



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.: SKA2011013

FINAL REPORT

on investigation of air accident

of aircraft type **Z-226 M / VSO - 10**

Registration No. **OM – KMF / OM - 3503**

Date: 03.09.2011

Place: LZRY

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.

Operator / Owner:	SNA of gen. M. R. Stefanik / Individual
Type of operation:	general aviation
Type of aircraft:	Z - 226 M / VSO - 10
Registration No:	OM - KMF / OM - 3503
Take-off site:	Airport LZRY
Flight phase:	aeroplane towing
Place of accident:	LZRY airport traffic zone
Date and time of accident:	03.09.2011, 10:16 hrs

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

B. INFORMATIVE SUMMARY

On 3 September 2011 at 10:16 hrs the pilot was re-trained for a new type of one-seat glider VSO-10 / OM-3503 according to the Directive AKPL SNA by accomplishment of task 5/51 in the Aero Club Sabinov. The conversion training had the form of glider tow take-off drill. The tow flight was conducted using a towing aeroplane of Z-226M / OM-KMF type. In the area of the airport LZRY, in an altitude of 820 m, the tow flight was terminated by signalling the glider „O.K.“ for the preparation for glider disconnection. During the disconnection the glider started to climb steeply, which caused the change of the pitch angle, so-called suspension of towing aeroplane. The towing aeroplane turned into a dive with the glider connected. The pilot of towing aeroplane reacted to this situation by continuing the dive. The pilot of towing aeroplane said that the glider pilot had not reacted to the situation or answered the radio communication. The pilot of towing aeroplane added that in that flight phase the towing aeroplane had not reacted to the horizontal rudder. He further said that after the disconnection of the towing rope by the glider pilot the aeroplane had started to react normally to the horizontal rudder and that he had seen the vertical rudder of the aeroplane being damaged in the observation mirror. He terminated the flight by landing at the airport LZRY. During the flight the glider cockpit got lost. The glider landed at the airport of departure.

Person appointed for investigation of causes of the accident:

Jaroslav JUSZCZUK

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 flight history was established on the basis of statements of witnesses and the pilot of towing aeroplane, as well as on the basis of inspection of aircraft and detected damages to the aircraft.

On 3 September 2011 at 10:16 hrs a pilot was re-trained for a new type of one-seat glider VSO-10 / OM-3503 according to the Directive AKPL SNA by accomplishment of task 5/51 in the Aero Club Sabinov. The conversion training had the form of glider tow take-off drill. The tow flight was conducted using a towing aeroplane of Z-226M / OM-KMF type. During the second flight of conversion training included in the retraining programme in the area of the airport LZRY, in an altitude of 820 m, the tow flight was terminated by signalling the glider „O.K.“ for the preparation for glider disconnection. During the disconnection the glider started to climb steeply, which caused the change of the pitch angle, so-called suspension of towing aeroplane. The towing aeroplane turned into a dive with the glider connected. The pilot of towing aeroplane reacted to this situation by continuing the dive. The pilot of towing aeroplane said that the glider pilot had not reacted to the situation or answered the radio communication. The pilot of towing aeroplane added that in that flight phase the towing aeroplane had not reacted to the horizontal rudder. He further said that after the disconnection of the towing rope by the glider pilot the aeroplane had started to react normally to the horizontal rudder and that he had seen the vertical rudder of the aeroplane being damaged in the observation mirror. He terminated the flight by landing at the airport

In the phase of disconnection of the glider, during the movement behind the towing rope disconnecter, the seat back position changed, due to which the pilot making the movement jerked the controls backwards. The glider started to climb steeply, which caused the suspension of the towing aeroplane. During the transition to a descent the rope slackened and swang. The rope probably got looped around the horizontal tail plane and vertical rudder of the aeroplane and caused the damage to the rudder. During the dive the locked stretched rope blocked the horizontal rudder for some time.

The glider pilot said that due to the release of his seat back he had been unable to reach the towing rope disconnecter at that moment. In the effort to handle the situation, the pilot disconnecting the towing rope probably released the cockpit as well, due to which the cockpit broke loose from the hinges and the glider cockpit got lost. The pilot landed without the cockpit at the airport of departure.

The towing aeroplane landed with towing rope in one piece. The towing rope did not break (it was equipped with the prescribed anti-breaking protection).

Before the flight the pilot of towing aeroplane, as conversion training instructor, conducted with the glider pilot the pre-flight preparation in the prescribed scope with a corresponding entry into the pilot's diary.

Daytime: day

Flight rules: VFR

1.2 Injuries to persons

Injury	Crew	Passengers	Other persons
Fatal	-	-	-
Serious	-	-	-
Minor	-	-	-
None	2	-	-

1.3 Damage to aircraft

The towing aeroplane was damaged when the towing rope got looped around the horizontal tail plane and the vertical rudder.

**Poškodenie smerovky
pohľad zľava**



**Poškodenie smerovky
pohľad sprava**



The damage to the glider was caused by the release of the seat back cable lock, followed by the shift of the seat. The pilot by mistake opened the glider's cockpit cover (loss of cockpit that was torn from the hinges).

**Poškodenie vetroňa
vytrhnutie kabíny**



**Poškodenia vzniknuté
uvoľnenou opierkou
sedačky**



1.4 Other damages

No other damages were documented.

1.5 Personnel information

Pilot of glider:

Citizen of the Slovak Republic, aged of 56,

holder of the pilot licence GPL(A) No. SK 0111011, issued by the Civil Aviation Authority of SR on 30.06.2011 with validity until 31.12.2013.

Medical certificate of 2nd class with marked validity until 17.03.2012.

Qualifications:

GLD with marked validity until 31.12.2013.

Flying experience:

The pilot has flying experience since 1970 with interruption in the period of 1985 to 2008.

Qualification for types:

VT 16, VT 116, L 13, L 23.

Total flight hours:

With gliders: 385 h 767 flights

For the last period: 4 h 9 flights

With VSO 10 32 min 2 flights

Pilot of towing aeroplane:

Citizen of the Slovak Republic, aged of 46

Holder of the pilot licence PPL(A) No. SK 02070226 issued by the Civil Aviation Authority of SR on 10.12.2007, valid until 10.12.2012.

Medical certificate of 2nd class with marked validity until 11.06.2012.

Qualifications:

SEP(L) with marked validity until 31/08/2013

TMG with marked validity until 31/08/2013

Qualification for glider towing since 2002.

Flying experience:

The pilot has flying experience since 2000. Qualification for types Z 42, Z 43, Z 226, L 13 SW, WT 9.

Total flight hours:

With aircraft: 510 h 1650 flights

For the last period: 17 h 70 flights

1.6 Aircraft information

Airframe:

Type: **Z - 226 M**

Registration No: OM-KMF

Serial No: 708

Year of manufacture: 1957

Manufacturer: Moravan Otrokovice, CR

Certificate of airworthiness No. 2556/08, issued by the Civil Aviation Authority of SR on 17.06.2010

Certificate of verification of airworthiness ARC No. 363/2556-08/03/N110 with marked validity until 07.07.2012

Total time in service: 4802 h

Total number of takeoffs: 16571

Release into operation: CRS No.1/2011-KMF on 26/05/2011

4785 h, 16385 takeoffs

Airframe:

Type: **VSO - 10**

Registration No: OM-3503

Serial No: 150076

Year of manufacture: 1983

Manufacturer: Orličan Choceň, CR

Certificate of airworthiness No. 0339-S, issued by the Civil Aviation Authority of SR on 04.07.2008.

Certificate of verification of airworthiness ARC No. 361/0339-S/03/N092 with marked validity until 07.07.2012.

Total time in service: 1526 h

Total number of take-offs: 1173

Release into operation: CRS No. 1/2011-3503 on 16/04/2011, 1520 h, 1164 take-offs.

1.7 Meteorological situation

The meteorological situation did not influence the flight.

1.8 Aids to navigation

Not applicable.

1.9 Communications

The aircraft was equipped by radio communication system enabling two-way radio communication at every moment of flight with all air and aircraft stations.

1.10 Aerodrome information

Not applicable.

1.11 Flight recorders and other recording systems

Not applicable.

1.12 Wreckage and impact information

Traffic zone of the airport LZRY.

1.13 Medical and pathological information

The crew was not injured, without need of medical examination.

1.14 Fire

Not applicable.

1.15 Survival aspects

The search and rescue using the SAR means were not required.

1.16 Tests and research

No tests or expert examinations of the glider parts were required.

1.17 Organizational and management information

The flight of the glider was a part of the flight day after the pre-flight preparation of participating members of AK Sabinov.

1.18 Additional information

Not applicable.

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

After being signalled to terminate the glider tow flight by the pilot of towing aeroplane, the glider pilot was unable to terminate the tow flight by disconnecting the towing rope, because his seat back got loose. The pilot was unable to reach the towing rope disconnecter on the glider dashboard, jerked the controls to himself and the glider started to climb steeply, which resulted in the „suspension“ of the towing aeroplane.

Both aircraft turned into a dive. The slackened towing rope at given aircraft configuration got looped around the horizontal tail plane and vertical rudder of towing aeroplane. At that moment it was impossible to use the breaking piece used on the towing rope on the side of towing aeroplane suspension or to handle the situation by the pilot of the towing aeroplane by disconnection of the rope.

In given aircraft configuration, where the glider was flying in front of the towing aeroplane, the attached rope was blocking the horizontal rudder of towing aeroplane. Stretching of the rope and tightening of the loop caused damage to the vertical rudder of the towing aeroplane. On the effort to disconnect the rope the glider pilot released the glider cockpit which resulted in the loss of the glider cockpit.

Inspection of glider after the accident

The towing aeroplane and the glider were technically fit for the flight.

The aircraft had valid certificates of airworthiness ARC, valid certificates of airworthiness OLS, valid protocols on release into operation after maintenance CRS, valid liability insurance and valid certificates for onboard radio stations.

The c.g. position of the glider and the towing aeroplane were within the prescribed ranges and had no influence on the occurrence of the air accident.

The main cause of the accident was the release of the seat back cable lock.



3. CONCLUSIONS/ Cause of air accident

3.1 Findings

Aircraft:

- the state of continuing airworthiness of the aircraft was documented,
- the aircraft had valid certificates of airworthiness,
- the maximum take-off weights were not exceeded,
- binding decisions for continuing airworthiness of the aircraft were implemented,
- maintenance was implemented by an authorized organization in accordance with the requirements of the holder of the type certificate of aircraft.

Crews:

- the state of validity of the licences and authorizations of pilots for the respective flight was documented (without findings).

3.2 Causes of accident:

- the glider pilot was conducting the second conversion training flight for given glider type. Insufficient experiences with the preparation of given glider type and with flight preparation
- the pilot underestimated the check of locking of the seat back in its position.

4. SAFETY RECOMMENDATIONS

The Air Accident Investigation Authority recommends the implementation of an analysis of the air accident in aero clubs of SNA as a part of preparations for a flight day.

Žilina, 03.10.2011