



FINAL REPORT

**Investigation into the serious incident (Airprox)
between RYR8403 and glider
at the TMA I Brno
on 11. June 2007**

Prague
April 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: 1. - RYANAIR
2. - private owner

Aircraft type: 1. - Boeing B 737 – 800
2. - LAK 17

Registration: 1. - EI-CSI (Call sign „RYR8403“)
2. - OK - 1507 (Call sign „OK 1507“)

Location of Incident: TMA I Brno
Date and Time: 11 June 2007, at 15:17 (All times are UTC)

B) Synopsis

On 11 June 2007 Air Accidents Investigation Institute (AII) was notified by ATS Brno of an air traffic incident – a collision risk between a Boeing B 737 aircraft and a glider in TMA I Brno. The B 737 aircrew, call sign RYR8403 (code SSR 1170) was on a regular flight from the London Stansted Airport to the Brno – Tuřany Airport (LKTB).

During vectoring to approach at FL 61, 8 NM north of LKTB, the aircrew reported that the B 737 passed the glider by around 150 ft to the left, approximately at the same flight level. Then, the B 737 landed well on LKTB and the glider continued to fly.

Based on the report, AII began to investigate the incident. On analyzing the radar record at the ATS Brno at the critical phase of the flight, the severity of the situation was taken into account and the occurrence was classified as a serious incident.

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

Investigator in charge: Milan Pecník
Members: Ing. Stanislav Suchý
Pavel Prošek - ATS Czech republic

The Final report was released by:

AIR ACCIDENTS INVESTIGATION INSTITUTE
Beranových 130
199 01 PRAHA 99

On the 03 April 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

The B 737 crew, call sign RYR8403, was on a regular flight from EGSS airport to LKTB airport. At 15:10 when contact was established with APP EC controller of APP BRNO, the crew got instructions to approach to land on LKTB airport where RWY 10 was in use. The crew asked for vectoring to ILS approach to RWY 28.

At 15:14:26 APP EC issued RYR8403 with the instruction to descend at a heading of 105 deg. from FL 100 to 5,000 ft AMSL and at 15:17:24 to descend further to 3,000 ft AMSL.

During the descent, within the CTR Tuřany northern boundary, PIC spotted a glider turning towards B 737 at approximately the same flight level. PIC alerted F/O, who was the flying pilot, of the conflicting VFR traffic and the necessity to get prepared to avoid it.

In his written safety report PIC reported he in no time saw the glider make a right turn banking considerably. From this manoeuvre PIC assumed the glider would finish the turn before B 737 achieved its position, so told F/O to go on descending. The glider passed the B 737 at a separation of about 150 ft, according to PIC.

At 15:18:20 at FL 61 the pilot reported the risky situation to APP EC with a message: "*Glider Activity*". To the PIC's message APP EC responded he had had no information on gliders traffic in the area. PIC told him they had just passed the glider from the left. Then PIC did not see the glider any longer.

TWR EC reacted to the report saying to APP EC by phone he had distinguished the glider on his radar as a primary target moving in airspace near the symbol RYR8403.

Having passed the glider, RYR8403 followed instructions from APP EC, who vectored it to ILS approach to RWY 28 where it landed in order at 15:25.

Having heard from PIC, APP EC tried to establish contact with the gliders (call signs OK4610 and OK1507, which had contact established on APP EC frequency before RYR8403 arrival, but the attempt was not successful.

At 15:35 the pilot of OK 1507 reported to APP EC frequency and asked for permission to entry TMA Brno by Tiřnov and continue flight in TMA Brno toward Źeliv. APP EC asked the pilot for information whether he was alone in this airspace. The pilot answered he had not seen anybody. Answering the question if he saw B 737, the pilot said he had seen this aircraft to the south of him but he was off CTR Tuřany. Answering a repeated question whether he was off CTR and TMA the pilot said he was near Jedovnice and he thinks he was off CTR.

The way the glider's pilot executed the flight in the given sector according to his words:

"I was navigating by a valid ICAO chart that I had on board the glider. On achieving Lhota (a dam NW of Vyřkov) I continued flight to Źeliv. I flew in the direction of

Jedovnice, Lipůvka and when over Čebín I needed to entry TMA Brno so I contacted Brno radar on 119.1”.

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 PIC of glider

Aged 39, holder of licence GLD, had a valid medical certificate.

He has flown total 1400 hours, of which 550 hours on LAK 17.

1.5.2 The flight crew RYR8403

Information related to the flight crew RYR8403 were not gathered.

1.5.3 ATS Personnel (ACC Praha)

ATCO function	APP EC	
Age	29	
Days in duty	2	
Duty time	From shift beginning	9 hrs 15 min
	Since last duty rotation	4 hrs
Practice (years)	2	
Qualification valid to:	3. 5. 2011	
Last training:	28. 5. 2007	

1.6 Aircraft information

1.6.1 Basic information - RYR8403

Type: Boeing B 737-8AS
Registration: EI-CSI
Manufacturer: Boeing Aircraft Company

1.6.2 Basic information regardind to glider

Type: LAK 17
Registration: OK-1507
Manufacturer: AB „Sportine aviacia“

The glider was not equipped by SSR transponder.

1.7 Meteorological information

According to METAR LKTB on 11 June 2007 at 14:00 the meteorological conditions was: „111400Z 12007KT 090V170 CAVOK 27/10 Q1011“.

Situation:	area of high pressure
Surface wind:	120°/ 7 kt
Visibility:	over 10 km
Weather:	NIL
Significant clouds:	NIL

1.7 Aids to navigation

Aids to navigation were no aspect relevant to the incident.

1.8 Communications

There were two-way communications between the RYR8403 and air traffic services on APP EC frequency 119,1 MHz.

1.10 Aerodrome information

LKTB is public international aerodrome. The RWY 10 was in use.

1.11 Flight recorders

The incident was analyzed by the use of radar recordings and radio communications. The radar data analysis at ATS Brno was carried out in both passive and active modes.

The passive mode enables the radar situation to be replayed as it was displayed at EC station (APP or TWR) including all action of the operator he took incl. analogue radar information from the local primary radar RL 64.

The glider's trajectory in the horizontal plane and the airplanes' separation were analyzed in detail in the active mode, which enables displaying active work (setting of the display scale factor, image centering, on/off switching of information digital display from primary radar, and setting of altitude filter). Analogue information from the primary radar is not displayed in this mode.

The radar data showing how the glider trajectory was identified are presented in Appendix 1.

1.12 Description of incident site

The serious incident took place on the TMA I Brno (vertical limit 1000 ft AGL), class of airspace D, 8 NM from LKTB, at FL 61, near CTR Tuřany boundary.

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

The APP Brno station, which controlled the RYR8403 flight during the event, is assigned large space of responsibility. The display scale of ATCO is usually set in such a way that it is larger than the space of responsibility so that ATCO could see entering traffic in time. Depending on the altitude filter setting, the display shows secondary radar data – symbols in addition with a form indicating the identification and level of the flight along with a symbol of changing tendency, and also the primary radar data that are displayed in the following two forms:

- Analogue data representing the radar trace of a target, which corresponds to its geographical position;
- Digital data in form of a track (cross on display), which indicates besides the position also the target's speed vector (i.e. prediction of its movement); the track is stored and displayed after the position analogue signals have been repeatedly confirmed.

The data on APP EC display as shown just before the occurrence are presented in Appendix 2.

1.18 Additional information

NIL

1.19 Useful or effective investigation techniques

The serious incident has been investigated in accordance with Annex 13.

2 Analysis

2.1 Activities of the glider's pilot

It follows with high probability from the analysis of radar record information and display of track of unknown traffic in the time period one hour before and one hour after the occurrence that it is the same glider the PIC saw pass by the RYR8403.

According to the track display, the unknown traffic traveled as follows:

- At 15:10 when RYR8403 reported to APP EC frequency, it was over the western limit of the village of Drnovice, (VOR BNO / DME 50 deg / 12 NM);
- At 15:13:20 it entered the area, which is limited by TMA I / Brno horizontal border, over the southern frontier of the Račice village (VOR BNO /DME 44 deg / 10NM) and continued at southwest heading to be at VOR BNO / DME 42 deg / 9.5 NM at 15:14:06;

- At 15:15:38 it was at the border of CTR Tuřany, in an area over the northern limit of the village of Ochoz by Brno (VOR BNO / DME 20 deg / 7 NM);
- Immediately before the PIC reported passing the glider at a dangerous vicinity, it was flying over the western limit of the village of Ochoz by Brno (VOR BNO / DME 18 deg / 6.5 NM);
- It continued on the route at northwest heading and at 15:20:21 was off CTR limits, but still in the area limited by the horizontal border of TMA I Brno;
- When the glider pilot reported to APP EC frequency to ask the permission to entry TMA Brno by Tiřnov (15:35) at ALT 6,000 ft, it was flying in the area of the town of Tiřnov.

The glider's successive positions during its entry into the control area are shown in Appendix 1.

When passing RYR8403 (at 15:18:20), the glider was approximately at the same level as the B 737, i.e. FL 61. When five minutes before, the glider entered the area limited by the horizontal border of TMA I Brno, it was very likely to travel at a level more than 1,000 ft AGL.

2.2 RYR8403 Activities

The aircraft followed the instructions by APP EC in vectoring to ILS RWY 28. At the time of reporting the glider dangerous vicinity, it was descending from FL 67 to FL 61. PIC made a judgement that owing to the glider's sharp manoeuvre, no immediate avoidance action was necessary and continued descent in forward direction.

2.3 APP EC Radar Controller

In controlling RYR8403, he worked in accordance with standard control procedures. At the time before the incident he had no information about gliders traffic in TMA I Brno, since he issued no clearance to entry the control area. In the incident area there were more targets on display in TMA I and APP EC had no information on unknown traffic. It was difficult for APP EC to find a glider flying without clearance in the area where RYR8403 was descending, because of detection failures due to the glider reflecting surface and material, glider's angle with respect to the radar, and the image low distinction. Even if he had registered a moving target, he could not have passed on information on conflicting traffic to RYR8403, as he did not know the target's flight level.

3 Conclusions

3.1 The commission determined the following conclusions:

Pilot of the Glider

- was rated for the flight and had a valid medical certificate;
- had enough experience with flying near the Brno Tuřany control airport;
- at 15:13:20 probably entered the ending control area of TMA I Brno, without establishing contact and being cleared by relevant ATC station;

- continued to fly in TMA I Brno without contact established as far as the northern limit of CTR Tuřany;
- is very likely to have passed the B 737 on the right as he made a big-banked turn.

Weather conditions within the TMA I Brno northern limit were good for the flight.

APP EC Brno

- had no information on glider traffic in TMA I Brno on the CTR Tuřany northern border;
- watching the primary radar trace, he could hardly notice the entry of unknown traffic into the control area in the presence of other immobile targets;
- identified unknown traffic at the CTR Tuřany border only after PIC's message and ATC TWR's notification.

RYR8403 Aircrew

- warned in time of the unknown glider flying near in the direction in which they were vectored to ILS final approach;

3.2 Causes

The serious incident was caused by the erroneous behaviour of the glider's pilot who entered the control area without permission and got close to B 737, bringing about a risk that APP EC could not be aware of.

The occurrence has been classified as a "**Serious Incident**" because the situation in TMA became hazardous (risk of collision) and jeopardized air operation safety. According to L 13 Regulation Annex 13 the event is classified as **Serious Incident / Near Collision**.

4 Safety recommendations

The growing number of gliders and other airplanes to enter without clearance the control areas (TMA and CTR) of international airports have already been looked at and analysed since this incident. Consequently, Civil Aviation Authority issued a Compulsory Safety Measure CAA No. 1/2007, making it unnecessary for UZPLN to propose further recommendations in this case.