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, CONSTRUCTION
AND REGIONAL DEVELOPMENT
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 investigation of accident

of glider type **ASW 27-18E**

Registration No. **SP-3769**

Reg.No. SKA2016002

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 / Owner:	LUBAR B.K.M. MEZYK Spólka Jawna
Type of operation:	general aviation / sport and recreational flying
Glider type:	ASW 27-18E
Registration No. :	SP-3769

Take-off site:	Aerodrome Prievidza / LZPE
Flight phase:	manoeuvring
Place of accident:	130 m south-west of the border crossing between Slovakia and Poland
	N 49°15'44.65", E 020°6'50.84"
Date and time of accident:	20.04.2016, 12 h 17 min

Note: All time data in this report are indicated in UTC.

B. INFORMATIVE SUMMARY

The international gliding competition FCC Gliding 2016 was held at the aerodrome LZPE in the period of 10 April to 21 April 2016. The competitors competed in three classes: 15m Class, Club Class and Mixed Class.

On 20.04.2016, the last-but-one flight day of competition, in the Slovakia-Poland border area Lysá Poľana, a glider performed the wing stall in low altitude and at low flight speed, which ended by fall of the glider to the ground.

The pilot of glider suffered fatal injuries in the accident.

The following commission was appointed for investigation of the air accident:

Ing. Igor BENEK – chairman of investigation commission
Ing. Juraj GYENES – member of investigation commission

The report is issued by:

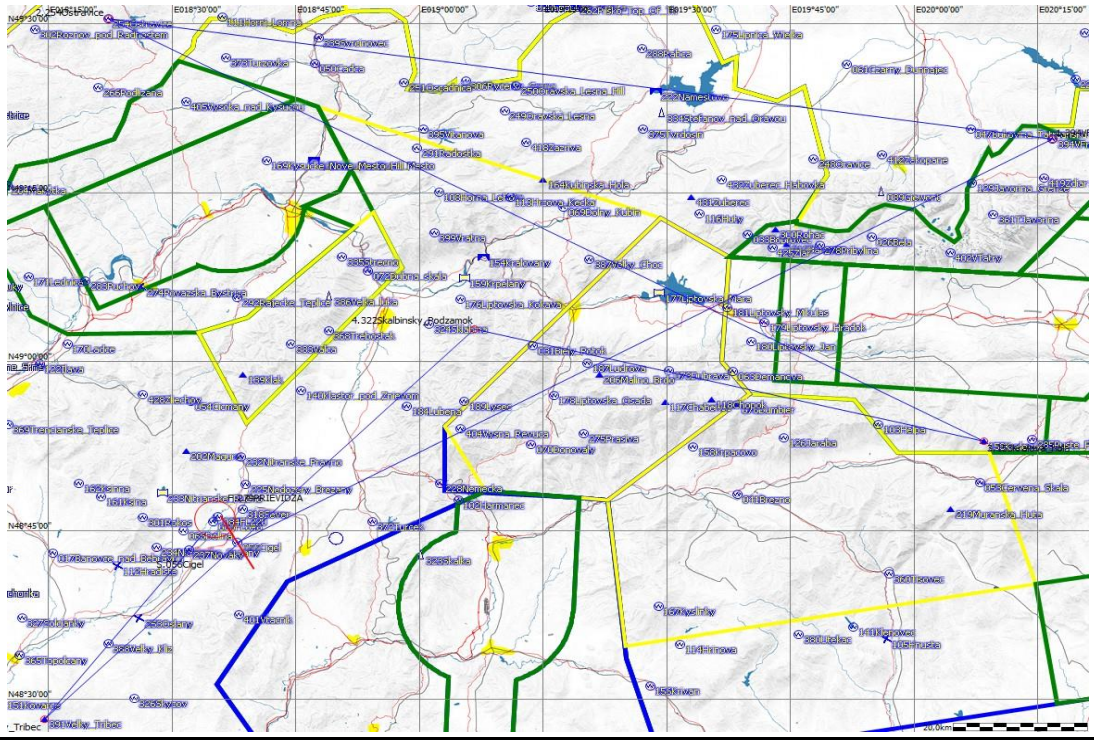
Aviation and Maritime Investigation Authority
of the Ministry of Transport, Construction and Regional Development of the Slovak Republic

C. MAIN PART OF REPORT

1. FACTUAL INFORMATION

1.1 History of the flight

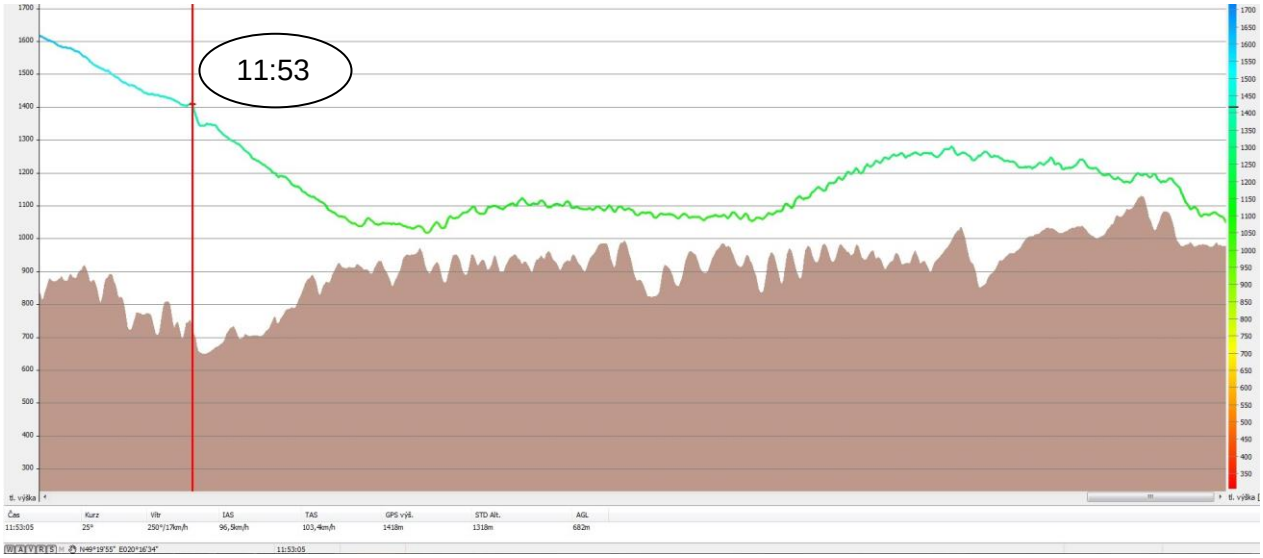
On 20.04.2016, at 08:03 the pilot started for the competition flight in “Mixed Class“.
At 09:49 he reached the competition route Cigeľ - Veľká Franková – Ostravice – Kráľova hoľa - Sklabinský Podzámok – Veľký Tríbeč – Prievidza.



Between 10:18 and 11:00 the pilot flew above a mountain area within altitude range of 150 - 600 m above ground level with possibility to make a safety ground landing on suitable surface in the valley.

At 11:07 in the area of community Bešeňová the pilot succeeded to climb to an altitude of 1,350 m above ground level and continue the flight toward the mountain area of Roháče-High Tatra.

At 11:53 he reached the turning point Veľká Franková in altitude of 700 m above ground level.

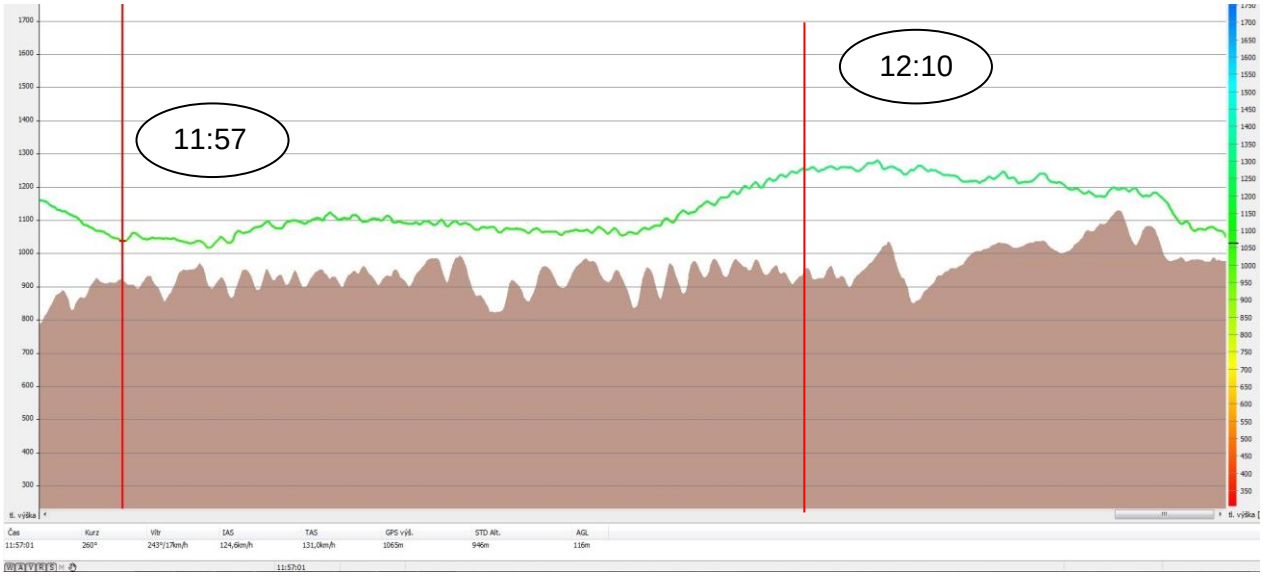


From this moment the glider continuously lost height.

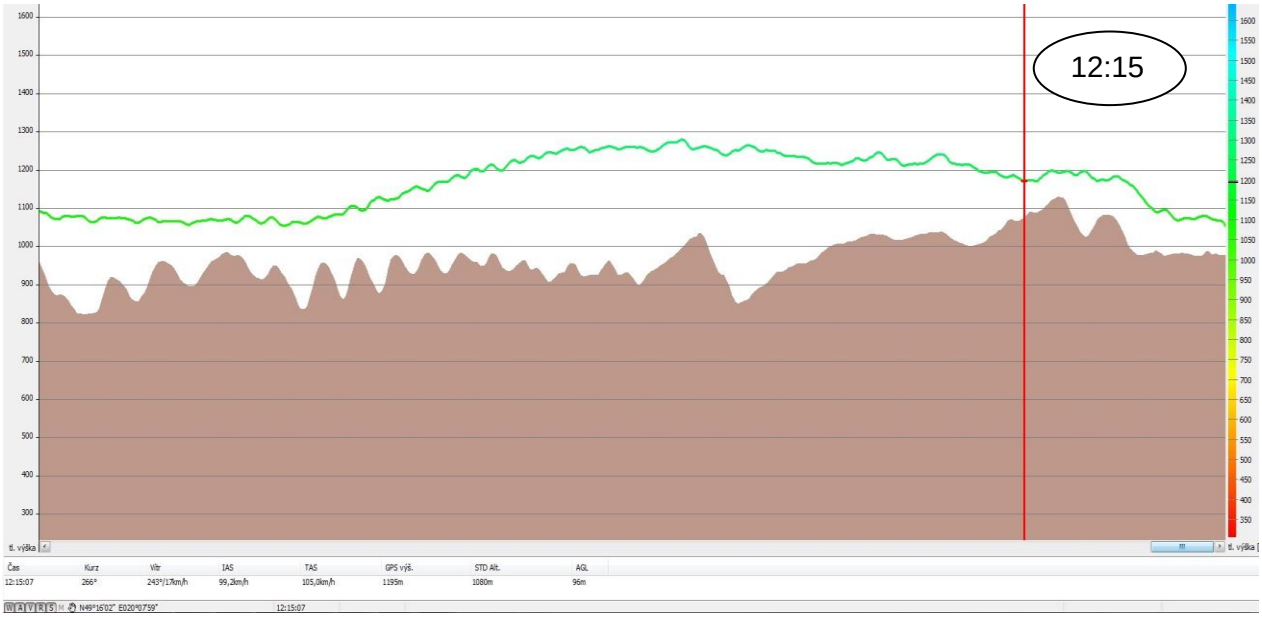
At 11:57 the pilot descended to altitude of 120 m above ground level east of the commune Jurgów and did not interupt the competition flight, but headed to the commune Tatranská Javorina with higher ground in order to climb in this area to a suficient altitude and then continue the flight on the route.

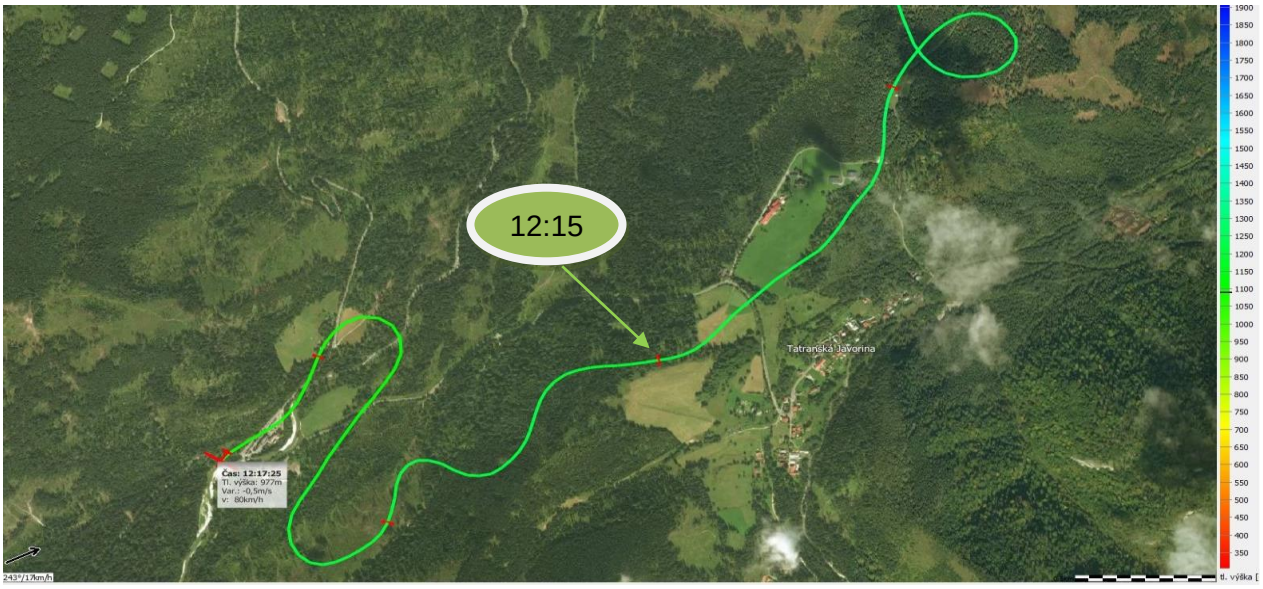
In the search for uplift currents the pilot flew within altitude range of 120 - 200 m above ground level; in some sections he reached critical flight levels under the altitude of 100 m above ground level in the mountain area until 12:10.

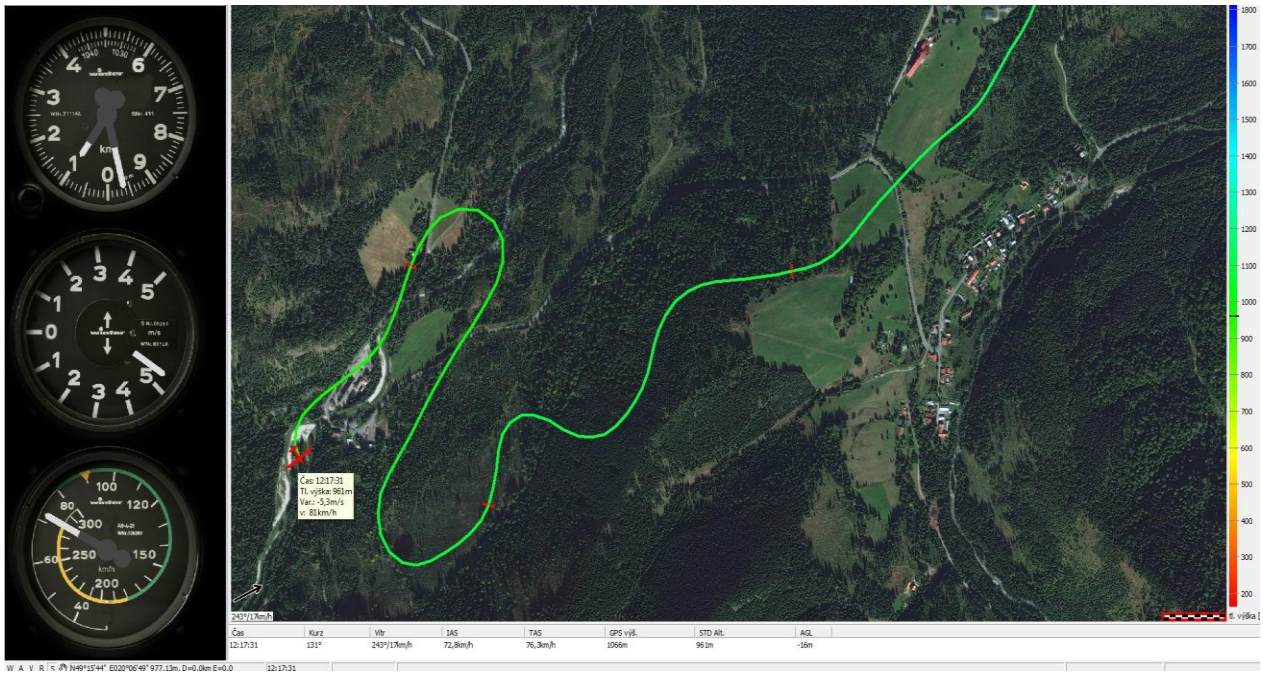
At this moment the pilot succeeded to achieve altitude above 300 m and at 12:11 he again set the course to the commune Tatranská Javorina.



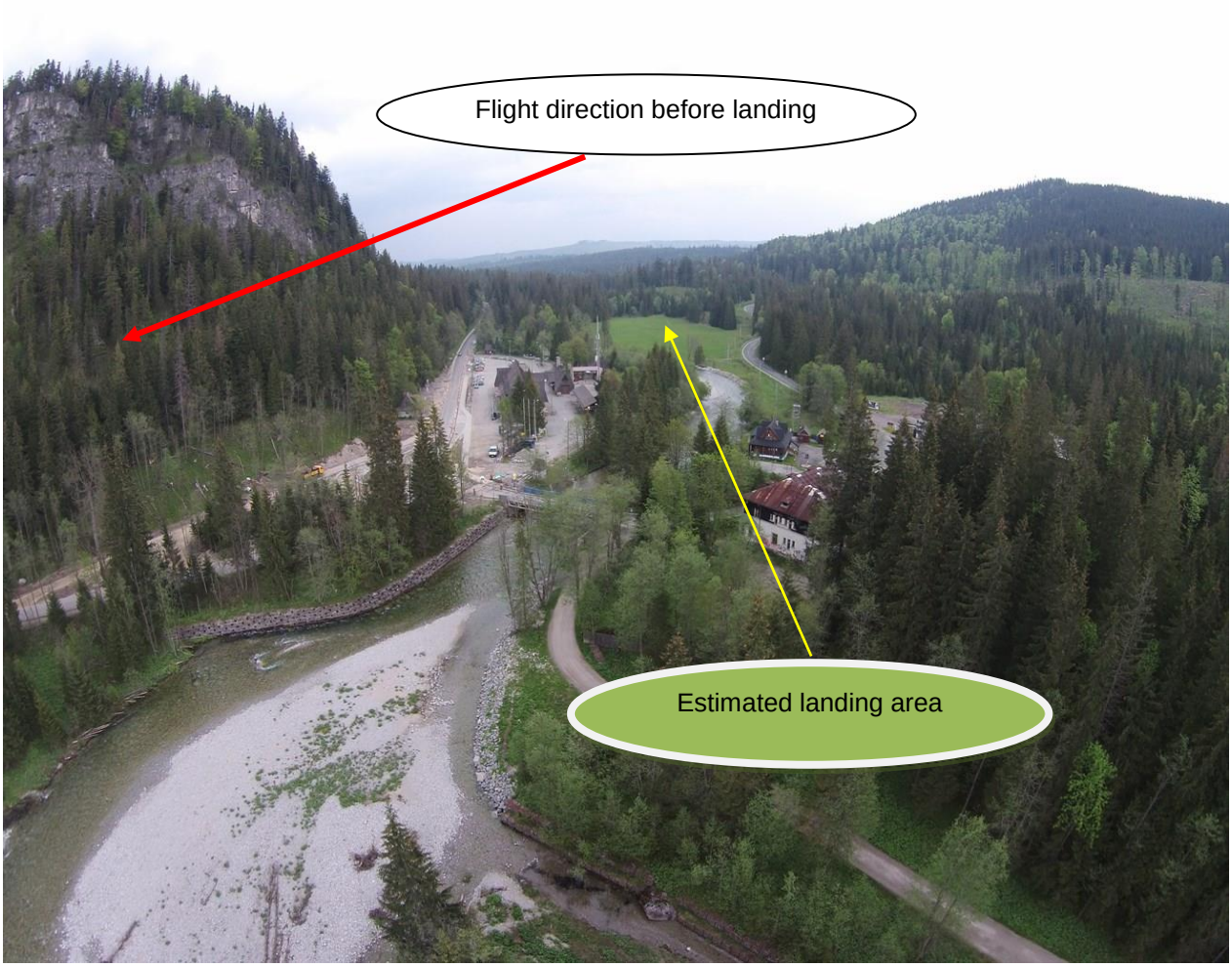
At 12:15 the pilot again achieved the altitude below 100 m above ground level with limited possibility of forced ground landing on a suitable surface; in some sections he descended below the surronding ground level. At this moment he probably decided to search for a landing area.







At the attempted landing approach the glider crashed at 12:17:31.



A member of the mountain rescue services reported the accident to the Aviation and Maritime Investigation Authority of the Ministry of Transport, Construction and Regional Development of SR.

Daytime: day
Flight rules: VFR

1.2 Injuries to persons

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

1.3 Damage to glider

The glider was destroyed in the accident.

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 Personnel information

Pilot:

A national of Poland, aged of 40 years,
Holder of the glider pilot (GPL) licence issued by the Civil Aviation Authority of Poland with marked validity until 11.02.2017.

Qualifications:

LAPL with marked validity until 11.02.2017
GLD with marked validity until 11.02.2017

Total flight hours: 1570 h

In it:

Powered	120 h	for the last year: 3 h
Non-powered	1450 h	for the last year: 135 h

Medical certificate of 2nd class with marked validity until 06.04.2018.

1.6 Information about glider

Type:	ASW 27-18E
Registration No:	SP-3769
Serial number:	29583
Year of manufacture:	2009
Manufacturer:	Alexander Schleicher GmBH&Co
MTOW:	600 kg

Certificate of airworthiness issued on 17.08.2009.
The verification of airworthiness was conducted on 02.03.2016 and is valid until 01.03.2017.

Third-party insurance: AXA Versicherung AG valid from 23.01.2016 to 23.01.2017.

1.7 Meteorological situation

On 20.04.2016 the edge of high-pressure area with the centre above the Northern Sea spread from north-west to Central Europe. At the same time, in higher atmosphere layers, trough of barometric depression shifted through Poland, Belorussia and Ukraine to the south-east.

At 12:17 in the area of commune Lysá Poľana it was cloudy to overcast with weak snow or hail precipitation. The air temperature was about 3°C and horizontal visibility achieved 20 km. The total cloudiness was 7/8 to 8/8. Clouds *Cumulus mediocris* and *Altocumulus cumulogenitus* dominated the area. The lower level of clouds was in an altitude of 1500 m above sea level. Moderate west to north-west wind with speed of 3 to 5 m/s blew in an altitude of 10 m above the flat country without obstacles. On the ridge of the Tatra mountains it was overcast with freezing fog and snowfall; the air temperature achieved -10°C. On the southern slopes of the Tatra mountains in altitude of 700 - 1500 m above sea level it was cloudy with weak snow precipitation and south-west to west wind with speed up to 5 m/s. In altitude of 3000 m above sea level (700 hPa) north-west airflow with speed of 15 m/s was observed. Toward the ground surface the wind direction remained north-west, but it became weaker. In altitude of 2500 m above sea level the wind speed in the free air achieved 10 m/s. In lower altitudes the airflow started to be influenced by surrounding mountain obstacles, in particular the Massif of Tatra. The wind gradually turned and finally came from the west; in altitude of 1500 m above sea level (850 hPa) it achieved the speed up to 7 m/s. The air temperature in altitude of 1500 m above sea level ranged from -1°C to -2 °C. In this altitude and lower, toward the ground and in the proximity of the Massif of Tatra, the airflow may have shown some deviations, as regards the wind direction and wind speed. Due to the windward effect local variable ascending and descending airflows may have occurred as a result of orographic turbulence.

1.8 Aids to navigation

N/A.

1.9 Communications

The glider was equipped by radio communication equipment allowing the two-way radio communication with all air stations at every moment.

FREQ 123,475 MHz - PRIEVIDZA GROUND, FREQ 122,60 MHz - PRIEVIDZA TRAFFIC.

1.10 Aerodrome information

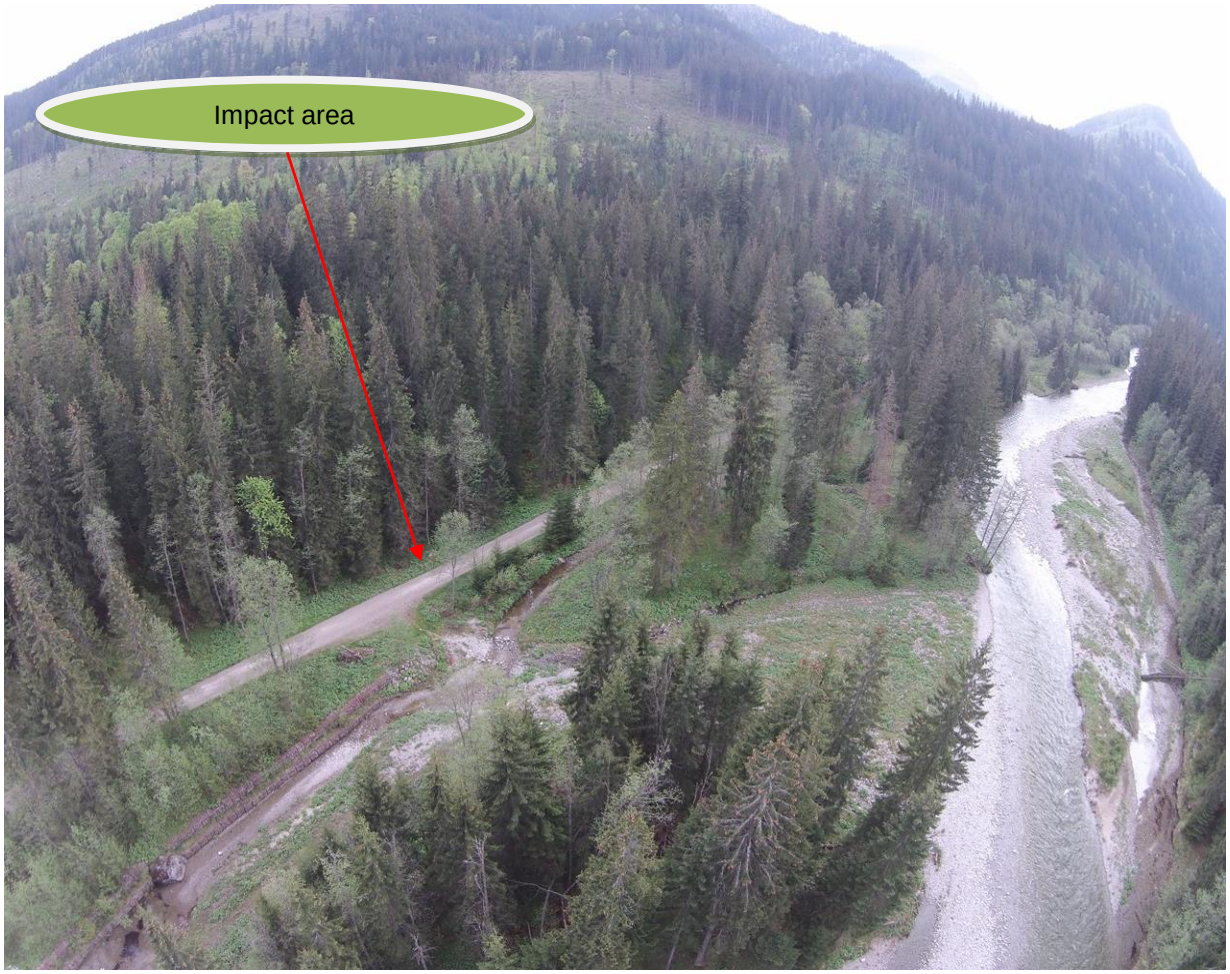
N/A.

1.11 Flight recorders

Flight recorder (FR), type approved by IGC FAI for confirmation of gliding performance.

1.12 Wreckage and impact information

The glider crashed near a country road situated on the bank of river Biela voda in altitude of 970 m above sea level and 130 m south-west of the border crossing Lysá Poľana – between the Slovak Republic and Poland.



1.13 Medical and pathological information

From the forensic perspective it was a violent death – caused by accident – brain contusion with intracranial bleeding with fracture of cranium and cranial base due to polytrauma.

Judging by accident changes in the area of upper and lower extremities detected by autopsy, the pilot actively steered the glider at the moment of its impact to the ground.

The toxicological analysis of blood and urine samples taken during autopsy, performed using a gas chromatography method, showed zero or negative concentration of ethylalcohol.

The analysis of biological material samples taken during autopsy did not detect the presence of etyalcohol, common painkillers, tranquilizers and barbiturates (analgetics, ataractics,

barbiturates and benzodiazepines), or other psychoactive substances or narcotics and drugs, which could have influence the thinking and conduct of the named at the time of accident or contribute to his death.

Neither external and internal examination, nor additional laboratory analyses of biological material samples taken during autopsy detected any acute or chronic pathological changes which could have affect attention and conduct of the named at the time of accident or contribute to his death.

1.14 **Fire**

No fire broke out.

1.15 **Survival aspects**

N/A.

1.16 **Tests and research**

On 25 April 2016 the wreckage of glider was inspected in the premises of company Aerospool, spol. s r.o. for the purpose of determining whether some control elements had or had not been defective. The result of inspection was negative, with the following findings:

- Left-hand internal wing, left-hand wing stub 18 m:

Both parts moderately damaged, the control surfaces moderately damaged, functional – movable. Wing control elements functional, without signs of blocking – all parts movable – functional;

- Right-hand internal wing, right-hand wing stub 18 m:

Internal wing fully destroyed, about 1 m away of the wing butt, flap and aileron broken at several points, but movable in attachment, wing control elements movable – functional. Wing stub 18 m broken near the root rib and torn covering on the leading edge in a length of 0.8 m. The stub aileron movable – functional;

- Stabilizer and elevators:

Stabilizer broken at the point of attachment to the fuselage, functional attachment to the fuselage, elevators damaged but movable – functional;

- Fuselage:
  - Cockpit from the fuselage tip to the front main partition fully destroyed, hood (also plexi) broken at several points, emergency hood release functional;
  - Pedal pylon detached, but pedals functional, steering ropes undamaged – functional;
  - Dashboard broken at several points, engine power switch on (blocked in position “ON“ after impact);
  - Harness assembly and pitot-static hose fittings to the dashboard undamaged (cut off – interrupted in Aerospool for the purpose of dismantling of dashboard);
  - Front accumulator (under manual controls frame) moderately damaged by impact, but connected to the network, actual measured voltage 12.4 V;
  - Manual controls frame moderately damaged, but manual controls functional without signs of blocking or disconnected nodes;
  - Centre-wing section damaged at several points, main landing gear destroyed, function of controls not verifiable;
  - Engine controls – control lever cut-out slightly bent upwards, lever in intermediate position “OFF – extended”, controls functional without signs of blocking;
  - Fuel (emergency) shot-off cock in position “OPEN“;
  - Engine compartment undamaged, right-hand CF-hinge / disengaging arm broken near the hinge;
  - Performed engine spindle function test – extension spindle functional;
  - Performed function test of extension mechanism/engine control levers in the engine compartment – controls fully functional.

- Stabilizing fin broken about 10 cm away of the fuselage – fin unit. Rudder control ropes undamaged. Elevator bar – horizontal in fuselage tube – broken, elevator controls in the fin unit fully functional, elevator control drive undamaged – functional. Rudder moderately damaged, but movable in hinges and fully functional.

1.17 Organizational and management information

The flight operation was performed in accordance with aeronautical standards valid in the territory of the Slovak Republic and local regulations.

1.18 Additional information

N/A.

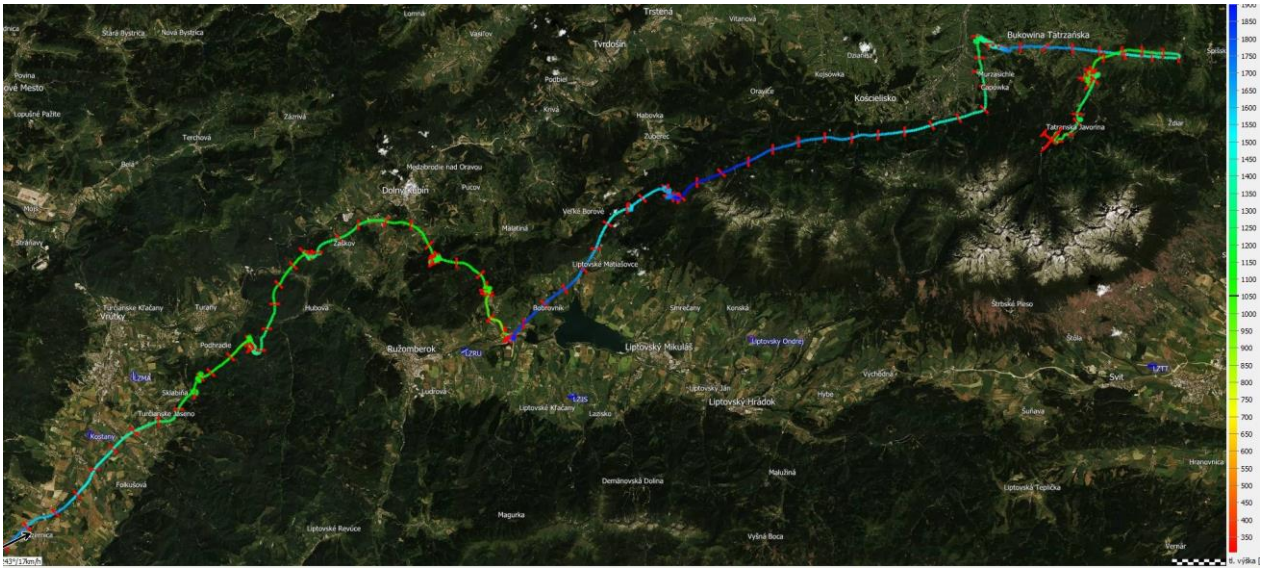
1.19 Useful or effective investigation techniques

Standard investigation techniques were used.

2. ANALYSIS

2.1 Activity of pilot

The evaluation of the flight record revealed that the pilot had not interrupted the competition flight timely above the ground level and had not attempted to use auxiliary built-in engine for return to the aerodrome of take-off LZPE in safe altitude. In spite of this fact, he continued the flight without engine until he was unable to start the engine due to the lack of height. Afterwards, he flew into airspace above a mountain area with limited choice of suitable landing surface, hoping to find uplift currents and achieve the required altitude for further flight. In his search he was unable to find any uplift current and the glider continuously lost height. Finally the pilot reached a narrow valley and created conditions where he had not enough time to find a suitable surface for ground landing. He steered the glider until the final phase – wingstall with hard impact of the nose to the ground.



2.2 Glider

The inspection of destroyed glider revealed that its condition did not influence the occurence of the accident.

2.3 **Weather**

Around noon in altitude of 3000 m above sea level (700 hPa) north-west airflow with speed of 15 m/s was recorded. Toward the ground surface the wind direction remained north-west, but it became weaker. In altitude of 2500 m above seal level the wind speed in the free air achieved 10 m/s. In lower altitudes the airflow started to be influenced by surrounding mountain obstacles, in particular the Massif of Tatra. The wind gradually turned and finally came from the west; in altitude of 1500 m above sea level (850 hPa) it achieved the speed up to 7 m/s. The air temperature in altitude of 1500 m above sea level ranged from -1°C to -2 °C. In this altitude and lower, toward the ground and in the proximity of the Massif of Tatra, the airflow may have shown some deviations, as regards the wind direction and wind speed. Due to the windward effect local variable ascending and descending airflows may have occurred as a result of orographic turbulence.

The meteorological conditions above the commune Lysá Poľana prevailing on 20 April 2016 around noon probably influenced the occurrence of air accident.

3. C O N C L U S I O N S / CAUSE OF ACCIDENT

3.1 **Findings**

- According to submitted documentation the pilot had valid qualifications for flights with given type of aircraft;
- At the time of accident the pilot was not under the influence of alcohol, drugs or common medicaments which might have decreased his attention during flight;
- During flight the pilot repeatedly descended below the minimum altitude of 150 m above ground level determined by visual flight rules;
- The pilot did not use the auximiliary built-in engine on time in a safe altitude and continued the flight without engine until the moment when it was impossible to start the engine due to the lack of height;
- The pilot did not observe the principles for forced ground landing of gliders in an area with limited choice of landing surfaces and continued the flight until he descended under the surrounding ground level (altitude lower than 150 m above ground level);
- The glider had valid documentation and did not show any fault before the accident,
- The glider fulfilled the airworthiness conditions before the critical flight.

3.2 **Cause of air accident**

Poor mastering of the flying technique by the pilot in the area with a limited choice of landing surfaces under unfavourable weather conditions for flight of glider in a mountain area.

4. SAFETY RECOMMENDATIONS

The final report does not contain any safety recommendations.

Bratislava, 06.07.2016