



**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: SKA2010004

FINAL REPORT

on air accident investigation
of aircraft type **WT-9 Dynamic**
registration: **OM-DYD**

Date: 27.05.2010

Place: LZPT

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:	Radoslav Mikuláš - RAMI Agátová 890/29, 958 04 Partizánske
Type of aircraft:	WT-9 Dynamic
Registration:	OM-DYD
Place of take-off:	LZPT
Planned place of landing:	LZPT
Flight phase:	landing
Place of air accident:	grass runway 25L at LZPT
Date of air accident:	27.05. 2010
Time of air accident:	15:51 hrs

Note: All times in this Report are UTC.

B. INFORMATIVE SUMMARY

On 27 May 2010 the pilot with the aircraft type WT-9 Dynamic, registration OM-DYD, was conducting practical flight training for given aircraft type at the airport Malé Bielice, district of Partizánske ("LZPT"). In the phase of landing the suspension of wheel of the front landing-gear leg broke off, which caused damage to propeller blades and forced engine shutdown when the propeller blades came into contact with ground.

The pilot was not injured.

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

Ing. JANČULA Maroš
Ing. GRELL Ladislav

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 27 May 2010 the pilot with aircraft type WT-9 Dynamic, registration OM-DYD, was conducting practical flight training for given aircraft type at the airport LZPT. The pilot properly carried out the ground preparation according to the plan with instructor two days before the practical training. The first independent flight with full landing went smoothly. After the second independent flight the pilot with aircraft landed approximately 50 m in front of the threshold of the runway 25 – in the clearway.

The aircraft landed on wheels of the main landing gear. Then it touched ground with the front wheel of the landing gear. The wheel of the front landing gear was unable to keep straight direction, started to vibrate and tipped over forward. The front landing gear leg buried in the ground and tipped backwards, due to which the front part of the aircraft sank down and the propeller blades came into contact with the ground. After the ground impact two propeller blades broke off and the engine was shut down forcedly.

The aircraft stopped at the level of threshold marking of the runway 25 at LZPT. The instructor standing approximately 50 m away from the aircraft brought to a stop ran up to the aircraft. The pilot opened the cabin and the instructor turned off the main switch and the ignition and closed the fuel supply.

After arrival of the police the pilot underwent the breath test for alcohol with negative result.

The air accident was reported by the operator to the police and to the Air Accident and Incident Investigation Board of the Ministry of Transport, Posts and Telecommunications of the Slovak Republic.

Light conditions: Daylight

1.2 Injuries to persons

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

1.3 Damage to aircraft

The aircraft was minor damaged 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 37,
holder of the licence of aviation staff No SK 02100048 issued by the Civil Aviation Authority of SR on 4 May 2010.

Proficiency: pilot licence PPL(A) with validity until 4 May 2015.

Qualifications: SEP(L) with marked validity until 30 April 2012.

Medical certificate of 2nd class with validity until 27 August 2010.

Flying experience:

Total flying hours	55:30 hrs
Flying time of which were on type WT-9 Dynamic	3:20 hrs
Flying time on the day of accident	3:20 hrs

1.6 Aircraft information

a) Airframe

Type: WT-9 Dynamic, registration: OM-DYD, serial No: DY-271/2008, year of manufacture: 2008, manufacturer: Aerospool, spol. s.r.o., Prievidza.

Certificate of airworthiness No 0926, issued by the Civil Aviation Authority of SR on 24 June 2008

Total flying hours from the year of manufacture: 420:42 hrs and 1018 flights
Flying hours on the day of accident: 3:20 hrs

b) Engine

Type: 912, model S2, serial No 4 923.675, manufacturer: Bombardier Rotax GmbH, A-4623 Gunskirchen, Austria. It was incorporated in the aircraft on 10 June 2008.

Total operating hours from the year of manufacture: 420:42 hrs

c) Propeller

Type: SR 2000 D, serial No: 2848, manufacturer: WOODCOMP, Vodolská 4, 250 70 Odolena Voda, Czech Republic.

It was incorporated in the aircraft on 10 June 2008.

Total operating hours from the year of manufacture: 420:42 hrs

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

Empty weight of aircraft:	309.8 kg
Weight of crew:	95.0 kg
<u>Weight of fuel: approx. 40 l x 0.72kg/l</u>	<u>28.8 kg</u>
Total aircraft weight at the time of accident:	433.6 kg

The maximum permissible take-off weight of the aircraft according to the flight manual is **450 kg**.

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

1.7 Meteorological situation

The meteorological situation did not influence the air accident.

1.8 Aids to navigation

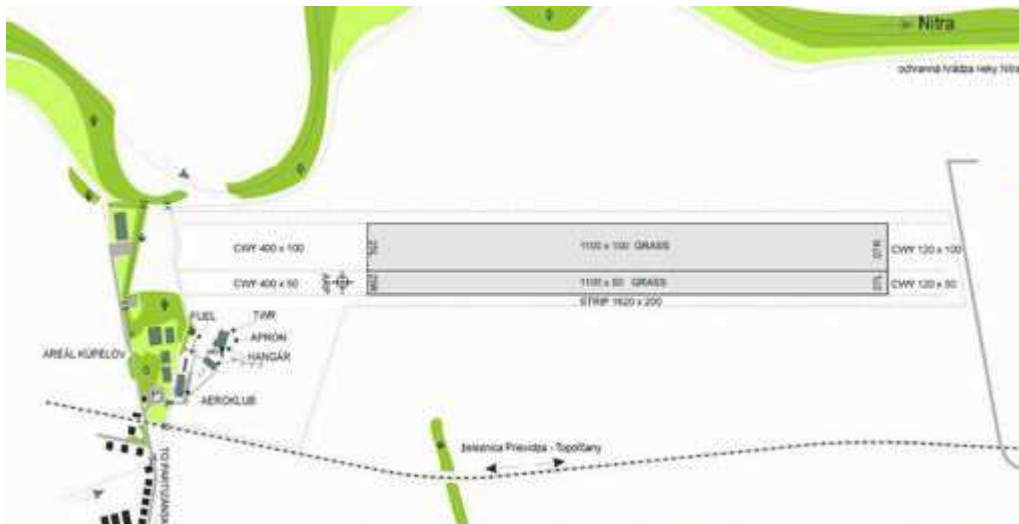
The aircraft was equipped for VFR flights.

1.9 Communications

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

1.10 Aerodrome information

LZPT is a grass area and at the time of air accident was operable and suitable for take-offs and landings of the aircraft type in question.



1.11 Flight recorders and other recording systems

The aircraft was not equipped by flight recorders.

1.12 Wreckage and impact information

After the air accident the aircraft stopped at the level of threshold marking of the runway 25 with the front landing-gear leg bent backwards and broken propeller blades.





1.13 Fire

No fire broke out.

1.14 Survival aspects

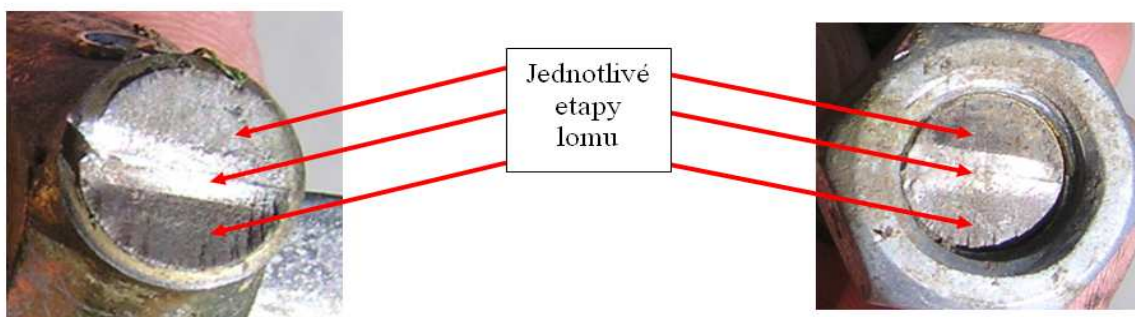
The search and rescue using SAR devices was not necessary. The pilot left the aircraft without help of other persons.

1.15 Tests and research

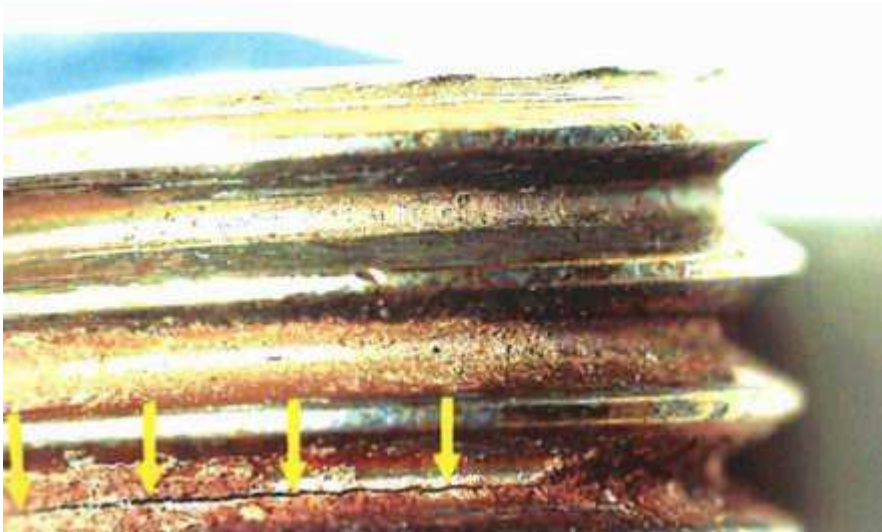
The friction bearing SMG 12–40 with broken threaded part was sent for expertise.

The threaded part of the bearing was broken off. Presence of progressive strips typical for fatigue mechanism of material damage was not detected on the fracture surface.

In the initial area of fracture spreading certain marks of bruised fracture surface caused by power closing of the fracture slot were visible. The fracture can be described as a progressive material damage, where the fracture was spreading step by step across the damaged area under the influence of very short dynamic power impulses (dynamic stress).



In the proximity of the fracture surface, three threads down (the distance corresponds to the height of the nut used in the joint), the presence of a parallel crack with the same orientation was detected.



2. ANALYSIS

The expertise showed a progressive breaking-off of the threaded part of the friction bearing of the attachment of the front landing-gear leg suspension. The loading of this component is characterized by forces generated in movement (taxiing, take-off and landing) of an aircraft. The size and frequency of these forces depends on the speed of the aircraft, on the runway bumps and on the landing mode. When an aircraft is used for example for training flights, an increased load of the aircraft structure and hence of the individual elements of the landing gear caused by forces generated in case of hard and repeated landings can be anticipated.

The comparison of the number of landings and use of several aircraft of the same type did not reveal any relationship with similar damage, so a structural defect can be excluded.

Based on the analysis it can be determined that the cause of the damage was a repeated excessive loading which affected the tear resistance of material used in the examined component.

3. CONCLUSIONS / Cause of air accident

The cause of the air accident was the breaking-off of the threatened part from the eye of friction bearing SMG 12-40 under the influence of excessive loading of the front landing-gear leg.

4. FLIGHT SAFETY RECOMMENDATIONS

The aircraft manufacturer took a preventive measure relating to a one-off check of the component in question with use of colour defectoscopy for all aircrafts that are maintained in its service centre.

Bratislava, 6 August 2010