



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: SKA2011008

FINAL REPORT

on investigation of air accident
of aircraft - unpowered paraglider **PLUTO M**

Registration No. **OM-P397**

Date: 16.07.2011

Location: community of Zlatníky

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 sports vehicle (hereinafter "FSV"), type: unpowered paraglider PLUTO M
Registration number:	OM-P397
Flight phase:	landing approach
Place of accident:	community of Zlatníky
Date and time of detection of accident:	16.07.2011, 14:35

Note: All time data in this report are stated in the UTC time.

B. INFORMATIVE SUMMARY

During the landing approach of FSV with registration No. OM-P397 fell to the ground from a low altitude.

The pilot of FSV was seriously injured.

Person appointed for investigation of the air accident:

Ing. Milan GREGA

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
2. ANALYSES
3. CONCLUSIONS
4. SAFETY RECOMMENDATIONS

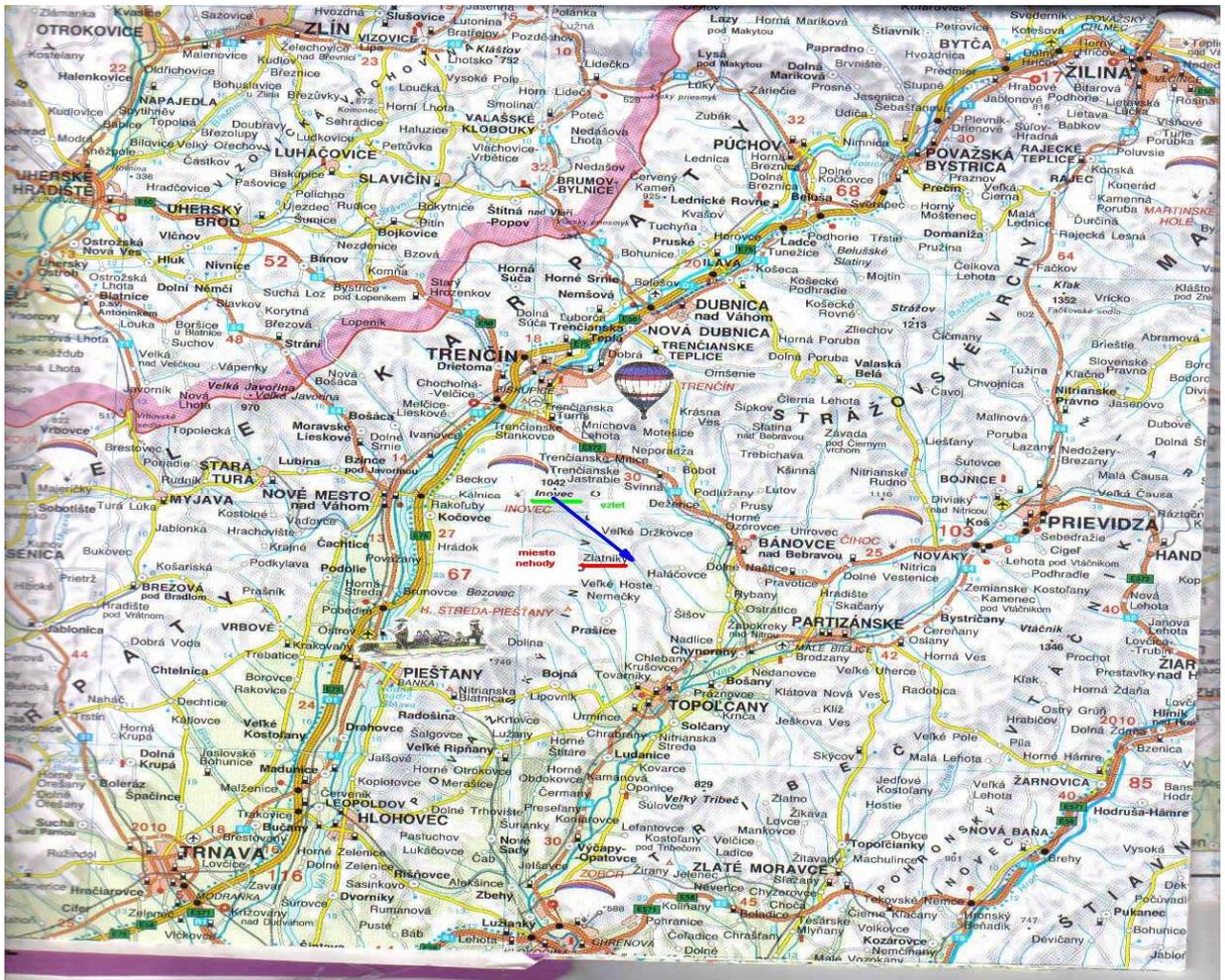
1. FACTUAL INFORMATION

1.1 History of the flight

The pilot of FSV made a recreational and sports flight with take-off from the flight surface INOVEC at 13:56. The whole flight occurred without negative manifestations, under pleasant meteorological conditions without significant air turbulences with use of updraft flows at a course of 135° from the take-off site to the community of Zlatníky. During the cross country flight, in front of the community of Zlatníky, the pilot noticed a weakening of the updraft flows and decided to land. As landing site he chose the football ground in the community of Zlatníky.

During landing approach in a low altitude the airfoil of FSV became deformed and the aircraft fell to the ground. The pilot landed in the area in front of the football ground railing, in the south-east corner from the outer side of the football ground.

The pilot was seriously injured in the fall.



Description of cross country flight of FSV

Daytime: day

Time of air accident: 14 h 35 min

Coordinates of the place of accident:

N: 48°42' 43,24''

E: 018°07' 07,63''

The air accident was reported to the Aviation and Maritime Investigation Authority of the Ministry of Transport, Construction and Regional Development of SR on 20.07.2011.

1.2 Injuries to persons

Injury	Crew	Passengers	Others
Fatal	-	-	-
Serious	1	-	-
Minor	-	-	-
None	-	-	-

1.3 Damage to FSV

FSV was not damaged. The lift lines of the pilot harness were damaged by the rescue team member that cut them through after the air 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 of FSV:

Citizen of the Slovak Republic, aged of 36 years, holder of FSV pilot licence No. 4-450 issued by LAA SR on 14.05.2001.

Qualifications: pilot holding FSV - C with marked validity until 12.05.2012.

Medical certificate with marked validity until 12.05.2012.

Flying experience:

Total flight hours:	900 h 00 min and 1,200 flights
In it for previous 90 days:	22 h 00 min and 40 flights
In it for previous 90 days with the aircraft type:	20 h 00 min and 35 flights
In it on the day of air accident (incl. critical flight):	01 h 09 min and 2 flights

1.6 Information about FSV

a) Type: PLUTO M
Serial No.: 12618802MC
Year of manufacture: 2006
Manufacturer: Axis Paragliding, CR

Total number of operating hours since manufacture: 170 h 00 min and 220 flights.

Certificate of airworthiness No. OM-P397, issued on 04.06.2010, with marked validity until 15.06.2012.

Sport class FAI	O - PG
Safety category (EN)	B
Minimum flight speed	22 km/h
Maximum flight speed	48 km/h
Minimum take-off weight	80 kg
Maximum take-off weight	105 kg

On the day of air accident no deficiencies in the airworthiness were detected before the flight and no negative manifestations in flight characteristics were registered during the flight .

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

Empty weight of FSV	4,7 kg
Weight of crew	85,0 kg
Weight of equipment and baggage	13,9 kg
<hr/>	
Total take-off weight at the time of air accident:	103,6 kg

Maximum permissible take-off weight of FSV according to Flight Manual is 105 kg. Take-off weight of FSV was observed at the time of air accident.

1.7 Meteorological information

CAVOK, wind variable up to 2 m/s.

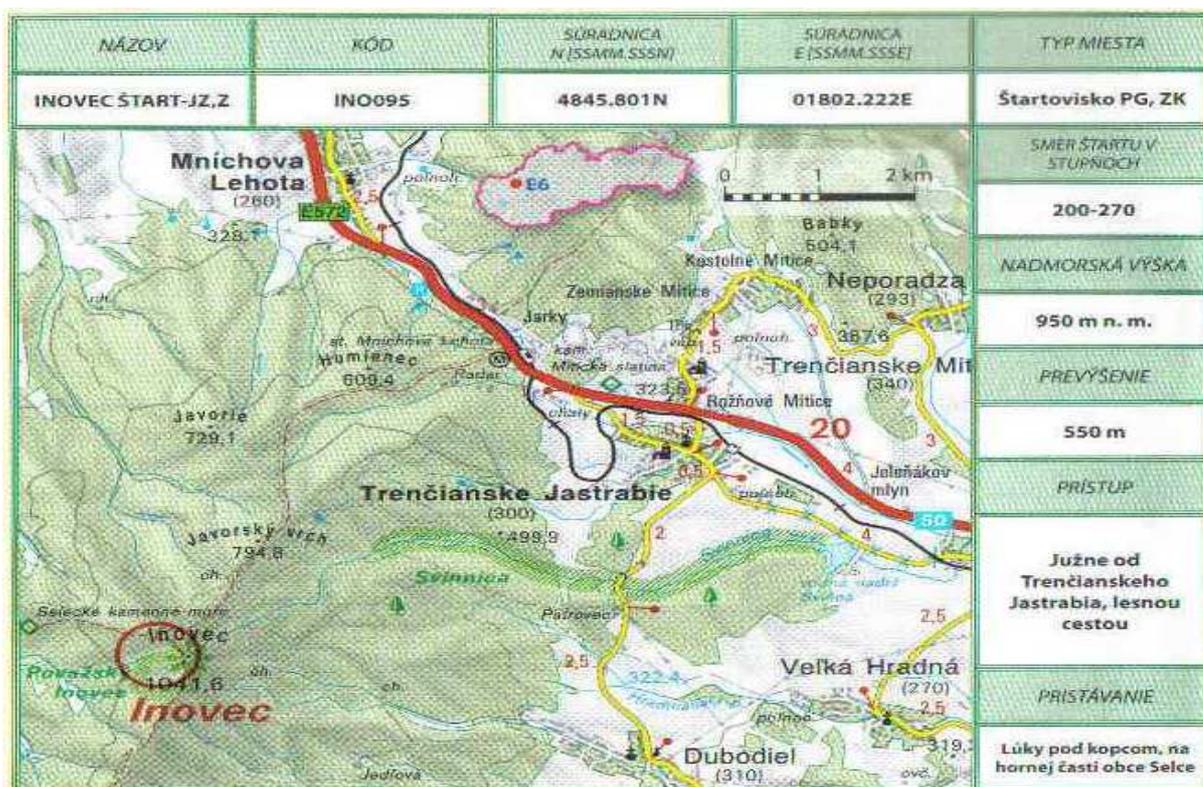
1.8 Aids to navigation

Not applicable.

1.9 Communications

Not applicable.

1.10 Aerodrome information – take-off and landing surface for FSV – Inovec



1.11 Flight recorders and other recording systems

The participant of the air accident submitted the GPS flight records.

1.12 Wreckage and impact information

The place of air accident is situated in the south-east corner of the football ground from its outer side in front of its railing.



1.13 Medical and pathological information

The pilot of FSV was seriously injured. Broken pelvic bone, injury of humerus and wrist (polytrauma), bleeding into lungs – lung contusion.

1.14 Fire

No fire broke out during the air accident.

1.15 **Survival aspects**

No search was required. The rescue operations were implemented by the air rescue service.

1.16 **Tests and research**

Analysis of GPS flight records was implemented. Type of recording device - GPS map 76.

1.17 **Organizational and management information**

Not applicable.

1.18 **Additional information**

Not applicable.

1.19 **Useful or effective investigation techniques**

Standard investigation methods were used.

2. ANALYSIS

The pilot of FSV made a take-off from the flight surface Inovec at 13:56. Meteorological conditions were suitable for a flight, with slight thermic updraft flows, so the pilot decided to make a cross country flight at a course of 135°. The flight route crossed the boundaries of caution area LZR20A, C, which was not activated at that time. The pilot did not register any negative manifestations during the flight.

Just above the northern margin of the cadastral area of community Zlatníky the pilot of FSV registered a steady weakening of updraft flows and continued the flight without climbing in the effort to maintain the horizontal flight. At that moment the pilot had the possibility to land safely outside the developed area of the community.

On the basis of the low flight altitude the pilot decided to make a safety landing on the football ground, which he evaluated as clear at the time of landing. A witness who was present in the area of the football ground at the time of arrival of FSV, confirmed it in his statement, too.

The pilot decided to land in the south-east corner of the football ground, in the direction of the access road to the pitch. In the phase of flight just before the fall the pilot made a left-hand turn. When turning left he saw a group of tall trees in front of him on his right side and intensively pulled on the left-hand steering rope in the effort to avoid them. On the basis of analysis of GPs flight records and in weak variable wind conditions it can be assumed that the pilot was approaching the football ground with a flight speed of 36 – 38 km/h. The manufacturer indicates the steady optimal flight speed for FSV PLUTO M of 37 km/h. The pilot started the left-hand turn in an altitude of 35 m above the ground level and then changed the flight speed to approximately 22 km/h, which is the minimum flight speed of FSV indicated by the manufacturer. At the moment of more intensive pull on the left-hand steering rope, co-called “overbraking“ of the left side of the airfoil occurred, where the flight speed dropped to 9 km/h. Subsequently, the left side of the airfoil became deformed and FSV started to fall to the ground in a negative turn from an altitude of 20 m. The fall of FSV started at 14:35.

In view of the changed flight conditions (weakening of updraft flows), this landing can be regarded as safety landing. The choice of the football ground, situated on a broken ground of the developed area with natural obstacles formed by tall trees and groups of persons standing around the football ground, as landing area seems to be unsuitable.

3. CONCLUSIONS / CAUSE OF AIR ACCIDENT

3.1 Findings

- the pilot had valid qualifications for the flight in question,
- FSV had valid documentation and did not show any faults before the air accident,
- the surface for safety landing was unsuitable in view of the ruggedness of the developed area of the community, when a higher risk of negative impact on safety of the crew and third parties arises,
- the flight of FSV was made in areas LZR20A,C. These areas were not activated at the time of the critical flight,
- the pilot was seriously injured in this air accident.

3.2 Causes of air accident:

- unsuitable choice of surface for safety landing,
- deformation of the left side of the airfoil caused by incorrect steering of FSV in a left-hand turn, with subsequent loss of flight speed.

4. SAFETY RECOMMENDATIONS

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

FSV PLUTO M

Registration No. **OM-P397**

Date of accident: **16.07.2011**

We recommend the **Light Aircraft Association of the Slovak Republic** ("LAA SR") to implement the following measures:

- to draw up a binding decision of the Air Traffic Director of LAA SR on safe method of safety landing of flying sports vehicles administered by LAA SR. To publish the binding decision on the website of LAA SR.
- to implement an analysis with the flying personnel of LAA SR in the form of publication of this binding decision and of the final report on the website of LAA SR.
- we recommend the pilots of FSV not to make turns in the phase of landing approach in an altitude below 20 m above the ground level, unless they are forced to do so in order to avoid obstacles or to make slight direction corrections. The landing approach should be made, as far as possible, on the most direct flight route under steady flight regime, with more consistent pre-flight preparation.
- we recommend the pilots of FSV that their choice of landing site outside approved areas (safety landing) should be motivated primarily by their safety and safety of third persons.

Bratislava, 04.04.2012