



# MINISTRY OF TRANSPORT, CONSTRUCTION AND REGIONAL DEVELOPMENT OF THE SLOVAK REPUBLIC

Aviation and Maritime Investigation Authority  
Nám. slobody 6, P.O.BOX 100, 810 05 Bratislava 15

Reg. No.: SKA2011012

## FINAL REPORT

on investigation of air accident  
of powered hang-glider MW155/TOMI CROSS5  
registration No. **OM – H041**

Date: 20.08.2011

Place: community Jamník near Liptovský Mikuláš

## A. INTRODUCTION

The investigation of air accident, serious incident, 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 Air Accident and Incident Investigation to the Convention on International Civil Aviation.

The exclusive aim of investigation is to establish causes of accident, serious 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 the air accident in question have an 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 operation: general aviation  
Type of aircraft: flying sport equipment – powered hang-glider  
MW155 / TOMI CROSS5 („PHG“ )  
Registration number: OM-H041



Flight phase: landing  
Place of air accident: south-east of the community Jamník near Liptovský Mikuláš  
Date and time of detection of accident: 20.08.2011, 13:40  
Note: All time data in this report are stated in the UTC time.

## **B. INFORMATIVE SUMMARY**

During landing of PHG, registration No. OM-H041, in the ground roll phase, PHG touched the ground with its wing, turned over and got damaged.

The pilot of PHG was not injured, the second crew member was slightly injured.

Person appointed for investigation of causes of the air accident:

Ing. Milan GREGA

The report was 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
2. ANALYSES
3. CONCLUSIONS
4. SAFETY RECOMMENDATIONS

### **1. FACTUAL INFORMATION**

#### **1.1 History of the flight**

The race organizer carried out the pre-flight preparation in the morning. The race window in the morning hours was not opened because of unfavourable weather conditions – high wind speed in the area of the Ružomberok airport („LZRU“). The race organizer opened the starting race window at 13:00 h without repeating the pre-flight preparation.

The pilot of PHG with the second crew member started from LZRU at 13:10 h as the third competitor for a navigation flight within the event organized by Light Aircraft Association of the Slovak Republic („LAA SR“) on the route LZRU – Turík - Gôtovany – Beňadiková – Žiar – Jamník – Dúbrava – Partizánska Ľupča – LZRU.

During the flight (after 30 minutes) the pilot of PHG noticed a change of meteorological conditions, increased wind speed and increased occurrence of air turbulences.

In the area of communities Liptovský Peter and Jamník the pilot decided to make a precautionary field landing.

Before landing the pilot registered the impact of wind from the right side. He landed with the glider on asphalt road near farm buildings with course of 225°. The asphalt road rises 0.5 m above the surrounding ground and the slope of its edges to the surrounding ground is steeper.

In the landing run PHG turned left from the road to the grass area. The high-level road and the steep transition from the road to the grass area caused that PHG suddenly banked to the left side, the left side of its wing came into contact with the surroundings, the rotating propeller touched the ground and became damaged, and pieces of the propeller hit the right hand of the navigator with the highest probability. Subsequently PHG partially turned over and came to a standstill.

Daytime: day

Geographic coordinates of the place of air accident: N: 49°03' 33,20'', E: 019°44' 01,87''

The accident was reported to the Aviation and Maritime Investigation Authority of MoTCRD on **02.09.2011**.

## 1.2 Injuries to persons

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

## 1.3 Damage to aircraft

Damage to the wing canvas, wing reinforcement, wing ropes, wing spar, propeller, aerodynamic covers of landing gear, front wheel and landing gear frame.

## 1.4 Other damages

The Aviation and Maritime Investigation Authority was not informed about circumstances with potential application of other claims for compensation of damages towards a third party.

## 1.5 Personnel information

### Pilot:

Citizen of the Slovak Republic, aged of 50 years, holder of the pilot licence for LSE No: 2-077 issued by LAA SR on 14.05.2001.

Qualifications: Instructor of LSE – PHG with marked validity until 08.08.2012.

Medical certificate with marked validity until 08.08.2012.

### Flying experience:

Total flight hours: 375 h 00 min and 1200 flights

For previous 90 days: 10 h 00 min and 20 flights

For previous 90 days with the type of glider: 10 h 00 min and 20 flights

On the day of accident (including the critical flight): 00 h 30 min and 1 flight

### **Other crew members / other persons if their activities are related to the accident**

### **Navigator:**

His activity is not directly related to the accident.

## 1.6 Information about PHG

**a) Type:** MW155/TOMI CROSS5

Serial No: H041

Year of manufacture: 1996

Manufacturer: MARA WING / TOMI AVIATION

Total number of flight hours: 341 h 00 min and 1556 flights

Certificate of airworthiness No. OM-H041 issued on 21.09.2004 with marked validity until 31.08.2012.

FAI sport class	R – RWL2
Safety category	3
Minimum flight speed	62 km/h
Maximum flight speed	115 km/h
Minimum take-off weight	240 kg
Maximum take-off weight	372 kg

No deficiencies in the airworthiness of PHG were detected on the day of air accident.

No defects before flight and no negative manifestations in flight characteristics were registered.

**b) Take-off weight of PHG at the time of air accident:**

Empty weight of PHG	160 kg
Weight of crew and equipment	182 kg
Weight of fuel	25 kg
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Total take-off weight at the time of air accident:	367 kg

Maximum permissible take-off weight of PHG for the flight according to the Flight Manual is 372 kg.

Take-off weight of PHG was observed at the time of air accident.

**1.7 Meteorological situation**

In the area of LZRU – north-west wind 4-5m/s, in gusts 8-10m/s,

In the area of the route Liptovský Mikuláš - north-west wind 4-5 m/s, in gusts 12-13m/s.

The actual values of meteorological elements were close to the forecast values.

Natural light conditions at the time of accident - sunshine.

**1.8 Aids to navigation**

Not applicable.

**1.9 Communications**

Not applicable.

**1.10 Aerodrome information**

Not applicable.

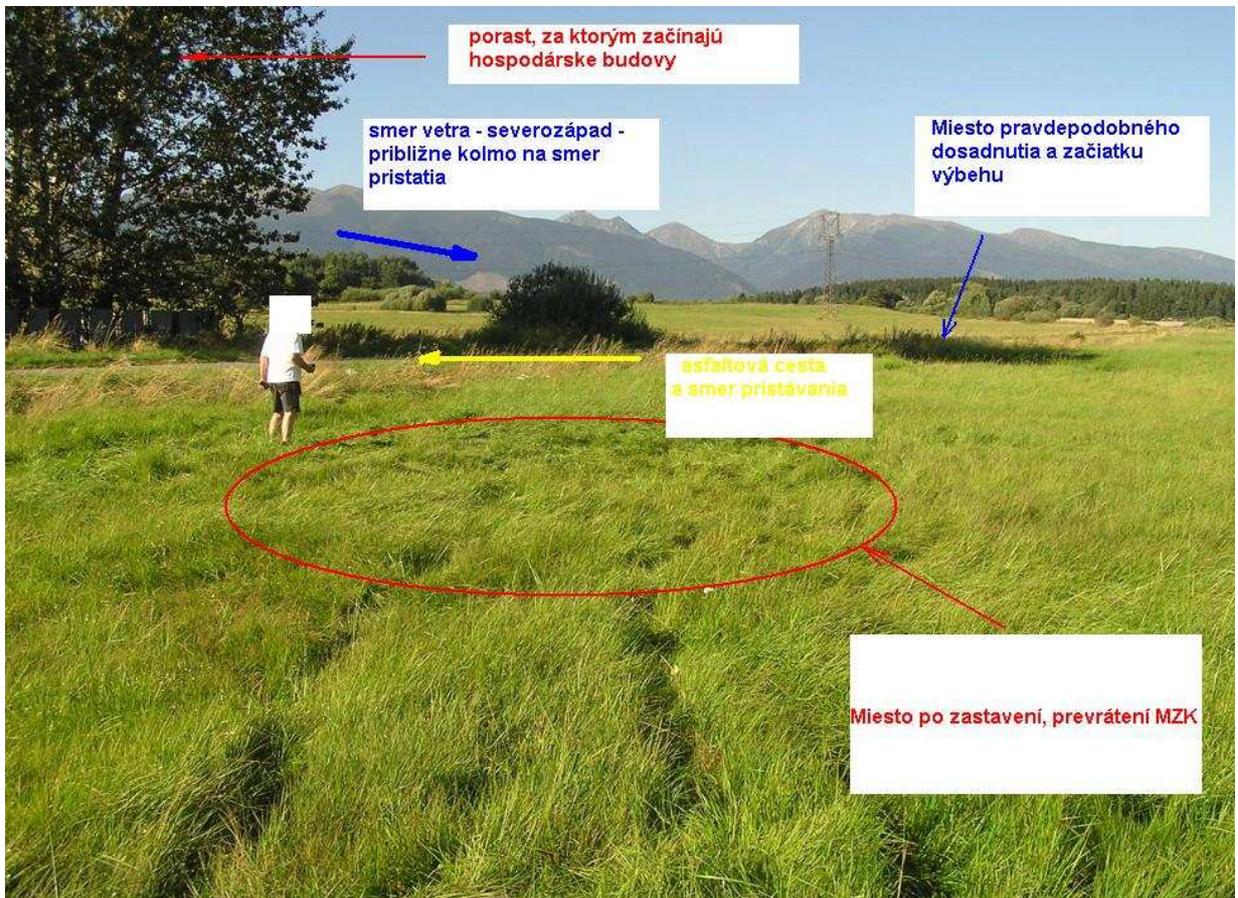
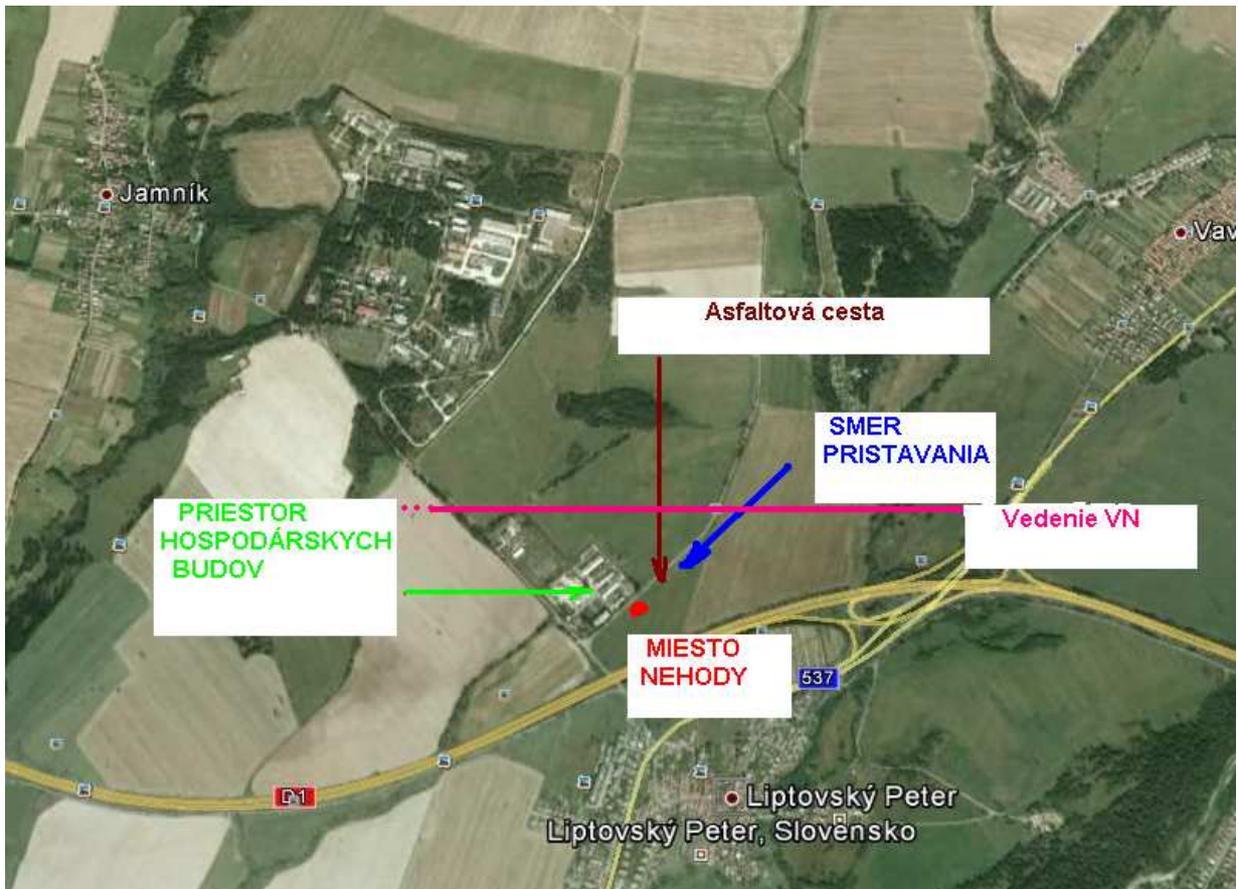
**1.11 Flight recorders and other recorders**

Not applicable.

**1.12 Wreckage and impact information**

The place of accident is situated left of the asphalt road (at the sight in direction of 225°).

Before arrival of the race organizer to the place of accident PHG was dismantled by its crew and prepared for transport from the place of accident.



### 1.13 Medical and pathological information

The pilot of PHG was not injured.

The navigator of PHG was slightly injured and treated in the health facility. Injure of right arm – fracture and jagged wounds. He remained in the health facility for observation for three days.

### 1.14 Fire

No fire broke out during the accident.

### 1.15 Survival aspects

Search and rescue operations were not required.

### 1.16 Tests and research

Not applicable.

### 1.17 Organizational and management information

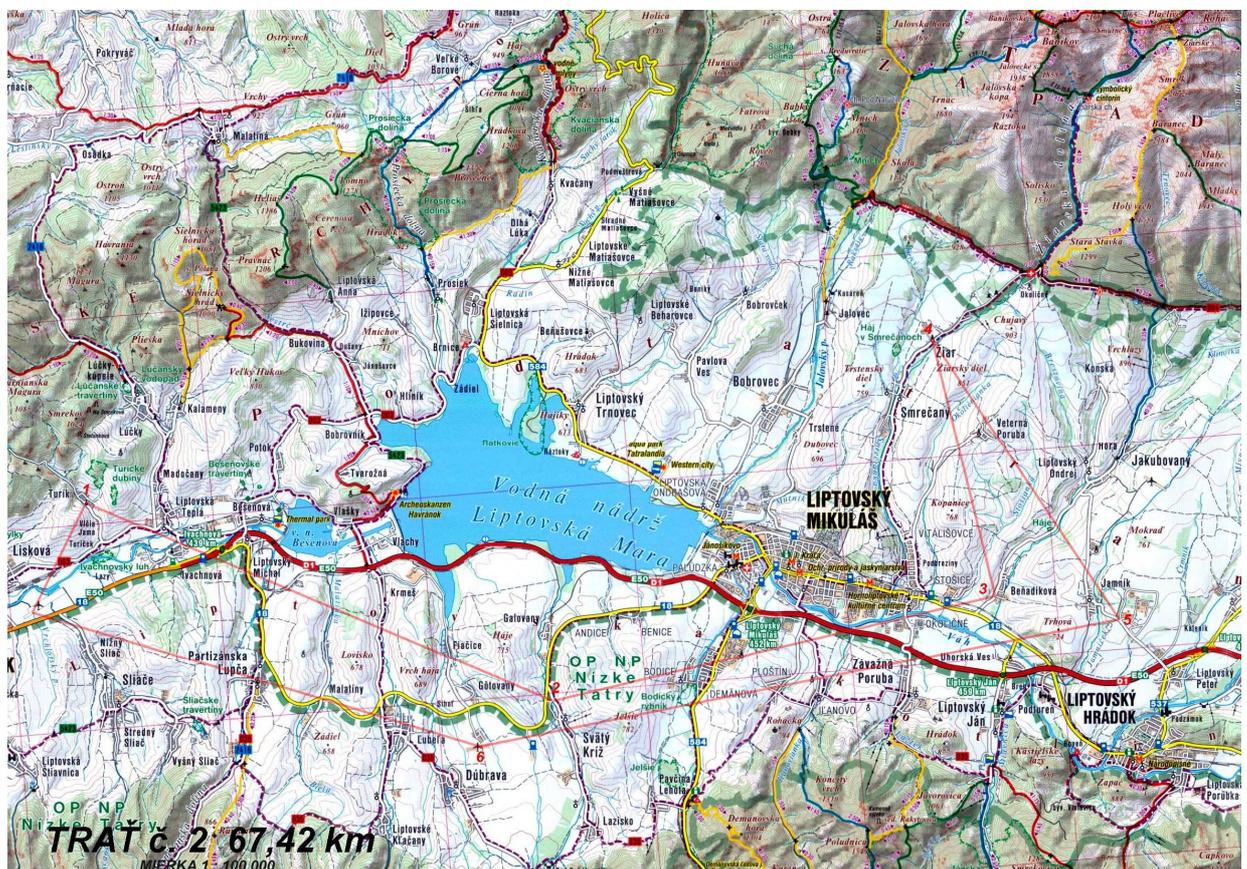
The air race „Slovak Championship in Powered Paragliding held in the days of 17.08. – 21.08.2011“ was permitted by the Decision of the Civil Aviation Authority of SR No. 2353-321-63-1/2011, subject to the fulfilment of the conditions specified in the decision.

### 1.18 Additional information

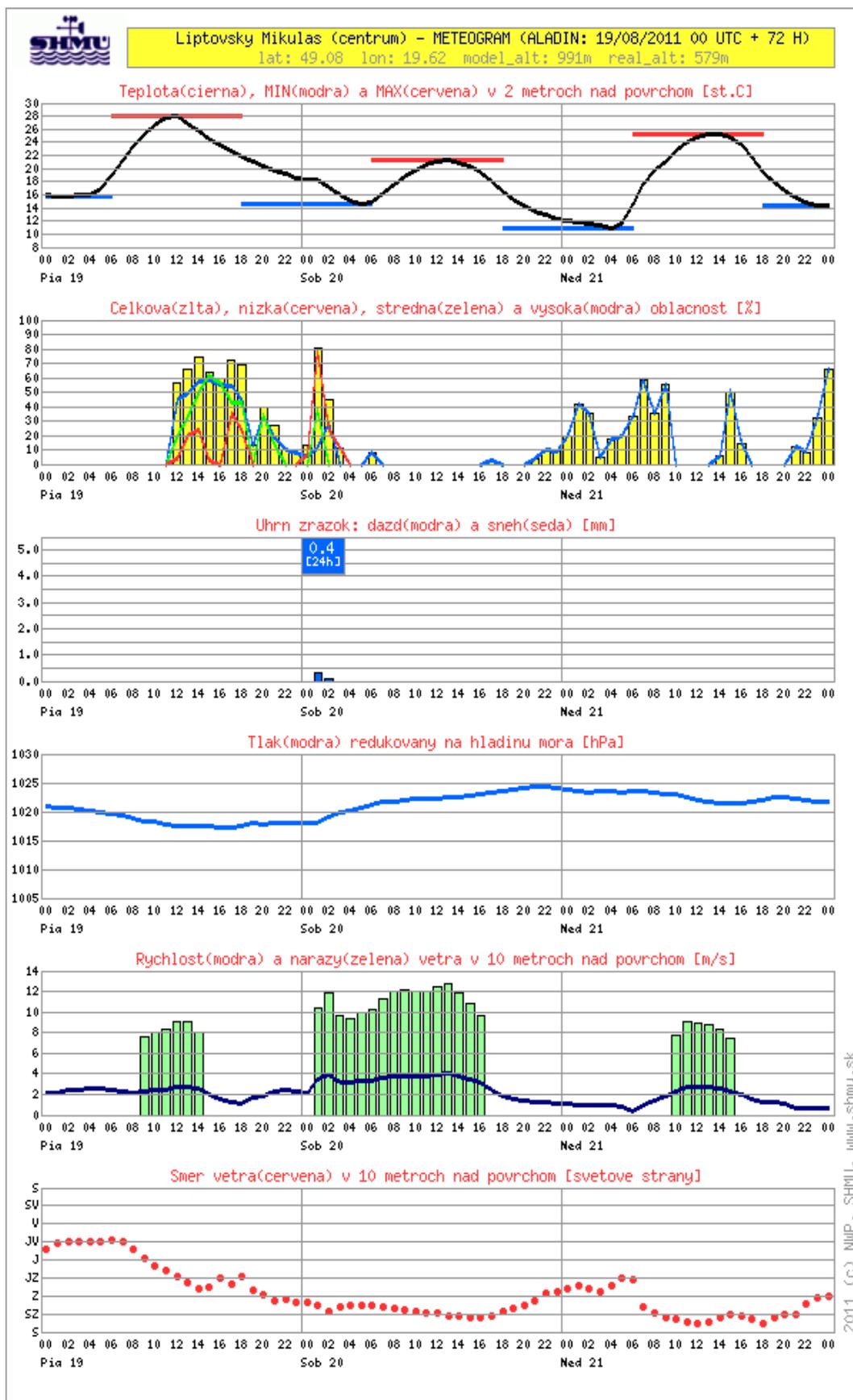
#### 1.18.1

For the respective day the race organizer chose the air navigation race on the following route:

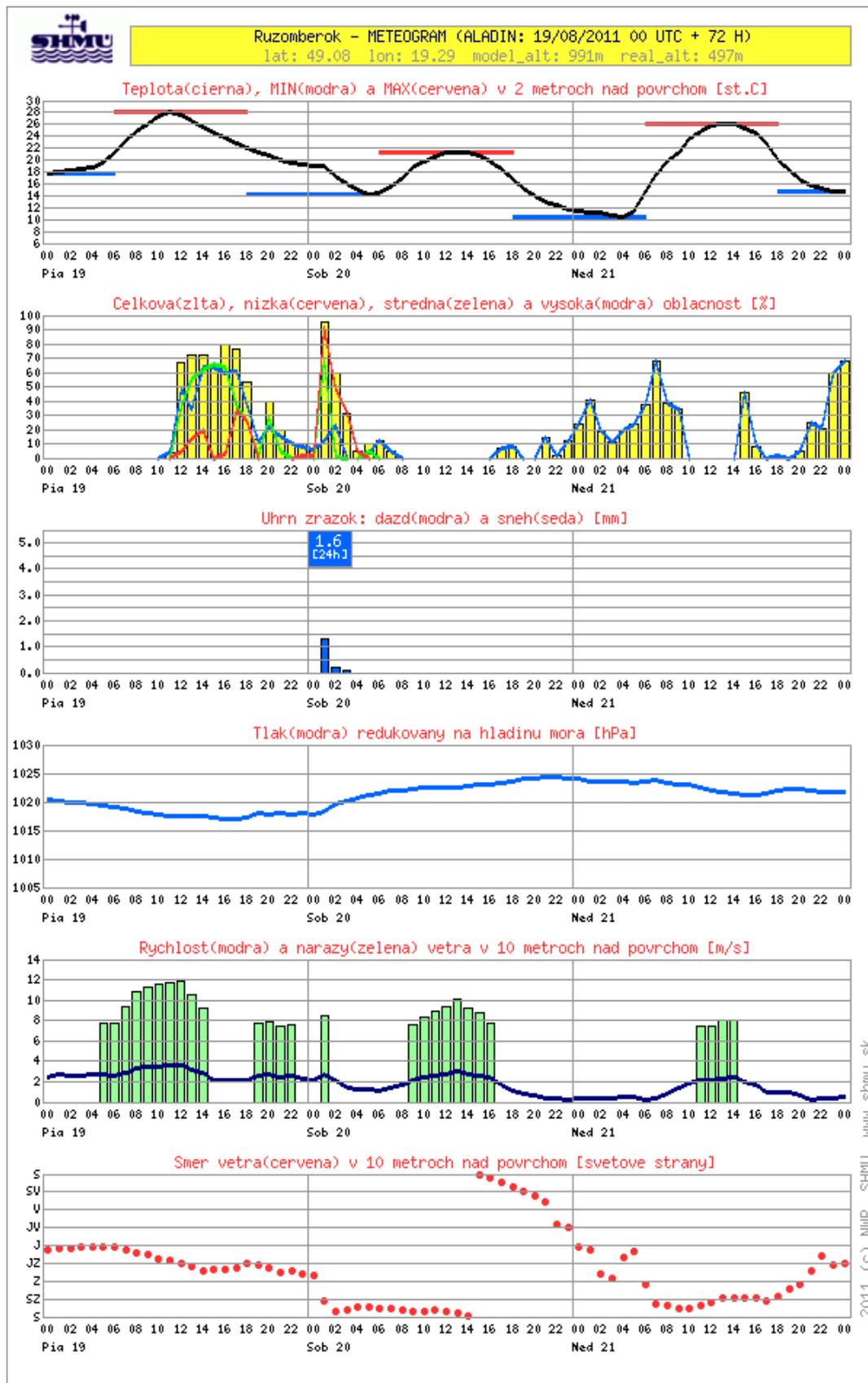
LZRU – Turík – Gôtovany – Beňadiková – Žiar – Jamník – Dúbrava – Partizánska Ľupča – LZRU.



1.18.2 The Slovak Hydrometeorological Institute („SHMÚ“) published the following weather forecast for the location of Liptovský Mikuláš for the race day:



1.18.3 SHMÚ published the following weather forecast for the location of Ružomberok:



1.19 Useful or effective investigation techniques

Standard investigation methods were used.

## **2. ANALYSIS**

The race team of PHG - pilot with navigator – made the take-off from LZRU at 13:10 h. At the time of take-off the airport LZRU had acceptable meteorological conditions with wind speed of 4 – 5 m/s and north-west wind direction.

After 30 minutes of flight in the location of Liptovský Mikuláš the crew of PHG registered more intensive random air motions – turbulences which lasted some time and considerably increased the demands for steering of PHG.

The pilot did not decide to make the flight with return to LZRU, but he decided to make precautionary field landing near the communities Liptovský Peter a Jamník, because he expected more intensive long-term turbulences. The pilot chose the asphalt road close to farm buildings as the landing site.

The area left from the road had a character of grass flat meadow, which would have been more suitable for landing with regard to the meteorological situation, including the lateral gust wind.

The pilot touched down the road just in front of the trees and farm buildings that were situated on the right side of the road, in its close proximity.

The landing run to the right would most probably mean a collision of PHG with the stands or near farm buildings, so the pilot turned left to the area of spacious open meadow.

The high-level road and the steep transition from the road to the meadow caused that PHG suddenly banked to the left side, the left side of its wing came into contact with the ground, the rotating propeller touched the ground and became damaged, and the navigator was injured. Subsequently PHG partially turned over and came to a standstill.

## **3. CONCLUSIONS / CAUSE OF AIR ACCIDENT**

### **3.1 Findings:**

- the pilot had valid qualifications for making the critical flight,
- PHG had a valid documentation and did not show any faults before the air accident,
- the air race was permitted by the Decision No. 2353-321-63-1/2011 of the Civil Aviation Authority of SR,
- the gust wind speed forecast for the location of navigation route of Liptovský Mikuláš was 12-13 m/s, which is two times the maximum wind speed determined for flying with PHG (Directive ZL-2, Annex T – max. 6 m/s from straight direction),
- PHG was substantially damaged in the air accident.

### **3.2 Causes of air accident:**

- error of flying technique during landing with lateral gust wind,
- above-limit wind speed in gusts,
- unsuitable narrow asphalt road chosen for precautionary landing in view of the lateral wind direction.

## 4. SAFETY RECOMMENDATIONS

On the basis of investigation of causes of the air accident of:

PHG type: (MW155/TOMI CROSS5)

registration No.: **OM-H041**

date of air accident: **20.08.2011**

We recommend the Light Aircraft Association of the Slovak Republic to take the following measures:

To implement an analysis with the flight personnel of LAA SR in the form of publication of the final report on the website of LAA SR,

The air race organizers of LAA SR should pay increased attention to the meteorological situation in the whole area of race disciplines. They should use for this purpose updated weather forecasts in combination with comparison of actual meteorological situation in important sites of the race tracks to eliminate as much as possible the negative meteorological effects on flight safety.

The aircraft operators of LAA SR should fulfil their obligation not to handle the aircraft or its wreckage after air accidents in order to allow the aircraft inspection, preservation of material evidence and documents, unless it is necessary for prevention of other damage;

After the repair of LSA OM-H041 to carry out works within the scope set out in 6.1.11 (a) and (b) of the Directive LZ-2PHG. The works should be carried out by the technician of the Powered Hang-Gliding Association and by the owner of LSA. The technician of the Association and the owner of LSA should immediately inform the Chief Technician of LAA SR about the prescribed works and their results.

Bratislava, 14.05.2012