



**MINISTRY OF TRANSPORT, POSTS AND
TELECOMMUNICATIONS
OF THE SLOVAK REPUBLIC**

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

Reg. No: SKA2010006

FINAL REPORT

on air accident investigation

of aircraft **Z - 37A**

registration: **OM - KJS**

Date: 10.06.2010

Place: Jasenov

A. INTRODUCTION

The investigation of an 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:	TECH-MONT helicopter company, spol. s.r.o.
Type of aircraft:	Z-37A
Registration:	OM-KJS



Place of take-off:	Jasenov
Planned place of landing:	Jasenov
Flight phase:	right-hand turn
Place of air accident:	north from runway of the Jasenov Airport N 48°48'00,5'', E 022°10'51,0''
Date of air accident:	10.06.2010
Time of air accident:	10:10 hrs

Note: All times in this Report are UTC.

B. INFORMATIVE SUMMARY

On 10 June 2010 the pilot with aircraft of Z-37A type, registration OM-KJS, conducted an unplanned flight with two persons onboard from the Jasenov airport used for agricultural work. During the return to the airport the aircraft made a wing stall.

The following persons were appointed as investigators of the air accident:

Ing. Benek Igor
Ing. Grell Ladislav
Ing. Kumorovitz Marián

The report is issued by:

Air Accident and Incident Investigation Board
of the Ministry of Transport, Posts and Telecommunications 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

On 10 June 2010 between 07:00 hrs and 08:00 hrs the pilot was visited by his classmate and friends at the airport used for air agricultural work.

At 09:30 hrs the aircraft mechanic at the request of the pilot performed the engine test sooner than planned for the reason of performance of an unplanned activity.

At 09:50 hrs, following the engine test, the mechanic handed over the aircraft to the pilot who confirmed the acceptance of the aircraft by his signature in the dispatch document.

Two persons – a man and a woman entered the room for transport of the mechanic, following the pilot's instructions.

The woman was sitting on the seat in the room for transport of the mechanic and the man was sitting next to her on the floor – on a cushion given to him by the pilot. Both persons used ear defenders but had not fastened the seat belts.

Before the take-off the aircraft was in a configuration with spraying device and empty auxiliary gas tanks.

After the take-off the pilot conducted with the persons onboard a 5 to 10 min flight in a low height around the airport and above the water body of Zemplínska Šírava and return to the airport of departure in a height of 15 m. Then he made a runway pass in the direction of 360° above the runway. Behind the airport the pilot started to climb with the aircraft up to the height of 30 m. From this height the pilot started a right-hand turn with the aircraft. According to the statement of one of the persons aboard this turn resembled to a hammerhead turn.

From this right-hand turn the aircraft made a right wind stall. It fell on the shoulder of a reinforced country road. The aircraft's right wing and landing-gear leg were broken due to the fall. Subsequently the left landing gear and the propeller hit the ground and the aircraft fell on the lower part of the engine. The left landing gear broke backwards and the propeller blades turned back. These impacts caused a destruction of the aircraft body in front of tail surfaces.

The wreckage of the aircraft landed 10 m from the first point of contact with the ground.

The man tried to open the door of the mechanic cabin and succeeded only with use of a greater force. As fire was visible in the front section of the aircraft, the man put one leg on the centre section of the wing and helped the woman to get out of the aircraft. The front section of the aircraft, including the cockpit, was in flames which the man evaluated as impossibility to help the pilot and ran away from the aircraft together with the woman. When they ran 15 m away the aircraft tank exploded.

One of the persons present at the airport noticed that the aircraft was burning. The mechanic with other persons present at the airport took two fire extinguishers, get into a car and headed for the place of air accident.

During drive the aircraft mechanic reported the air accident to the telephone number 112.

After their arrival in the place of air accident they stated that fire in the front section of the aircraft was burning out and saw that the pilot was showing no signs of life. Using extinguishers they tried to smother the fire in the burning aircraft section, but they did not succeed. The fire was only extinguished by firemen who came to the place of air accident in the meantime.

Both persons who succeeded to get out of the aircraft suffered injuries and were transported to the airport where they waited for the arrival of the rescue service that treated and transported them to the hospital in Michalovce.

Light conditions: Daylight

Flight rules: VFR

1.2 Injuries to person

Injury	Crew	Passengers	Other persons
Fatal	1	-	-
Serious	-	-	-
Minor	-	2	-
None	-	-	-

1.3 Damage to aircraft

The aircraft was destroyed in the air accident.





1.4 Other damages

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 35

Holder of commercial pilot licence CPL(A) No SK 03020073, issued by the Civil Aviation Authority of SR.

Qualifications: SEP(L) with marked validity until 31 May 2012

Medical certificate of 1st class with marked validity until 12 May 2011

Total flying hours before the accident 1 658:00 hrs

Flying time of which were on type Z - 37 A 785:48 hrs

Flying time on the day of accident

(including the critical flight) 0:10 hrs

Persons on board

Man: Citizen of Slovak Republic, aged of 35

Woman: Citizen of Slovak Republic, aged of 20

1.6 Information about aircraft

a) Airframe

Type: Z – 37A

Serial No: 2407

Year of manufacture: 1980

Manufacturer: LET n.p. Kunovice, Czech Republic

Certificate of airworthiness No 0278-S, issued by the Civil Aviation Authority of SR, with marked validity until 8 April 2011.

Total flying hours from the year of manufacture: 5 331:27 hrs and 44 115 flights

Flying hours since the last 750h revision: 288:37 hrs and 1 954 flights

Flying hours on the day of accident: 0:10 hrs

b) Engine

Type: M 462RF

Serial No: 511080

Year of manufacture: 1975

Manufacturer: AVIA n.p. Prague 9, Letňany, Czech Republic

The engine was incorporated in the aircraft on 12 March 2009

Total operating hours from the year of manufacture: 3 468:27 hrs

Total operating hours from the last general overhaul: 391:15 hrs

c) Propeller

Type: V 520

Serial No: 04231373

Manufacturer: AVIA n.p. Prague 9, Letňany, Czech Republic

The propeller was incorporated in the aircraft on 10 March 2010

Total operating hours from the year of manufacture: 1 440:30 hrs

Total operating hours from the last general overhaul: 62:20 hrs

d) Calculation of aircraft weight at the time of air accident

Empty weight of aircraft 1111.0 kg

Weight of pilot 80.0 kg

Weight of passengers 165.0 kg

Weight of fuel approx. 150 l x 0.72kg/l 108.0 kg

Weight of oil approx. 13 l x 0.90 kg/l 11.7 kg

Weight of spraying device 41.0 kg

Weight of two underwing tanks 24.4 kg

Total aircraft weight at the time of accident: **1541.1 kg**

The maximum permissible take-off weight of the aircraft according to the flight manual is **1 850 kg**.

The aircraft weight at the time of accident was within the permitted range.

1.7 Meteorological situation

On the front side of low pressure with centre above West France, very hot air from south to south-west was flowing to our territory on the critical day. The area of air accident had a stable weather without precipitation, with low clouds, lower base of 4 700 – 5 000 ft and visibility of more than 10 km.

The surface wind at the time of air accident was very variable and its direction fluctuated within the range of 170°–330°, with wind power of 8 – 10 KT. An important meteorological element on the critical day and at the time of air accident was the air temperature of +29°C, whereby in leeward and sunny locations it may have been slightly higher.

1.8 Aids to navigation

The aircraft was equipped for VFR flights.

1.9 Communications

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

1.10 Aerodrome information

Not applicable.

1.11 Flight recorders and other recording systems

The aircraft was not equipped by flight recorders.

1.12 Wreckage and impact information

The impact point determined by coordinates N 48°48'00.5'', E 022°10'51.0'' was situated on the shoulder of a reinforced country road and adjacent field seeded with corn. The wreckage of the aircraft was found in the distance of 10 m from the first impact point. The distribution of wreckage was documented by photos.



1.13 **Medical and pathological information**

The pilot suffered an injury of the left lower extremity, and in particular of head and brain, related to cerebral contusion and crushing with intracranial bleeding, with several splintered fractures of facial bones, roof and base of the skull, that can be regarded as fatal from the medicojudicial view for their general nature.

The chemical analysis of the pilot's blood sample taken during autopsy with use of special toxicological test (Wolfe method) revealed a zero concentration of carbon monoxide, which means that before his death and after the outbreak of fire after the aircraft crash the named was not breathing in smoke with a higher content of carbon monoxide. It is also proved by his death before outbreak of fire, caused by extensive injury of head and brain incompatible with life.

The health documentation of the pilot contained no data on potential diseases which would be in causal connection with his death or could have contributed to attention deficit and perceptual disorders during aircraft flying.

At the time of the accident the pilot was not under influence of alcohol, common drugs or other narcotics likely to decrease his attention during flight.

The woman suffered 2nd degree fire burns from direct flame on both hands and on his left forearm.

After the aircraft crash to the ground the man suffered a second-degree (a-b) burn injury on his left arm and elbow, contusion and bruises of left side of his thorax and contusion of his left thigh.

1.14 **Fire**

The aircraft took fire when it fell to the ground. The aircraft fell on the lower engine hoods and exhaust manifold, which probably led to the break-out of the sludge cup and fuel spattering on the hot exhaust manifold.

The air mechanic was trying to extinguish the aircraft fire using an extinguisher, but he failed. The fire was located by the Fire Rescue Service.

1.15 **Survival aspects**

The search and rescue using SAR devices was not necessary. The air accident was reported to the telephone number 112.

The persons onboard left the aircraft by their own forces.

The death of the pilot could not be prevented by application of early and professional medical aid and it occurred immediately or very shortly after the aircraft crash on the ground with subsequent secondary skin burn on almost the whole body surface during fire of wreckage which followed the crash of the aircraft on the ground.

1.16 **Tests and research**

Not applicable.

1.17 **Organizational and management information**

The aircraft operator was a company holding the licence for operation of flights with given aircraft type.

The pilot carried out other unplanned activity onboard the aircraft such as air agricultural work and he had not obtained the approval of the operator to performance of this work with given aircraft type.

1.18 **Additional information**

The pilot was only fastened by a lap belt and for this reason he hit his head on the dashboard when the aircraft crashed to the ground.

1.19 **Useful or effective investigation techniques**

Standard investigation methods were used.

2. ANALYSIS

2.1. Flight history

The aircraft pilot conducted a flight from the Jasenov Airport in an area close to the airport without clear specification of the flight purpose. The aircraft was in the non-acrobatic operation mode. During one of pilotage elements – right-hand turn in a low flight height (approx. 30 m) the aircraft made a right wing stall, followed by collision with the aircraft with the ground.

The critical flight was conducted in a configuration with spraying device and auxiliary gas tanks.

In given configuration the pilot of the aircraft was unable to handle the situation, recover from a fall in the right-hand turn with a larger bank angle in a low height at a high air temperature.

2.2. Crew

According to the submitted documentation the pilot had valid qualifications and sufficient flying experience for flights with given aircraft type. At the time of his death the pilot was not under influence of alcohol, narcotics or common drugs likely to decrease his attention during flight.

The pilot carried out other unplanned activity onboard the aircraft for which had not obtained an authorization or approval of the operator.

The pilot was only fastened with lap belts.

Two persons in the room for transport of the air mechanic were not fastened.

2.3. Meteorological situation

An important factor at the time of air accident was a high air temperature (+29° C), which directly, and in particular in the ground layer, affected the air density (lift). This in combination with variable direction of surface wind may have negatively affected the flight of the aircraft in the ground layer.

3. **C O N C L U S I O N S / Cause of air accident**

The pilot of aircraft **Z-37A** did not master the pilotage technique, wing stall from a right-hand turn in a configuration of the aircraft with spraying device and auxiliary gas tanks.

Meteorological conditions on given place and at the time of air accident may have negatively contributed to its occurrence.

4. **SAFETY RECOMMENDATIONS**

Following the investigation of causes of the air accident of
Aircraft type **Z-37 A**

Registration: **OM-KJS**

Date of accident: **10.06.2010**

We recommend to implement the following measures:

Recommendations for the Civil Aviation Authority of SR:

To inform the operators of given aircraft type about the air accident.

Recommendations for TECH-MONT helicopter company, spol. s r.o.:

To analyse the air accident with the flying personnel.

Bratislava, 13 October 2010