



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

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



Reg. No. SKA2012006

FINAL REPORT

on investigation of air accident

of aircraft **3Xtrim 450**

Registration No. **SP-YPL**

Date: 06.05.2012

Place: Airport Ružomberok / LZRU

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.

A. INTRODUCTION

Owner / Operator: Krzysztof Przyborowski
Type of aircraft: 3Xtrim 450
Registration number of aircraft: SP-YPL



Take-off site: Airport LZRU
Planned landing site: Airport GRUDZIADZ - LISIE KATY / EPGI
Place of accident: cadastral area of LISKOVÁ , district of Ružomberok
N 49°04'815'', E 019°21,827'
Date and time of accident: 06.05.2012, 10 h 28 min

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

B. INFORMATIVE SUMMARY

On 6 May 2012 the pilot of aircraft 3Xtrim 450 with its aircraft took-off from the grass runway („RWY“) 24.

After the take-off the pilot started to turn left in an altitude of 15 m, flew over TWR LZRU in an altitude of 35 m and continued the flight at a course of 170°. Then the pilot started a sharp left turn to a course of 060°. In an altitude of 40-50 m above the ground level the aircraft sharply turned left and suddenly tilted over forward. The aircraft made a 1.5 turn counterclockwise, vertical to the ground, at full engine output and hit the ground.

About 5 sec after the impact the aircraft caught fire and started to burn.

The air accident was reported by a representative of the Aero Club Ružomberok to the Aviation and Maritime Investigation Authority of the Ministry of Transport, Construction and Regional Development of SR.

The board appointed for investigation of the air accident:

Arnošt Foff – chairman of the Investigation Board
Marián Turan – member of the Investigation Board
Ing. Igor Benek – member of the Investigation Board

The report is issued by:

Aviation and Maritime 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

On 6 May 2012 the pilot of aircraft 3Xtrim 450 planned a flight from the airport LZRU to the airport EPGI. At 10:10 the pilot of aircraft 3Xtrim 450, registration No. SP-YPL, requested the CTAF (Common Traffic Advisory Frequency) operator for the permission for taxiing to the take-off site RWY 24.

When the pilot received the permission for take-off, he started with the aircraft from RWY 24 at 10.25.

After the take-off, in an altitude of 15 m, the pilot started to turn left and in an altitude of 35 m he flew over TWR LZRU and continued the flight at a course of 170°. Then he started a sharp left turn to a course of 060°.

In an altitude of 40-50 m above the ground level the aircraft sharply turned left and tilted over forward. The aircraft made 1.5 turn vertical to the ground at full engine output and hit the ground. About 5 sec after the impact the aircraft caught fire and started to burn.

The aircraft was destroyed after the impact.

The pilot and the passenger suffered injuries incomparable with life.

Daytime: day

Flight rules: VFR

1.2 Injuries to persons

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

1.3 Damage to aircraft

The aircraft was destroyed in the air accident.

1.4 Other damages

No circumstances with potential claims for compensation of other damage toward a third party were notified to the Aviation and Maritime Investigation Board.

1.5 Personnel information

Pilot:

A citizen of the Republic of Poland, aged of 56 years, holder of the pilot licence No. PL-12148-PPL(A)-10, issued by Urząd Lotnictwa Cywilnego of the Republic of Poland, with marked validity until 15.09.2015.

Qualifications:

SEP(L), with marked validity until 12.08.2012.

Medical certificate of 2nd class with marked validity until 06.05.2011.

Flying experience:

Total flight hours: 728 h and 3421 flights

Passenger:

A citizen of the Republic of Poland, aged of 57 years.

1.6 Aircraft information

a) Air frame:

Type: 3Xtrim 450

Registration number: SP-YPL

Serial No: E53

Year of manufacture: 2005

Manufacturer: Zakłady Lotnicze "3Xtrim" Sp. z o.o., Poland

Total number of operating hours since manufacture: not identified

Urząd Lotnictwa Cywilnego of Poland issued the certificate of registration of the aircraft No. 3948 on 7 July 2005. The aircraft was registered in the class SPEC1aL – „Y“

Third-party insurance: not identified

b) Engine:

Type: ROTAX 912
Serial No: not identified
Manufacturer of engine: BRP ROTAX GmbH, A - 4623 Gunskirchen, Austria

c) Propeller:

Type: Woodcom, 3-blade, electrically adjustable pitch.

The external inspection detected that the propeller was adjusted to a start/take-off regime of aircraft.

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

Empty weight of aircraft	309.7 kg
Weight of crew after autopsy 60 kg+50 kg	110.0 kg
Weight of luggage	10.0 kg
<u>Weight of fuel: 88 l x 0.72 kg/l</u>	<u>63.4 kg</u>
Total weight of aircraft at the time of AA	493.1 kg

Maximum permitted take-off and landing weight of aircraft for according to the flight manual is 450.0 kg.

Maximum take-off weight of aircraft was exceeded at least by 43.1 kg, i.e. 9.57 %.

The actual weight of the pilot and the passenger before the air accident could not be determined.

The medical expertise (weight of the pilot 80 kg, weight of the passenger 65 kg) showed that the maximum takeoff weight of aircraft had been exceeded by as much as 78.1 kg, i.e. 17.36 %.

1.7 Meteorological situation

On 6 May 2012 in the morning hours the meteorological situation developed as follows:

From 08:00 heap clouds patches started to form above the massifs of the Kremnické and Stoličné mountains, which spread into the south-west upper stream in two patches running in parallel with the air flow, topped the crest of the Low Tatra mountain and reached the area of Liptov and Poprad basins. These cloud patches grew thicker, wider and vertically more developed and increased the cloudiness in the location. At around 10:00 the vertical magnitude of cloudiness south of the line Ružomberok – Liptovský Mikuláš culminated in local precipitation.

The air temperature in the area of Lisková was rising from the morning and reached its maximum of 20°C at 10:20. The relative air humidity gradually decreased to the minimum of 35%. The cloudiness was growing and the sky was covered to 60% by heap clouds with the lower baseline above 1500 m. The wind speed gradually increased, south to south-west wind with speed of 4 to 6 m/s was blowing in the location.

In direct relation to the formation of vertically developed heap cloudiness on the south edge of the Liptov and Poprad basins a mesosynoptical phenomenon occurred, where relatively colder air penetrated from the crest of the Low Tatra mountain into the Liptov and Poprad basins. Its beginning can be identified at 10:20 am. This phenomenon affected particularly the course of air temperature, but the other meteorological elements remained unaffected until 10.30, i.e. the time of air accident. This mesosynoptical phenomenon influenced the development of meteorological elements in the area of Lisková as follows:

After 10:20 it started to cool down (by 2.0 to 2.5° C within 15 minutes) and at the critical time of 10:35 the air temperature was around 18° C, relative humidity 40%, and south wind with

speed of 5 - 8 m/s was blowing. The cloudiness remained, the lower baselines of vertically developed heap cloudiness were above 1,500 m and the horizontal visibility exceeded 40 km. No storm or other dangerous meteorological phenomena were observed.

In the surface air layer up to 100 m above the ground level the wind direction may have changed slightly to south to southwest direction and the average wind speed may have increased to 10 m/s. This assumption is based on the regularity of wind speed and direction in the surface air layer, taking into account the relatively homogeneous topography and vegetation cover in the area of Lisková. Data from the radio sounding output in Gánovce at 12:00 confirm these estimated values.

Meteorological conditions in given location at the time of accident may have influenced the critical flight and probably participated in the occurrence of the air accident.

1.8 Aids to navigation

Not applicable.

1.9 Communications

The aircraft was equipped by radio communication system and had two-way communication with TWR LZRU, from which the pilot received required instructions before the take-off.

1.10 Aerodrome information

The airport LZRU is a non-public domestic aerodrome with grass RWY. At the time of air accident it was operable and suitable for take-off and landing of this type of aircraft.

1.11 Flight recorders and other recording systems

Not applicable.

1.12 Wreckage and impact information

After impact to the ground the aircraft came to a standstill in the tilted-forward position, caught fire and burnt down completely.

The final position of the aircraft after the air accident was documented, including the photo documentation.





1.13 Medical and pathological information

From the forensic viewpoint the death of both victims was violent – caused by injury of the pilot, which was directly attributable to the air accident of the power aircraft 3Xtrim 450.

On the basis of accident-attributable changes in the upper and partially lower extremities found by autopsy, investigation of circumstances and laboratory tests it can be assumed that at the time of impact – ground deceleration of the aircraft – the lower extremities and in particular the upper extremities of the pilot could be in active position on the controls of the aircraft, which means that the pilot was most probably steering the aircraft just before the accident as well as at the time of impact.

At the time of air accident the pilot was not under the influence of alcohol, common medicines or intoxicants likely to decrease his attention during the flight.

All detected injuries had causal connection with the described air accident and occurred when the aircraft hit the ground in the area of Lisková, district of Ružomberok.

The external and internal inspections and additional laboratory tests of biological materials sampled during autopsy did not detect any acute or chronic pathological changes likely to negatively affect the attention and activity of the pilot at the time of air accident or cause his death.

During autopsy it was impossible to exactly measure the length and weight of both victims due to significant thermic changes related to extensive burns on their bodies. The pilot's height was approximately 147 cm and his weight was approximately 60 kg. The actual height and weight of the pilot may have been larger than the values measured during autopsy, so the named may have weighed about 80 kg. The passenger was 138 cm tall and weighed 50 kg. Her actual height and weight may have been larger than the values measured during autopsy, so she may have weighed about 65 kg.

1.14 Fire

The fire was extinguished by the called fire brigade.

1.15 Survival aspects

No search or rescue was required.

1.16 Tests and research

On the basis of biomechanical – traumatological analysis of pilot's injuries it was possible to calculate the impact speed of the aircraft. The intensity of accident-attributable changes corresponded to the 1st degree on a 13 degree scale of injuries according to Fialka, which lied within the range of 94 – 178 km/h at estimated impact angle of 45 – 75°, as proved by investigated circumstances.

1.17 Organizational and management information

A standard certificate of airworthiness was not issued to the aircraft and the Civil Aviation Authority of SR does not register any application from the operator of aircraft with registration No. SP-YPL for approval to the operation of this aircraft in/from/over the territory of the Slovak Republic.

In Poland the aircraft 3Xtrim 450 was operated as an aircraft to which the standard certificate of airworthiness cannot be issued. The aircraft had a registration No. SP- YPL, where the letter Y in Poland designates aircraft not meeting the requirement for maximum weight of ULA, experimental, former military and other aircraft. The airworthiness of these aircraft is approved individually according to a special regulation, where they are categorised as „Special“ aircraft.

The aircraft manufacturer on its website warns the owners of this aircraft type that before entry in the air space of other State they have to obtain the required permission from the competent aviation authority of the respective State.

The Aero Club Ružomberok organized static demonstrations – exhibition of aircraft during the Days of the City of ružomberok.

1.18 Additional information

The aircraft manufacturer indicates lateral wind component for take-off max. 5m/s for this aircraft type.

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

2.1 Activity of pilot

In the effort to show off in the presence of visitors at the aircraft LZRU, after the take-off the pilot steered the aircraft so that he made the first left turn in a low altitude, at a low speed and in climbing flight regime, which with the south to south-west wind blowing in the surface air layer up to 100 m above the ground level, the wind speed of 5-10 m/s, and maximum take-off weight of the aircraft exceeded by at least 9.57% probably led to a loss of speed of advance below the manoeuvring airspeed. With given position of controls (aircraft in banking, at low speed and with potential rudder angle) the aircraft was stalled with entry into a spin, from which the pilot was unable to recover to a stabilized flight path in view of the low flight altitude.

3. CONCLUSIONS / CAUSE OF AIR ACCIDENT

3.1 Findings

- the pilot of the aircraft took-off from the airport LZRU, where maximum take-off weight (MTOW) of the aircraft was significantly exceeded against the value prescribed in the flight manual of the aircraft, moreover in weather conditions that were not suitable for a take-off,
- the pilot did not hold a valid medical certificate,
- in view of the invalidity of the medical certificate, the pilot licence was invalid (non-applicable) – the rights resulting from the licence may only be exercised if the licence holder holds a valid medical certificate,
- the aircraft had not an authorization for entry in the air space of SR and for landing at the airport LZRU.

3.2 Causes of air accident:

- the pilot did not pay sufficient attention to the meteorological situation,
- the pilot overrated the capabilities of the aircraft with exceeded maximum take-off weight,
- poor mastering of the flying technique after the take-off.

4. SAFETY RECOMMENDATIONS

On the basis of investigation of causes of the air accident

which occurred on **06.05.2012**

we recommend the Civil Aviation Authority of SR to take the following measures:

To carry out checks of valid documentation of aircraft crews and flight clearances under state supervision aimed with special focus on aircraft with MTOM up to 2,250 kg.

Bratislava, 17.10.2012