker 800 – H25B was reported to the Air Accidents Investigation Institute (AII) on 25 November 2007 by the ANS of the Czech Republic.

The aircrew of D-CLBD airplane on flight from Praha Ruzyně airport (LKPR) to Kiev Borispol airport (UKBB) received in their departure clearance a standard instrument departure (SID) VOZ 2A, which they confirmed and then a frequency to contact the traffic controller APP Praha (APP EC) that the crew confirmed as well. However, on taking off from RWY 24 the crew did not follow the assigned SID, made a turn in the opposite direction to a heading of ca 360 degree, climbed to a level of 5,000 ft AMSL, and continued this regime without establishing contact with APP EC. All the APP EC's attempts trying to establish contacts with the aircrew for around seven minutes failed including attempts made through another airplane and on the emergency frequency. It was only after that time that the aircrew established contact with APP EC, who with regard to the plane position and other traffic, vectored the flight onto a suitable route.

AII notified the operator and asked for more information about the incident. AII conducted investigation into the incident in accordance with Annex 13.

The cause of the incident was investigated by an AII commission comprising:

Investigator in charge: Ing. Stanislav Suchý
Members: Pavel Prošek ANS

The Final report was released by:

AIR ACCIDENTS INVESTIGATION INSTITUTE
Beranových 130
199 01 PRAHA 99

On the 21 January 2008.

C) The Final report includes the following main parts:

- 1) Factual information
- 2) Analysis
- 3) Conclusions
- 4) Safety recommendation
- 5) Appendices

1 Factual information

1.1 History of the incident

At 13:37:23 DCLBD contacted on the frequency of traffic clearance controller Ruzyně DELIVERY (CDD) to request for start up. CDD cleared the start up and transmitted departure clearance: “DCLBD is cleared to Borispol via Vožice two Alfa Departure, Squawk one four two four”. The pilot read back the clearance in the standard way and asked for information about allowable initial climb. CDD gave instruction to climb after takeoff to a level of 5,000 ft.

At 13:40:25 the pilot asked CDD for the frequency on which to establish contact after taking off. CDD instructed to use a frequency of 120.525 MHz after takeoff. At 13:44:21 the pilot asked again on DELIVERY frequency for confirmation that on arriving at VOZ the flight would go on to point TBV. CDD replied to the crew at 13:45:45 that after passing VOZ they should fly on to the point BODAL according to the FPL.

At 13:59 the pilot acknowledged the takeoff clearance from RWY 24 and the instruction to go to a frequency of 120.525 MHz after takeoff. According to a radar record, the airplane after takeoff climbed to 5,000 ft AMSL, then turned right to a heading of about 360 degree and from 14:03 to 14:07:50 kept to this course till the distance of ca 25 NM north of LKPR airport. During all this time the crew did not answer the repeated calls on the frequency of Prague traffic controller APP EC, Ruzyně DELIVERY frequency, Ruzyně TOWER frequency, on the frequency of another plane in the air, and on the emergency frequency of 121.5 MHz. The flight history is in Fig. 1.

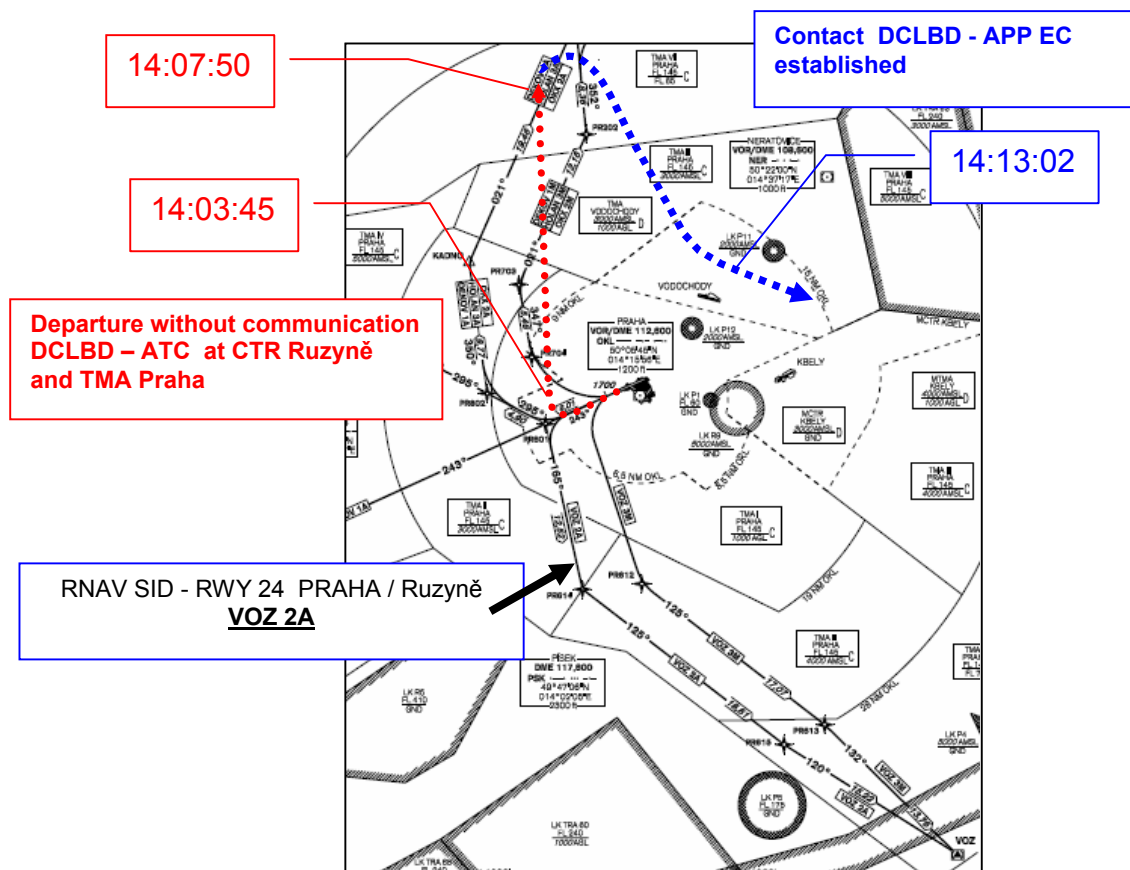


Figure 1

At 14:07:50 the pilot responded to an APP EC call and a moment later he received from him the instruction to climb to FL 80 and turn left to a heading of 220 degree . The pilot

acknowledged the instruction but made a right turn. To this, APP EC reacted by the instruction: "DCLBD stop on heading one three zero". The pilot reported he had already turned to a heading of 150 degree. So APP EC gave instruction to go on on this heading. Then he transmitted instruction to go on climbing to TBV and to establish contact on the frequency of a relevant sector ACC.

1.2 Injuries to persons

NIL

1.3 Damage to aircraft

NIL

1.4 Other damage

NIL

1.5 Personnel information

1.5.1 The flight crew

The PIC, aged 48, holder of ATPL(A), had a PIC qualification for the type HS 125. He has flown total 4,170 hours, as PIC total 3,770 hours, of which 240 hours on the H25B.

The F/O, aged 31, holder of CPL(A). She has flown total 500 hours, of which 170 hours on the H25B.

1.5.2 ATS Personnel

ATCO function	CDD	APP EC
Age	60	40
Days in duty	3	2
Duty time	From shift beginning	7 hrs
	Since last duty rotation	20 min
Practice (years)	36	12
Qualification valid to:	-	16. 10. 2009
Last training:	20. 11. 2006	5. 10. 2006

1.6 Aircraft information

Type: Hawker 800 – H25B
 Registration: D-CLBD
 Manufacturer: Raytheon
 Serial number: 258405
 Total flight time: 6,151 hours

Based on provider report, no technical problem on aircraft concerning failure to establish contact on the relevant frequency was established.

1.7 Meteorological information

The 14:00 hrs ATIS broadcast continued until 14:30 hrs and comprised the following information „Quebec“:

„ILS Approach, Runway in use 24, Transition level 60, METAR Praha issued at 14:00, Wind 240 degrees 17 kt, Visibility 10 km or more, Broken 4600 ft, Temperature 2, Dewpoint 0, QNH 1013 hPa, NOSIG.“

1.8 Aids to navigation

Aids to navigation were no aspect relevant to the incident.

1.9 Communications

There were two-way communications between the crew of D-CLBD and air traffic services was established on CDD frequency 120,05 MHz and TWR frequency 118,1 MHz. The contact on APP frequency 120,525 was established 8 minutes after takeoff.

1.10 Aerodrome information

NIL.

1.11 Flight recorders

Pertinent data from the flight data recorder were not available to AAI investigation. The ATS radar and communications records of the E 2000 and reports of ATS personnel were used for an analysis.

1.12 Description of incident site

The incident took place in TMA II/VII Praha, airspace class C.

1.13 Medical and pathological information

NIL

1.14 Fire

NIL

1.15 Survival aspects

NIL

1.16 Tests and research

NIL

1.17 Organizational and management information

NIL

1.18 Additional information

Standard instrument departure VOZ 2A is published in Aeronautical information publication of the Czech Republic (AIP) - AD-2-31-3 / RNAV SID – RWY 24. Description of SID VOZ 2A is specified at AD-2-LKPR-33 as follows:

Označení Designation	Trať Track	Po vzletu/After take off		Poznámky Remarks
		Stoupat do Climb to	Spojení Communication	
1	2	3	4	5
VOZ 2A VOŽICE TWO ALPHA DEPARTURE	Stoupat ve směru vzletu (243°) na PR801 (fly-by); doleva tratí 165° na PR614 (fly-by); doleva tratí 125° na PR615 (fly-by); doleva tratí 120° na VOZ VOR/DME. Straight ahead (243°) to PR801 (fly-by); turn left track 165° to PR614 (fly-by); turn left track 125° to PR615 (fly-by); turn left track 120° to VOZ VOR/DME.	5000 ft AMSL	PRAHA RADAR 120,525 MHz	

The JEPPESEN publication details the RNAV SID - VOZICE TWO ALFA (VOZ 2A), in line with mentioned above, at LKPR/PRG RUZYNE page 10-3K.

The aircraft operator in his information provided an explanation on the event from the point of view of the aircrew as follows:

“Clearance Delivery assigned a frequency different from that on the SID-Page. After take off initial radiocontact was established and a radar vector and altitude were assigned. Thereafter radiocontact was lost. We attempted to contact Departure on the published frequency, that differed only by about 50 KHz and were then able to reestablish radiocontact.

It appears, that the originally assigned and readback frequency was close enough to allow initial contact, but with increasing range radiocontact was lost.”

1.19 Useful or effective investigation techniques

The incident has been investigated in accordance with Annex 13.

2 Analysis

2.1 The D-CLBD aircrew’s activities during departure from LKPR

When the D-CLBD crew asked for the departure clearance, they received from CDD a standard clearance phrase containing basic instructions, which were extended, on the pilot’s request, by information on initial climb level and frequency for immediate contacting APP after takeoff. These instructions are detailed in relevant documents in a standard way. The pieces of information handed over were complete enough to know the departure route and met requirements for standard departure, making it possible to set right the aircraft radio navigational aids to guide the airplane after takeoff from RWY 24.

The DCLBD flight was identified after takeoff. The airway profile with a heading of around 360 degree (a difference more than 180 degree from the published heading of 165 degree) and the flight without contact established on the determined frequency for a time period from takeoff to 14:08 indicates that the aircrew may have made a mistake during briefing before takeoff. After takeoff the aircrew worked in conflict with determined and confirmed description of SID.

It is evident from information provided by the operator that explaining the event the crew said they were given departure clearance and a frequency on which to communicate after takeoff, which was different by 50 Hz from the frequency published in SID. In analyzing communications records on APP EC, CDD and TWR frequencies there was no verification of the crew's statement about establishing contact with APP EC and fixing the flight heading and level.

It follows from the analysis that communications before takeoff and after 14:08 up to the time contact was established, the D-CLBD airplane's radio station worked right and communications between the pilot and APP EC were readable.

2.2 Procedures of CDD and APP EC

At the time of issuing the departure clearance, CDD transmitted to the D-CLBD crew basic departure clearance and the pilot then read back the clearance.

At 13:40:25 on the pilot's request, CDD transmitted intelligible information containing the correct designation of transmitting frequency for immediate contact with APP EC after takeoff which the pilot read back at once.

APP EC knew the situation well and replied correctly when the airplane left the SID heading assigned turning left (instead of right) and tried to establish contact with D-CLBD on his working frequency, TWR frequency and emergency frequency.

3 Conclusions

3.1 The commission determined the following conclusions:

- aircrew was qualified for the flight,
- ATS personnel had professional capacity, ability and skill for the job,
- D-CLBD on-board radio worked well before takeoff and after working out the problem, and communications were readable,
- CDD transmitted correct departure clearance and passed information requested by pilot correctly,
- it is very likely that the crew did not make due departure briefing in accordance with the SID prescribed and with standard procedures for departure from LKPR,
- aircrew was too long in working out the situation when flying in the class C area without two-way contact established with right ATC unit,
- APP EC reacted correctly to the situation when the airplane left the ordered SID and failed to duly establish contact,
- as D-CLBD established the contact, APP EC duly reacted by making changes in the airplane clearance.

3.2 Causes

The incident was caused due to D-CLBD crew erroneous procedure:

- before takeoff briefing,
- in handling the situation after takeoff when the plane flew a quite different route without established radio contact with APP EC.

Since the minimum separation requested was not reduced and the event was monitored, according to the ESSAR 2 the severity of the incident was assessed as the **“Significant Incident”** and classified as **Incident / Potential for Collision / Aircraft deviation from ATC clearance.**

4 Safety recommendations

- 4.1** The ANS of the Czech Republic should make ACC Prague controllers familiar with the event,
- 4.2** The operator should draw the attention of aircrews to the necessity of accurate departure briefing.