The original of the Final Report was issued in the Slovak language.
In case of inconsistency original version in Slovak language is applicable.

MINISTRY
OF TRANSPORT
AND CONSTRUCTION
OF THE SLOVAK REPUBLIC

AVIATION AND MARITIME INVESTIGATION AUTHORITY
Námestie slobody 6, P.O.BOX 100
810 05 Bratislava 15

F I N A L R E P O R T

on the safety investigation of a parachutist event

paraglider type MAGELLAN 140

Reg. No.: SKP2017003

The investigation of occurrence 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 and in accordance with the Regulation (EU) No. 996/2010 of the European Parliament and of the Council on investigation and prevention of civil aviation accidents and incidents, governing the investigation of civil aviation accidents and incidents.

The final report is issued in accordance with the Regulation L 13 that is the application of the provisions of ANNEX 13 Aircraft Accident and Incident Investigation to the Convention on International Civil Aviation.

The exclusive aim of investigation is to establish causes of accident, incident and to 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 occurrence in question have an informative character and can only be used as recommendation for the implementation of measures to prevent occurrence of other accidents and incidents with similar causes.

A. INTRODUCTION

Operator:	Slovak National Aeroclub
Owner of the parachute:	private person
Organizer of parachute operation:	Aeroklub Senica
Jumping Site:	Senica Airport / LZSE
Flight phase:	jump
Site of parachutist accident:	364 m N-NW from the center of the RWY23 runway 48° 39' 26.00" N, 17° 19' 22.12" E
Date and time of accident:	18.06.2017, 07:50

Note: All time data in this report is reported in UTC time.

B. INFORMATIVE SUMMARY

The parachutist jumped from an aircraft at a height of 4,000 m above the ground (hereinafter “AGL”). After a smooth jump, free fall, and filling the main parachute canopy with the air after its opening, the parachutist continued with the parachute flight to about a height of 50 m AGL to the position between the third and fourth corner of the landing. At a height of about 40 m AGL, in a lateral position in the wind, he made a steep turn to the right: after the wind, the falling speed increased and the parachutist hit the ground hard.

Emergency medical assistance and air ambulance service were immediately called.

The parachuting accident t was reported through the operator (the organizer of the parachute operation) to the Aviation and Maritime Investigation Authority of the Ministry of Transport and Construction of the Slovak Republic.

A commission was set up to investigate the causes of the parachuting accident:

Lic. Jaroslava MIČEKOVÁ	Chairperson of the Safety Investigation Commission
Miroslav GÁBOR	Member of the Safety Investigation Commission

The report is issued by:

Aviation and Maritime Investigation Authority
of the Ministry of Transport and Construction of the Slovak Republic

C. MAIN PART OF REPORT

1. FACTUAL INFORMATION

2. ANALYSIS

3. CONCLUSIONS

4. SAFETY RECOMMENDATIONS

1. FACTUAL INFORMATION

1.1 History of the flight

On 18.06.2017, a parachute operation organized by the Senica Aeroclub was held at LZSE Airport in accordance with the Regulations for Airborne Activities (Amendment No.4/2010) and Directive V-PARA-1.

Airborne activities were carried out from the L-410 UVP-E20 aircraft, registration mark OK-LRB, from a height of 4,000 m AGL.

In the first parachute flight on that day, the parachutist performed a jump in the role of V/7 Directive V-PARA-2 (a group of jumping acrobatics in free fall) with a manual opening of the parachute after a determined period of free fall.

After a smooth jump, free fall from a height of 4,000 m AGL and filling the main parachute canopy with air after its opening, the parachutist continued with the parachute flight to about a height of 50 m AGL to the position between the third and fourth corner of the landing. At a height of about 40 m AGL, in a side position in the wind, he made a steep turn to the right: after the wind, the falling speed increased and the parachutist hit the ground hard.

In the right-hand corner the parachutist hit a crop field at an increased falling speed.

Daytime: day

1.2 Injuries to persons

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

1.3 Damage to the parachute

No damage to the parachute mechanism was detected when the parachute was completely checked.

1.4 Other damage

No circumstances with potential claims for compensation of other damage toward a third party were notified to the Aviation and Maritime Investigation Authority.

1.5 Information about the parachutist

Citizen of the Slovak Republic, 52 years of age, holder of an international license for parachutism, issued by the Slovak National Aeroclub, with validity until 04.04.2019.

Medical Certificate valid until 04.04.2019.

Qualifications:

holder of Performance Category “D”.

Experience:

number of total jumps: 597

in 2017: 32

previous jump took place on 17.06.2017 at LZSE.

1.6 Information on the parachute

Main parachute: MAGELLAN 140, packed for jumping on 17.06.2017
Serial Number: 140-713.

Package with harness: WINGS W-10
Serial Number: 10130

Backup parachute: PR-143
Serial Number: 050523, packed on 17.03.2017

AAD device: VIGIL II Multimode

Serial Number: 32587

1.7 Meteorological information

The meteorological situation at LZSE Airport at the time of the parachutist accident was suitable for the execution of jumps in question and did not affect the occurrence of the accident.

Direction and wind speed: from 350° to 9 m/s.

Cloud type, amount and height: Clear.

1.8 Aids to navigation

Not applicable.

1.9 Communications

Not applicable.

1.10 Aerodrome information

The LZSE Airport is a public national airport with irregular traffic.

At the time of occurrence, it was suitable for parachuting operations.

1.11 Flight recorders

Not applicable.

1.12 Wreckage and impact information

The accident siteis located about 310 m south of the RWY12 runway. At the time of the accident, the field, the impact site, was covered with green grain at a height of about 40 cm and is determined by the geographical coordinates: 48° 39' 26.00" N, 17° 19' 22.12" E.

The body of the parachutist was about 10 m south of the first contact with the ground. It was partly tangled in the cords and canopy of the main parachute.

Site of parachutist impact

1.13 **Medical and pathological information**

A forensic examination was performed: the parachutist's death was associated with the impact rate calculation, his health status before the parachuting accident, a detailed analysis of the injury mechanism that arose after the parachutist hit the ground. At the time of the event, he was not influenced by alcohol, common drugs or narcotics, drugs that could have reduced his attention during the jump.

In this case, there was injury to several internal organs in a multiple trauma – fractures of several bones of the trunk and extremities judicially considered to be fatal injuries of a general nature and the possibility of life-saving by providing immediate and specialized medical assistance may have been considered in this case, given the nature and extent of the injuries that arose, to be irrelevant.

1.14 **Fire**

None.

1.15 **Survival aspects**

It was not necessary to perform an investigation and rescue by SAR.

1.16 **Tests and research**

Parachute mechanism

- Checking of the harness and the parachute:

an investigation of the parachute harness with cover was performed at the parachutist's impact site. It was found that the release pin and the backup release pin of the parachute were in their cases. The parachutist was properly fastened in the harness, and the package and the harness did not show any signs of damage that could have affected the occurrence of the accident in question.

- Checking of the main parachute canopy:

an investigation of the canopy of the main parachute was performed at the parachutist's point of impact. The parachutist's body was partially tangled in the canopy of the main parachute.

However, the tangle was caused by the impact of the parachutist on the ground and the multiple overspeeding of the parachutist's body was caused by the inertial force on the right-hand corner before the impact. After disentangling the cord from the body of the parachutist, the canopy and the main parachute cord were investigated. The control guards were supressed and overturned, indicating the fact that the parachutist was controlling the parachute with the control guards. Upon further checking of the carrier cord and the main parachute canopy, no damage or other malfunction of the carrier cord and the main parachute canopy could be detected that could have resulted in the occurrence of the accident.

- The inspection focused on the proper packing of the main parachute:

the symmetry of the main parachute canopy as well as the release of the individual carrier and control cords showed that the parachute was correctly packed prior to the jump and the parachute pack could not have affected the occurrence of the accident, as confirmed by the video of the jump.

A VIGIL safety device was used on the parachute (Automatic Activation Device). The safety device was correctly installed and turned on in "PRO" mode. The pyropatrone was not activated, as evidenced by the fact that the last 256 m AGL was not over 35 m/s.

In the overall inspection of parachute mechanism documentation, the Commission concluded that the parachute technology in question had been operated and maintained in accordance with current legislation, and no facts that could have affected the occurrence of the accident in question were found.

1.17 **Organizational and management information**

Flight-airborne activities were performed in accordance with aviation regulations valid in the territory of the Slovak Republic.

The organization of the parachuting operation was performed by Aeroclub Senica. Pursuant to Act No. 83/1990 Coll., Aeroclub is a voluntary association of citizens performing interesting and sporting activities in motor flying, non-motorized flying and parachuting.

The Aeroclub is voluntarily associated within a higher organizational unit – the Slovak National Aeroclub of Gen. M.R. Štefánik based in Žilina.

On the given day operation commenced with the signing off of the controlled jump and the air traffic control manager in the Controlled Jump Log. No facts that could have affected the occurrence of the accident were found within the investigation.

1.18 **Additional information**

When investigating the causes of the occurrence of the accident, no facts of the cause or effect of a third party on the occurrence of the accident were found.

1.19 **Useful or effective investigation techniques**

Standard investigation methods were used.

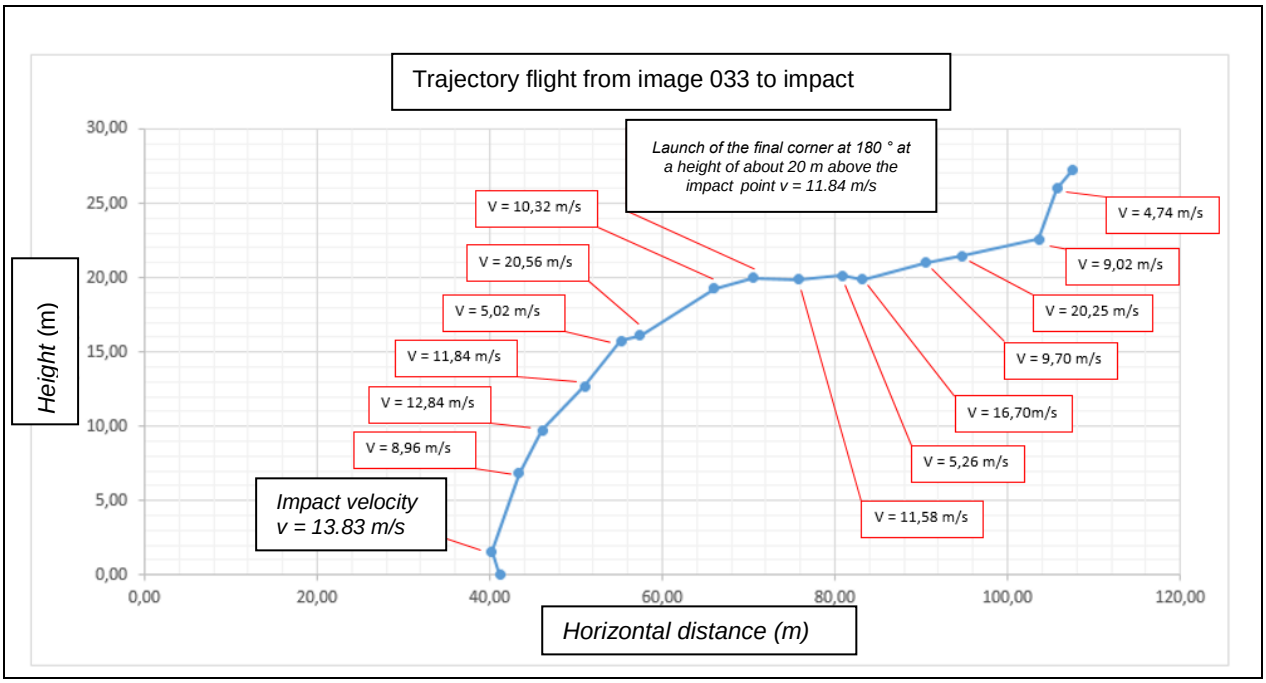
2. ANALYSIS

Parachuting activity

The parachutist, after completing the free fall, opened the main parachute at an altitude of 900 m AGL. Furthermore, on a fully functional main parachute, he continued in position with a westerly wind above the area of LZSE Airport. Flying over the RWY and at the boundary of the airport, in the part of the former tree avenue south of the RWY, he made a third circular turn and continued on the wind at about a height of 60 to 50 m AGL. For the parachutist category and type of parachute, this height is decisive for making the fourth turn: against the wind and preparing for landing.

The parachutist, **probably** due to fear of falling at the boundary of airport where a stream and brook are located, wanted to make a corrective maneuver but the parachute turned sharply to the right after the wind, resulting in a rapid loss of height with an increasing fall in speed. That height was no longer sufficient to open the parachute, and the parachutist hit the ground hard.

Based on the observation of a randomly made remote video from the ground, it can be stated that the parachutist had a parachute that was fully functional until the last minute and the final right-handed turn after the wind was performed by the parachutist using the control elements.



Graphical representation of the flight trajectory with total average flight speeds in individual segments: the speed indicated at the individual trajectory points corresponds to the always completed section defined by the two points

Additional information:

another parachutist landed in the area and, after turning the parachute against the wind with respect to their weight and the parachute jump, they left behind the airport boundary and safely landed in a field about 200 m west of the parachutist's impact. The other parachutists landed on the LZSE Airport.

3. C O N C L U S I O N S / Cause of Parachuting Accident

Causes

- impact of parachutist at an increased falling speed on the ground,
- failure to control the final landing maneuver.

Concurrent circumstances

Incorrect estimate of height for corrective maneuver in the final landing phase

4. SAFETY RECOMMENDATIONS

The final report from the investigation of the parachuting accident does not contain any recommendations.

In Bratislava, 28.11.2017