



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

Air Accident and Incident Investigation Board
Nám. slobody 6, P.O. BOX.100, 810 05 Bratislava 15

Reg. No: SKA2010024

FINAL REPORT

on investigation of an air accident
of powered paraglider **ANTEA L / RODEO 125**
Registration No – **not assigned**

Date: 15.10.2010

Place: municipality of Rybky

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 the 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:	private person
Type of operation:	general aviation
Type of aircraft:	powered paraglider ANTEA L / RODEO 125
Registration No:	not assigned
Place of take-off:	Oreský vrch - Miléniový kríž (in a triangle formed by the municipalities of Rybky – Smrdáky – Rohov)
Planned place of landing:	- - -
Flight phase:	ongoing flight
Place of air accident:	municipality of Rybky, football ground
	geographic co-ordinates of the place of accident: 48°42'28,60" N, 017°20'03,70" E

Date and time of detection of accident: 15 October 2010, 15:50 hrs

Note: All times in this Report are UTC.

B. INFORMATIVE SUMMARY

During the flight the powered paraglider ("PP") canopy got caught on a football ground light pole and fell to the ground.

The pilot was seriously injured.

The following person was appointed as investigator of the air accident:

Ing. GREGA Milan, member of the Permanent Investigation Board.

The report is issued by:

Air Accident and Incident Investigation Board

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 PP started from the area of Oreský vrch (Miléniový kríž / Millennium Cross) near the municipalities of Rybky, Smrdáky and Rohov at 14:40 hrs. The pilot installed a wind direction indicator in the take-off site, where he also planned to land. After the start he conducted the flight in the rural areas of the municipalities of Rybky, Smrdáky, Rohov, and in the rural area of the city of Senica.

The pilot conducted the flight in altitudes of about 150 m GND and lower. A witness observed the flight of this PP near the football ground in the municipality of Rybky around 15.00 hrs, when the PP pilot circled twice high above the football field and then flew away from the municipality of Rybky.

Around 15:45 hrs the PP pilot returned to the football ground in the municipality of Rybky and flew over it in the crosswind axis direction, slightly to the left, under the course of 315° in a very low altitude. As somebody was present in the area next the change-room building of the football ground and football players were having a training near the west gate of the football ground, the PP pilot started to wave these persons a greeting, probably because he had a close relation to the municipality of Rybky and its inhabitants.

When approaching the low change-room building with tall trees behind it, he started a right-handed turn to avoid the trees and the building. In this flight phase the right side of the canopy and its ropes got caught on a football ground light pole. The canopy and the ropes got stuck so firmly that the PP flight was interrupted. Under the influence of the inertial and centrifugal force the pilot made another turn of 180° with the centre of PP rotation around the top of the light pole. The light pole started to bend to the course of 45° under strain from inertial and centrifugal forces and was stopped by the roof of the change-room building. The pole beam became permanently deformed in its root end.

The ground impact occurred in the following sequence – the pilot, and in particular the left side of his body, impacted the ground first (which is proved by his injuries) and absorbed a significant amount of the remaining energy of the PP system, followed by the power unit, where the deformation of the left side of the propeller protection frame started upon the contact with the ground (it is proved by complete fragments of the propeller found in the close proximity of the impact point); at that moment the propeller got caught on the deformed propeller protection frame and propeller blades were destroyed. The propeller boss remained in the engine gearbox body.

The pilot with PP fell on the flat grass surface of the football ground.

Light conditions: Daylight

On 15 October 2010 the air accident was reported to the Air Accident and Incident Investigation Board of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic.

1.2 Injuries to person

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

1.3 Damage to aircraft

Significant damage to the PP canopy, where its repair seems to be ineffective, damage to the power unit caused by total propeller damage and minor damage to the propeller protection frame and the engine bonnet.





1.4 Other damage

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

Pilot:

Citizen of Slovak Republic, aged of 50, holder of the pilot licence PK-A (pilot) No. 4-1975, issued by the Light Aircraft Association of SR ("LAA SR") on 5 October 2010, holder of the pilot licence MPK (learner pilot) No. 09/07/2010, issued by the Training Centre of LAA SR No 07/2010 on 20 September 2010.

Qualifications:

Pilot of paragliders: PK - A since 5 October 2010 with marked validity until 20.09.2011.

Student - pilot of PP since 20 September 2010 with marked validity until 20.09.2011.

Medical certificate of 2nd class valid of 20 September 2010 valid until 20 September 2011.

The pilot of PP fulfilled the conditions for extension of the licence of paraglider pilot to the licence of powered paragliders on 10 October 2010. He requested for this extension after the fulfilment of conditions by application sent on 13 October 2010 to LAA SR and registered under No RR 46 993 281 5 SK, post office Partizánske 1.

Because of a lack of time, the extension of qualifications was not recorded in the pilot licence by the date of the air accident.

Flying experience:

Total flying hours: 10 h 05 hrs
Total flying hours for the previous 90 days: 10 h 05 hrs
Flying time of which were on type: 10 h 05 hrs
Flying time on the day of accident (including the critical flight): 01 h 10 hrs

1.6 Information about aircraft

Type: One-seat PP started by the pilot's feet (category FAI – RPF1),

ANTEA L / RODEO 125

Serial No: Paraglider - M1059-11-0794
Power unit - 610287

Year of manufacture: 09/2010

Manufacturer: Paraglider: SKY PARAGLIDERS, Czech Republic
Power unit: NIRVANA PARAMOTORS, Czech Republic

Total flying hours from the year of manufacture: 10 h 05 min.

The inspection of the aircraft for the purpose of issue of the certificate of airworthiness carried out on 11 October 2010 concluded that the aircraft was airworthy. The application for the certificate of airworthiness was sent to LLA SR on 13 October 2010 and registered under No. RR44060049 9 SK – post office Senica 1. Because of a lack of time, the licence was not issued by the date of accident.

Weight of PP at the time of air accident:

Empty weight of PP 32.7 kg (5.2 kg + 27.5 kg)
Weight of crew 94.0 kg
Weight of crew equipment 6.5 kg
Fuel 2.8 kg

Total aircraft weight at the time of accident: **136.0 kg**

Maximum permitted weight of PP for take-off according to the flight manual is **143 kg**.

Weight of PP at the time of air accident was within the permitted range.

1.7 Meteorological situation

1), 2), 3)

	Before 02:00 p.m. ¹⁾	After 02:00 p.m. ²⁾	³⁾
	Wind gusts up to 8m/s	---	---
Wind (direction / speed)	315 ⁰ / up to 4m/s	315 ⁰ / 3m/s, slackening	315 ⁰ / 2m/s
Cloudiness	40% total	40% total	Without precipitation
Temperature	8-10 ⁰ C	8-10 ⁰ C	---

1) Data based on weather forecasts of SHMÚ

2) Data based on weather forecasts of SHMÚ

3) Statements of witnesses of the accident (Pilot: North-west wind of 4-6m/s, also with gusts in the area of start around 02:00 p.m. Later the wind slowed down to 2m/s. During the flight the pilot registered a slight turbulence, especially in altitudes above 100m GND. Witness:– There was almost dead calm in the area of football ground).

1.8 Aids to navigation

Not applicable.

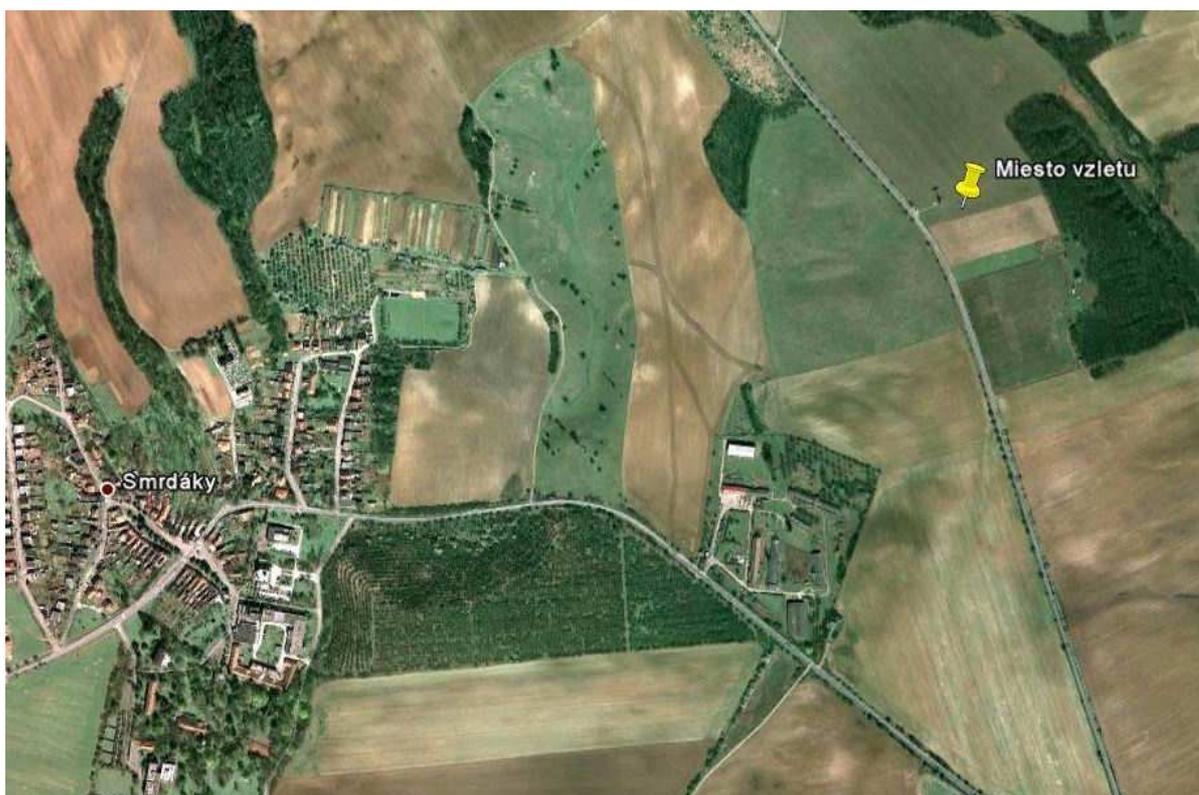
1.9 Communications

Not applicable.

1.10 Aerodrome information

The take-off site of PP is situated in the proximity of so-called "Miléniový svätý kríž / Millennium Holy Cross" on the hill Oresky vrch, inside a triangle formed by the municipalities of Rybky – Smrdáky – Rohov, and consists of a flat meadow lying in an altitude of 955 ft.

Approximate co-ordinates of the take-off site: 48° 43' 37.56" N, 017° 19' 05.52" E.



1.11 Flight recorders and other recording systems

Not applicable.

1.12 Wreckage and impact information

The place of accident is situated on the west fringe of the municipality of Rybky, in a football ground in the proximity of the change-room building. The point of impact is created by a flat grass surface outside of the playing field of the football ground. The light pole of the football ground became deformed near the pole root in the right direction at the sight from the north-west and its upper part got caught on the change-room building roof. The paraglide canopy remained wrapped around the upper part of the light pole. The power unit remained on the flat grass surface, with a slightly damaged left side of the propeller protection frame, slightly damaged engine bonnet on the left side and with total propeller damage. The propeller root including screws remained in the engine drive gearbox. Fragments of the propeller blades were found in the perimeter of 4 m from the point of impact. The fuel installation was tight and undamaged. No fuel leakage was detected.





1.13 Medical and pathological information

The pilot suffered serious injuries – fractures of left arm, left leg and pelvis.

1.14 Fire

Not applicable.

1.15 Survival aspects

An ambulance and a rescue helicopter were called to the injured. The injuries caused by fall from height were mitigated by deformation of the light pole which partially absorbed the energy as well as by the fact that during the fall the pilot's body did not hit the building or other obstacles in the place of accident. After the accident the pilot was conscious and communicated.

1.16 Tests and research

No tests and research beyond the common basic investigation methods were required.

1.17 Organizational and management information

Not applicable.

1.18 Additional information

A) The pilot in his statement said that he had decided to conduct the critical flight when the wind speed had decreased below 4 m/s. The pilot was informed about wind speed and wind direction by the wind cone situated in the start area and through a call that he had received from his friend who had provided him with data based on weather forecasts of SHMÚ and informed him that after 14:00 hrs the wind speed would decrease and start and flight conditions would be favourable.

According to the weather forecast of SHMÚ (Slovak Hydrometeorologic Institute) for the area of Senica for the critical day and the statement of the pilot and witnesses, there were not discrepancies between data on the meteorological situation. The pilot mentioned the north-west wind direction with speed of 4 m/s and more, with wind gusts.

In this situation the pilot decided not to start and attempted to get information about development of weather conditions. He only started when the wind achieved a speed of 2 m/s and when he registered no wind gusts. The pilot in his statement also indicated that during the flight he had not noticed any negative changes in flying characteristics of PP and operation of the power unit. In altitudes of more than 100 m GND he registered a slight turbulence. In lower altitudes he had not registered this turbulence. The pilot stated that after the arrival to the football ground he had seen light poles. He further stated that he had stopped the motor by pressing the button breaking the ignition circuit after the impact to the ground and that he had released himself from the power unit harness.

- B)** The witness of the accident, who was present on the football ground together with students doing training, indicated in his statement that he had registered the flight of PP over the football ground as well as its return to the football ground after a longer period. At that moment he paid no attention to pilotage because of the training. He increased his attention after he had registered a change of the PP engine noise. He turned to the supposed place attracted by the sound of PP engine, but he only saw a parachute hanging on the pole and the pilot lying on the ground. The witness said there was almost dead calm in the area of the football ground.
- C)** The witness standing near the change-room building indicated in his statement that on his way to the change-room building he had registered a PP flying in a very low height, approximately in the transversal axis of the football field, approaching the change-room building from the south side of the football field.
- D)** The height of the light pole of the football ground is 12 m. The height of the change-room building is approximately 4 m.
- E)** The football ground of the municipality of Rybky is situated on the west verge of the municipality. The developed area of the municipality is situated in the north-west to east direction from the football ground. The football field itself (its centre) is situated in an altitude of 703 ft. The altitude of the area surrounding the football field, especially in the west to east direction, continuously increases, so that the football ground is situated on the bottom of this terrain funnel. The surrounding area achieves the altitude of 800 - 850 ft in the circuit of about 0.7 km from the centre of the football field. The north-west wind, especially in case of a more intensive air circulation due to the flow around the surrounding area, may create descending air effects in the area of the football field.
- F)** The municipality of Rybky as well as the area overflowed by PP are situated in the area LZMC 2 – D characterized by altitudinal limits of 1000ft /300m AGL – 5000ft /1500m MSL. The pilot registered this fact and was only using the area of class G.
- G)** Approximately 5 km south-west from the municipality of Rybky is situated a limited air space LZR 221B (north-east limit of the space) with altitudinal limits of GND/FL245. The pilot registered this fact. On 15 October 2010 this space was activated between 06:00 hrs and 09:30 hrs (data from AMC Zvolen – air space processing centre).
- H)** For the needs of the police an expert report on the condition of PP after the air accident was drawn up. It states that PP was fully functional during the flight phase preceding the air accident.
- I)** The distance between the transversal axis of the paraglider canopy and the centre of gravity of the pilot's body is about 6m.

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

The pilot of PP started at 14:40 hrs from the area of Oresky vrch near the municipalities of Rybky, Smrdáky and Rohov and was conducting activity without apparent purpose of flight in low altitudes (150 m GND and lower). The takeoff was performed under favourable weather conditions for flight of PP, especially as regards the wind speed.

At 15:40 hrs the pilot of PP entered the area of the football ground of the municipality of Rybky and crossed it in its transversal axis at a flight course of 315° in a very low altitude.

The pilot was conducting the final flight phase in a very low altitude and was probably flying such low altitude that just in front of the change-room building his legs, as the lowest part of the set, were 6 m above the football ground and the canopy was in a height of 12 m (height of the change-room building: 4 m, height of the light pole: 12 m, distance between the canopy axis and pilot's body: 6 m).

In the flight phase in a low altitude above the football ground the pilot saw on his right side in front of him an obstacle, consisting of the light pole and the change-room building. He evaluated this situation in a larger distance in front of these obstacles and assumed that he would avoid these obstacles without problems.

However, he simultaneously started waving on the persons present on the football ground, due to which he was not fully concentrated on the flight. He made a right turn in a very small distance in front of the obstacles, due to which his flight came in close proximity to the obstacle and the paraglider canopy got caught on the upper section of the light pole. During the flight over the football ground the flight height probably decreased, especially due to the decreased attention of the pilot, as well as due to very slight, but with high probability existing descending air effects in view of the configuration of the ground on the place of accident and instantaneous meteorological situation of north-west air flow.

3. CONCLUSIONS / Cause of air accident

Main cause of accident:

Flight in a low altitude in close proximity of obstacles.

Contributing factors:

- decreased attention during pilotage
- descending air effect.

4. SAFETY RECOMMENDATIONS

Following the investigation of causes of the air accident of

PP type: **ANTEA L / RODEO 125**,

Date of accident: **15 October 2010**

We recommend to implement the following measures:

1. Publication of investigation results on the website of LAA SR
2. Analysis of the air accident at level of LAA SR (managed by the Flight Director) with focus on the analysis of the provisions of the Regulation LZ-1, Title 3 – Flight rules. The analysis should be performed as a part of regular training of LAA SR instructors and inspectors in spring 2011.
3. To inform about causes of the accident in the form of the Bulletin of LAA SR in printed or electronic form.