



**MINISTRY OF TRANSPORT, POSTS AND
TELECOMMUNICATIONS
OF THE SLOVAK REPUBLIC**

Air Accident and Incident Investigation Board
Nám. slobody 6, P.O. BOX 100, 810 05 Bratislava 15

Reg. No: SKA2010009

FINAL REPORT

on air accident investigation
of aircraft **Discus 2a** and **Discus 2T**
registration: **OK – 7000** and **SE - UOA**

Date: 04.07.2010

Place: 10 km SW from the city of Ružomberok

A. INTRODUCTION

The investigation of an air accident [AA], serious incident [SI], has been conducted pursuant to Art. 18 of the Act No 143/1998 on Civil Aviation (Civil Aviation Act) and on Amendment of Certain Acts.

The final report is issued in accordance with the Regulation L 13 that is the application of the provisions of ANNEX 13 Air accident and Incident Investigation to the Convention on International Civil Aviation and with the Council Directive 94/56/EC, establishing the fundamental principles governing the investigation of civil aviation accidents and incidents.

The exclusive aim of investigation is to establish causes of an accident or serious incident and prevent their occurrence, but not to refer to any fault or liability of persons.

This final report, its individual parts or other documents related to the investigation of the air accident have informative character and can only be used as recommendation for the implementation of measures to prevent occurrence of other air accidents and serious incidents with similar causes.

Type of aircraft:	DISCUS 2a	DISCUS 2T
Registration:	OK – 7000	SE - UOA
Operator / Owner:	Letecké sportovní centrum Aeroklubu České republiky, o.s. Letiště Vrchlabí, 543 01 Vrchlabí	Lindell Rony Hyllestigen 35 260 30 VALLÅKRA
Place of take-off:	LZPE	
Place of planned landing:	LZPE	
Flight phase:	competitive flight – circling in updraft	
Place of accident:	10 km SW from the city of Ružomberok N 48°59'24'' E 019°12'31''	
Date and time of accident:	04.07.2010	15:02 hrs

Note: All times in this Report are UTC.

B. INFORMATIVE SUMMARY

On 4 July 2010 at 15:02 hrs during competitive flights on the 31st FAI World Gliding Championship in Prievidza ("31st FAI WGC 2010") two aircraft circling in updraft crashed to each other on track 10 km SW from the city of Ružomberok.

Unhurt pilots with damaged aircraft landed at the Ružomberok airport ("LZRU") and at the Prievidza airport ("LZPE"), respectively.

The organizer of the competition reported the air accident to the Police Department in Prievidza, Police Department in Ružomberok, Integrated Air Rescue Coordination Centre ("IZKSL") in Bratislava and the Air Accident and Incident Investigation Board.

The following persons were appointed as investigators of the air accident:

Ing. JANČULA Maroš

Ing. CHUDÝ Ján, member of the Permanent investigation commission

The report is issued by:

Air Accident and Incident Investigation Board
of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic

C. MAIN PART OF REPORT

1. FACTUAL INFORMATION
2. ANALYSES
3. CONCLUSIONS
4. SAFETY RECOMMENDATIONS

1. FACTUAL INFORMATION

1.1 History of the flight

In the days of 4 July to 17 July 2010 the 31st FAI World Gliding Championship 2010 took place at LZPE. The championship was organized in accordance with the FAI Sporting Code – General Part and Part 3, Amendment „A“ to the Sporting Code Part 3, and with the Local Rules of the 31st FAI WGC 2010.

On 4 July 2010, while doing a competition task, the pilot of aircraft **Discus 2a** (competitor No "**GX**") was circling together with other aircraft in a right-hand turn in updraft, trying to achieve the required height to be able to continue the flight on route. The pilot of aircraft **Discus 2T** (competitor No "**8K**") was joining the same updraft with respect to the other circling aircraft, but for unknown reasons could not see the aircraft "**GX**". When the pilot of aircraft "**8K**" started the right-hand turn, he suddenly noticed the approaching aircraft "**GX**" approaching from behind and from below. In spite of the effort of the pilot "**8K**" to avoid the collision by pulling back the stick these two competitive aircraft crashed to each other in the QNH of 2 230 m, in a location situated 10 km SW from the city of Ružomberok. Following the crash the pilots interrupted the task, checked the function of aircraft steering system and decided to land at the airports LZRU ("**GX**") and LZPE ("**8K**"), respectively.

The landing of both damaged aircraft occurred without defects and further damage.

Light conditions: Daylight

Flight rules: VFR

1.2 Injuries to persons

Injury	Crew	Passengers	Other persons
Fatal	-	-	-
Serious	-	-	-
Minor	-	-	-
None	1 / 1	-	-

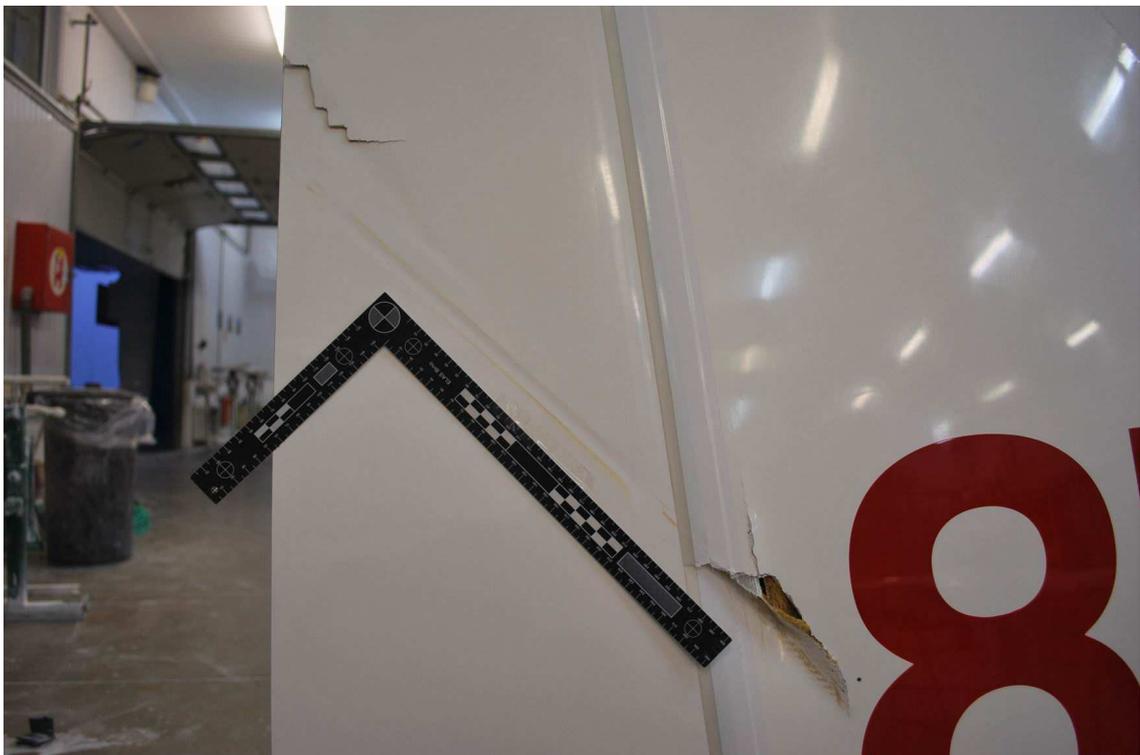
1.3 Damage to aircraft

After the crash, the aircraft **Discus 2a** "**GX**" had a broken Plexiglas hood of the cockpit, a broken left venting window of the cockpit, and 35-30 long cracks in varnish behind the right butt rib of the aircraft body. The right wing was fully broken off approximately 2 m from its end. The left wing and tail surfaces were not damaged.





The aircraft Discus 2T "8K" had a ripped skin of the body right of the keel trailing edge in a length of 15 cm and 5 cm, a split keel skin in a length of 60 cm and 15 cm right below the stabilizer, and a delaminated inner sandwich skin on the right rudder bracing in a length of 10 cm. Three delaminations with a length of 3 cm in the corners of the tail battery compartment and a broken hinge of the door of tail battery compartment. One delamination in a length of 15 cm near the landing gear (back right). The rudder had unsealed trailing edge in the whole length and delaminated inner sandwich skin with size of 3x20 cm on the right side. Split skin on both sides of the rudder. The stabilizer had a broken skin behind the leading edge and unsealed leading edge in a length of 70 cm from the end.





1.4 Other damages

The Air Accident and Incident Investigation Board was not informed about circumstances with potential claims for compensation of other damages toward a third party.

1.5 Personnel information

Pilot of aircraft OK - 7000:

Citizen of the Czech Republic, aged of 46

Holder of the aviation personnel licence GPL No CZ/101056324, issued by the Civil Aviation Authority of the Czech Republic, with marked validity until 22 February 2016.

Qualifications: gliders GLD, with marked validity until 31 December 2011

Medical certificate of 1st class with marked validity until 10 April 2011

Flying experience:

Total flying hours and flights: 4 529:51 hrs and 1 001 flights
Flying time on the day of accident: 3:16 hrs and 1 flight

Pilot of aircraft SE - UOA :

Citizen of Sweden, aged of 48

Holder of the aviation personnel licence GPL No SE-6207264059, issued by the Civil Aviation Authority of Sweden, with marked validity until 31 January 2012.

Holder of the BEVIS licence No Sei 64, issued by the Royal Swedish Aero Club (KSAK) on 15 February 2001.

Qualifications: Glider flying instructor of aero clubs of KSAK.

Medical certificate of 2nd class with marked validity until 25 January 2012.

Flying experience:

Total flying hours and flights: 2 470:05 hrs and 1 980 flights
Flying time on the day of accident: 4:03 hrs and 1 flight

1.6 Aircraft information

Type: **DISCUS 2a**
Registration: OK-7000
Serial No: 216
Year of manufacture: 2005
Manufacturer: Shempp-Hirth Flugzeugbau GmbH, Kirchheim/Teck, SRN

Total flying hours from the year of manufacture: 1 145:58 hrs and 287 flights

Third party liability insurance with validity from 23 January 2010 to 23 January 2011.

Aircraft station licence No 118816/LR with marked validity until 30 April 2015.

The aircraft was put into operation on 1 April 2008 by issue of the certificate of airworthiness No 4404/2 and certificate of entry into the Aircraft Register of the Czech Republic No 4404/1, issued by the Civil Aviation Authority of the Czech Republic. The airworthiness inspection certificate No 404/5 with marked validity until 31 December 2010.

Calculation of aircraft weight at the time of air accident

Empty weight of aircraft	242.7 kg
Weight of crew	74.0 kg
<u>Weight of water ballast: approx. 200 l x 0.999 kg/l</u>	<u>199.9 kg</u>
Total aircraft weight at the time of accident	516.6 kg

Type: **DISCUS 2T**
Registration: SE-UOA
Serial No: 9
Year of manufacture: 2001
Manufacturer: Shempp-Hirth Flugzeugbau GmbH, Kirchheim/Teck, SRN

Total flying hours from the year of manufacture: 414:50 hrs and 153 flights until 29 July 2009

Third party liability insurance with validity from 1 October 2009 to 1 October 2010.

Aircraft station licence No 555399 with marked validity until 31 December 2014.

The aircraft was put into operation on 5 March 2007 by issue of the certificate of airworthiness and certificate of entry into the Aircraft Register of Sweden No 7674, issued by the Civil Aviation Authority of Sweden. The airworthiness inspection certificate with marked validity until 14 March 2011.

Calculation of aircraft weight at the time of air accident

Empty weight of aircraft	243.8 kg
Weight of crew	74.0 kg
<u>Weight of water ballast: approx. 200 l x 0.999 kg/l</u>	<u>199.9 kg</u>
Total aircraft weight at the time of accident	517.7 kg

1.7 Meteorological situation

On the critical day our territory was under the influence of ridge of higher pressure above the Baltic Sea.

The location of air accident at the respective time had a weather without precipitation, 2 – 4/8 Cu with lower base of 2 400 m QNH, average climb of 1.5 – 2.5 m/s, visibility distance of more than 10 km. The high-altitude wind at the time of air accident was blowing from the direction of 350° and the wind speed did not exceed 6 KT. The low-level air temperature in given location was approximately + 26°C.

The critical flight of aircraft Discus 2a "GX" and Discus 2T "8K" took place in an environment that can be described from the meteorological view as stable weather without precipitation and with excellent visibility conditions without meteorological phenomena likely to negatively affect the flights of the aircraft.

1.8 Aids to navigation

The aircraft was equipped for VFR flights.

1.9 Communications

The aircraft was equipped by a radio communication system enabling a two-way communication with all air stations at any moment of flight.

1.10 Aerodrome information

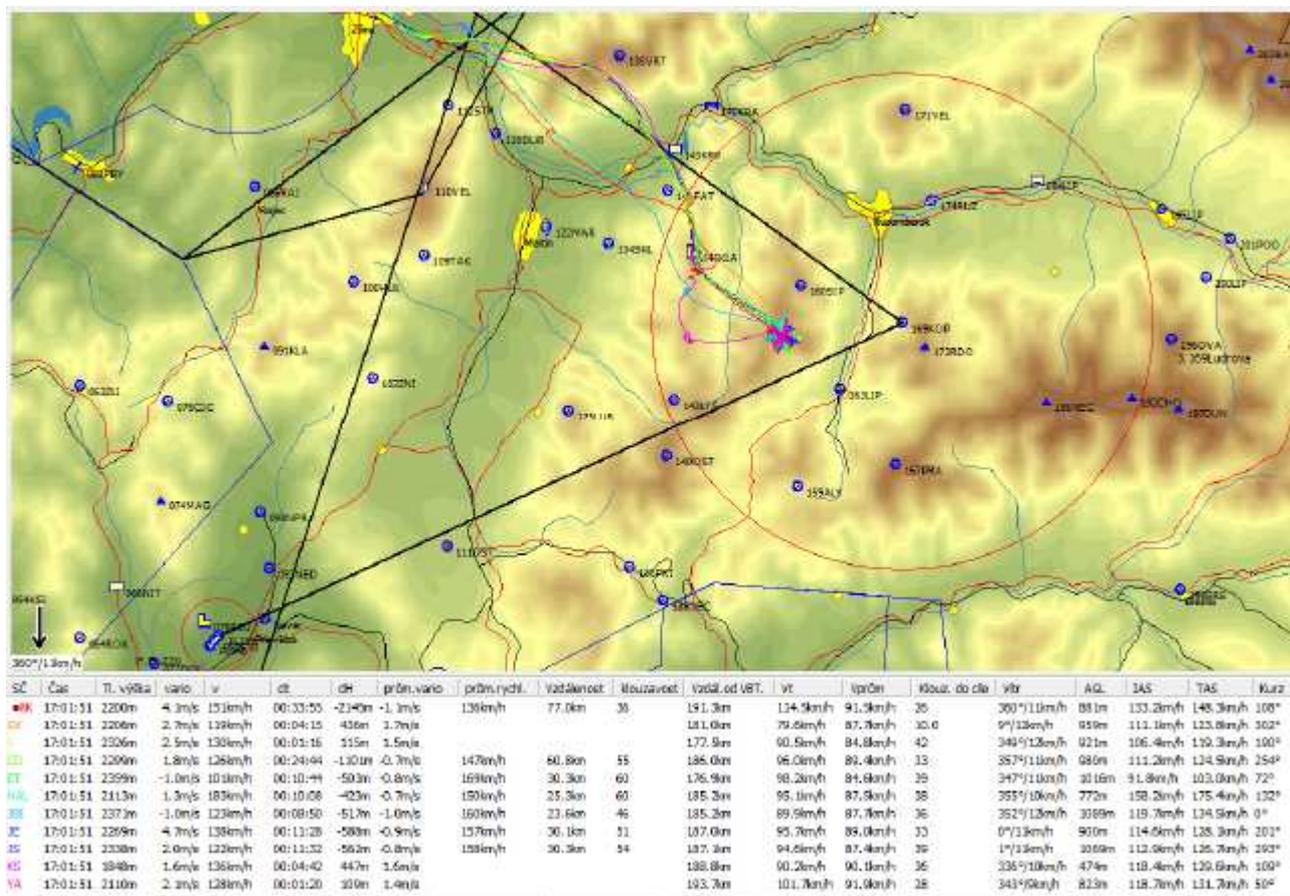
The airport LZPE is a public domestic aerodrome with irregular international operation. The grass RWY 04/22 is used for aircraft operation and at the time of air accident it was suitable for performance of the flight in question.

1.11 Flight recorders and other recording systems

The aircraft were not equipped by any flight recorders.

1.12 Wreckage and impact information

10 km SW from the city of Ružomberok. The place of accident is delimited by the geographical coordinates: N 48°59'24''; E 019°12'31''.



1.13 Medical and pathological information

Not applicable.

1.14 Fire

No fire broke out.

1.15 Survival aspects

The search and rescue were not required. Nobody was injured.

1.16 Tests and research

Not applicable.

1.17 Organizational and management information

The 31st FAI World Gliding Championship 2010 was organized in accordance with the FAI Sporting Code – General Part and Part 3, Amendment „A“ to the Sporting Code Part 3, and with the Local Rules of the 31st FAI WGC 2010.

During daily pre-flight briefings the pilots of competitive aircraft were informed about:

- the need to observe the safety rules,
- flight rules on route and for circling in updraft
- increased risk of crash during competitive flights
- the need to observe the rules in search for other aircraft in their proximity.

To increase the flight safety the organizer of the competition ensured the sale of the FLARM system for potential applicants.

1.18 Additional information

The pilots were equipped by GNSS FR (flight recorder - Global Navigation Satellite System). Data in the flight recorder, where information on flights from the respective competition day had been stored, were evaluated by the organizer of the 31st FAI WGC 2010.

The aircraft **Discus 2a "GX"** was equipped by FLARM (Traffic and Collision Warning for General Aviation – for displaying of junction traffic, visual and acoustic warning about approaching aircraft and obstacles), ELT (Emergency Locator Transmitter), LX7000proIGC (IGC-approved GNSS flight recorded) and COLIBRI (IGC-approved GNSS flight recorder).

The aircraft **Discus 2T "8K"** was only equipped by VOLKSLOGG ER (IGC-approved GNSS flight recorder).

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

2.1. Flight history

When entering the updraft, the pilot of aircraft **Discus 2T "8K"** created, although unintentionally, an extremely dangerous situation by flying through a circle in which the pilot of aircraft **Discus 2a "GX"** circled together with other aircraft in a right-hand turn in the updraft. A pilot of aircraft who joins circling aircraft in the updraft is responsible not to cross the air path of aircraft that are already circling in the updraft, and to keep a safe distance from these aircraft.

After the air crash the pilots interrupted their tasks, checked the function of aircraft steering systems and decided to land at the airports LZRU ("**GX**") and LZPE ("**8K**"), respectively.

2.2. Crew

According to the submitted documentation the pilot of aircraft **Discus 2a "GX"** had valid qualifications for flying aircrafts of the respective category. The pilot had sufficient flying experience for competitive flights. At the time of the air accident the pilot was not under the influence of alcohol, narcotics or common drugs likely to decrease his attention during flight.

According to the submitted documentation the pilot of aircraft **Discus 2T "8K"** had valid qualifications for flying aircraft of the respective category. The pilot had sufficient flying experience for competitive flights. At the time of the air accident the pilot was not under the influence of alcohol, narcotics or common drugs likely to decrease his attention during flight.

2.3. Meteorological situation

The meteorological conditions had no influence on the occurrence of the air accident.

3. CONCLUSIONS / Cause of air accident

The pilot of aircraft **Discus 2T "8K"** joining circling aircraft in the updraft crossed the air path of aircraft that were already circling in the updraft and did not kept a safe distance from these aircraft.

In spite of his effort to avoid the collision by pulling back the stick two competitive aircraft crashed to each other.

4. SAFETY RECOMMENDATIONS

Following the investigation of causes of the air accident of

Aircraft type Discus 2a, registration OK-7000 and

Aircraft type Discus 2T, registration SE-UOA

Date of accident: 04.07.2010

We recommend to implement the following measures:

- 1)** To execute an analysis of the air accident through the appointed organization of the Slovak National Aero Club with the flying personnel.
- 2)** Before the start of the flight day to thoroughly analyze the planned tasks, while putting stress on the observance of the procedures for joining, circling and leaving the updraft currents.
- 3)** The operators of aircraft classified to the category „Gliders“ should equip their aircraft by FLARM.

Bratislava, 15 August 2010