



**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: SKA2010013

FINAL REPORT

on investigation of accident

of parachutes **Pilot-124** and **Safire 2-139**

without assigned identification marking

Date: 10.07.2010

Place: Airport LZDB

A. INTRODUCTION

The investigation of 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 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.

Operator / Owner:	SNA gen. M. R. Štefánika / Polish Aero Club
Type of operation:	general aviation
Type of parachutes:	Pilot-124 – Slovak parachutist Safire 2-139 – Polish parachutist
Parachute ID marking:	without assigned identification marking
Flight phase:	parachute drops
Place of accident:	Airport LZDB
Date and time of accident:	10.07.2010, 16:00 hrs

Note: All times in this Report are UTC.

B. INFORMATIVE SUMMARY

On 10 July 2010 during the parachutist activity carried out at the Airport LZDB the collision of two parachutists occurred.

The Slovak parachutist suffered serious injuries.

The Polish parachutist was not injured.

Both parachutes were minor damaged.

The following person was appointed to investigate causes of the accident:

Lic. MIČEKOVÁ Jaroslava

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

On 10 July 2010 the organised parachute operation with participation of Slovak and Polish parachutists took place at the Airport LZDB. The parachute drops were conducted from aircraft L-410, from a height of 4000 m above ground level. During the 15th dropping flight the incident participants were among those making the parachute descent.

After the termination of the free fall from a height of 4000 m above ground level, the Slovak parachutist was opening the parachute in a height of 1200 m above ground level. Then he conducted the downward flight on the parachute in the area right from the runway (RWY) 23. In a height of 800 to 400 m above ground level he made 3 to 4 turns by 360°, followed by a straight-line sloping flight over RWY. In a height of 100 m above ground level he approached the Polish parachutist flying against him, who moved down the wind above the left edge of RWY 23. The Slovak parachutist made a left turn, by which he got just in front of the Polish parachutist. The contact – collision of the Slovak parachutist collided with the canopy of the main parachute of the Polish parachutist followed.

Due to the collision the Slovak parachutist's main parachute canopy warped approximately to 2/3 of its total surface area, which caused the decrease of the speed of advance and significant increase of the speed of fall with slight rotation. In this configuration the Slovak parachutist landed hard on the runway. After the collision, the Polish parachutist's main parachute canopy was refilled with air, but three to four twists were made on the parachute ropes which made the parachute uncontrollable. It continued the perpendicular downward flight over RWY 23 to its right edge and landed 10 m from the edge of airport in the corn field.

After the fall the Slovak parachutist was immediately provided help and emergency was called.

The Polish parachutist suffered slight concussion from the fall.

The ambulance, the air rescue service and the police of the SR were called immediately after the accident.

Daytime: Day

Flight rules: VFR

1.2 Injuries to persons

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

1.3 **Damage to parachutes**

Parachute Pilot 124 – The inspection of the Slovak parachutist's main parachute canopy detected damage – rupture of two rigging cords on the central channel of „A“ and „B“ series. The damage – rupture of rigging cords was caused by strong dynamic stress generated by collision. No other damage to the main parachute canopy was detected. Based on the video recording, the main parachute canopy was fully functional before the collision and its condition did not influence the accident. The inspection of other parts of parachute equipment and its documentation detected no other matters that could have influenced the accident. The parachute equipment was operated in accordance with valid legislation and properly maintained.

Parachute Safire 2 - 139 - The inspection of the Slovak parachutist's parachute canopy detected damage – rupture of parachute fabric on the margin of the leading edge of two left-handed channels. The damage – rupture was caused by the collision. No other damage to the main parachute canopy was detected. Based on the video recording, the main parachute canopy was fully functional before the collision and its condition did not influence the accident. The inspection of other parts of parachute equipment and its documentation detected no other matters that could have influenced the accident. The parachute equipment was operated in accordance with valid legislation and properly maintained.

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**

Slovak parachutist:

Licence No: 418/07, with marked validity until 26.03.2011.

Number of drops: 440, obtained licence C.

Polish parachutist:

Licence No: C-37457, with marked validity until 09.08.2012.

Number of drops: 360, obtained licence C.

1.6 **Information about parachutes**

Parachute Pilot 124:

Serial number: 12429, year of manufacture: 2010, packed for drop on 10 July 2010.

Parachute Safire 2 -139:

Serial number: 94216551, year of manufacture: 2009, packed for drop on 10 July 2010.

1.7 **Meteorological situation**

Wind direction and speed: 250°, 5m/s; cloudiness 1/8; cloud ceiling 4000 m above ground level.

1.8 **Aids to navigation**

Not applicable.

1.9 **Communications**

Not applicable.

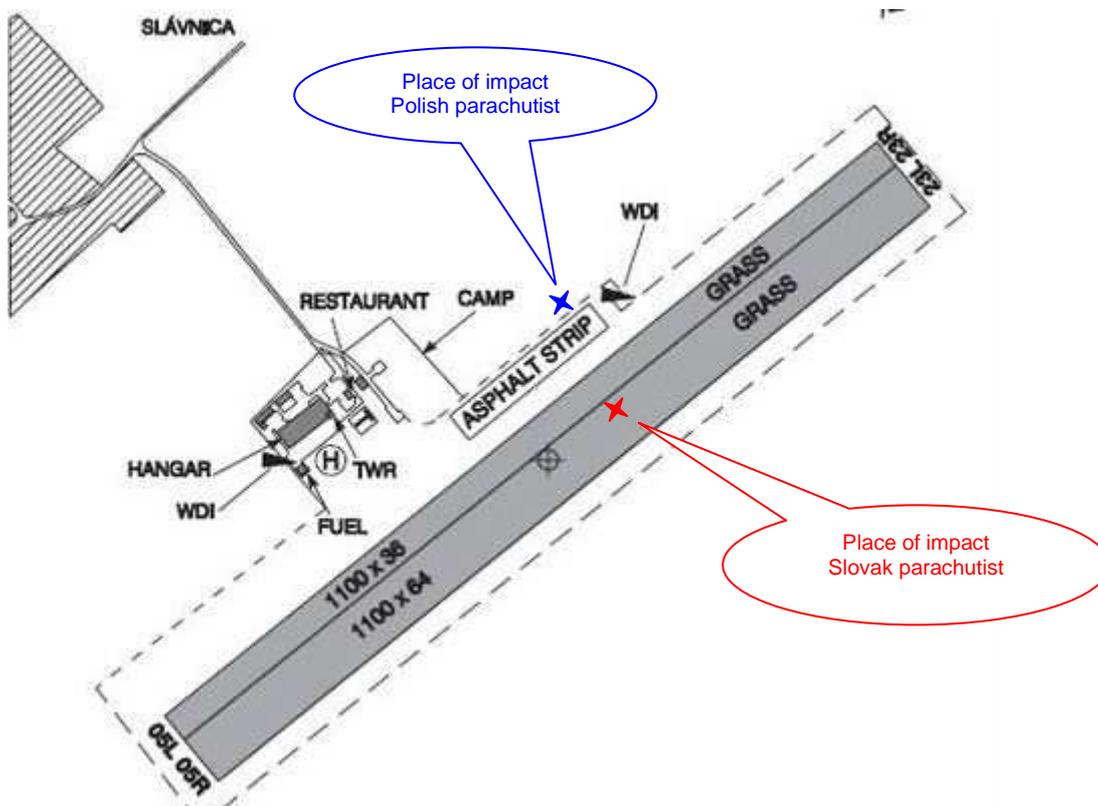
1.10 **Information about airport**

The Airport LZDB is a public domestic aerodrome with irregular operation. Grass RWY 23L / 05R is used for aircraft operation.

1.11 Flight recorders

Not applicable.

1.12 Wreckage and impact information



1.13 Medical and pathological information

The Slovak parachutist suffered extensive damage to cervical backbone and pelvis fracture. The Polish parachutist suffered slight concussion from the fall.

1.14 Fire

Not applicable.

1.15 Survival aspects

It was not necessary to implement the search and rescue using SAR means.

1.16 Tests and research

Not applicable.

1.17 Organizational and management information

The parachutist operation was organised by the Dubnica Aero Club. On the critical day the operation was started by the drop supervisor and air traffic controller signing the Drop Supervisor's Book. The traffic control inspection did not detect any circumstances or matters likely to have influenced the accident.

1.18 Additional information

Not applicable.

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

Slovak parachutist

The Slovak parachutist made a drop with the canopy 124. If we assume that weight of the parachutist including outfit was 90 kg, the canopy load was 1.5. Beside of other specific characteristics, canopies with such load are characterized by generation of large centrifugal force in case of multiple 360°turns and high speed of advance.

In a height of 800 to 400 m above ground level the parachutist made three or four 360°turns. At such parachute load it cannot be excluded that after the termination of the last turn the vestibular perception of the parachutist was partially affected, which could have decreased his attention.

Based on the video recording, the time interval between the completion of the last turn and the collision was 7 s. The estimated distance between the completed last turn and the collision of the parachutists was approximately 200 m. In this case the speed of closing was calculated at 28.5 m/s (102 km/h).

Another factor that may have influenced the decrease – reduction of attention was the sun with high light intensity that was situated low above the horizon at the time of air accident.

Polish parachutist

No circumstances influencing the share of contributory negligence as the cause of parachute accident were detected on the part of the Polish parachutist.

3. CONCLUSIONS / Cause of air accident

Main cause of accident:

- the Slovak parachutist landing with increased speed of fall.

Direct cause of accident:

- violation of the rules of avoidance with parachute according to Annex to the Regulation V-PARA-1 on the part of the Slovak parachutist.

Contributing causes:

- decrease of attention of the Slovak parachutist, probably caused by disturbance of vestibular perception and by effects of the sun standing low above the horizon.

4. SAFETY RECOMMENDATIONS

To analyse the accident with parachutist personnel of SNA.

Bratislava, 31.08.2010