



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.: SKS2011004

FINAL REPORT

on investigation of serious incident

of helicopter **Hughes 269C**

Registration No. **OM - ARS**

Date: 24.08.2011

Location: Airport Prešov / LZPW

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.

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 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 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.

| | |
|--------------------|---|
| Owner / Operator: | Heli Company , s.r.o. / Tatra - Leasing, s.r.o. |
| Type of operation: | flight training in pairs |
| Type of aircraft: | Hughes 269C |



| | |
|---|---|
| Registration number: | OM-ARS |
| Take-off site: | LZPW |
| Landing site: | LZPW |
| Flight phase: | entry into training autorotation with landing |
| Date and time of detection of incident: | 24.08.2011, 18 h 30 min. |

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

B. INFORMATIVE SUMMARY

On 24.08.2011 during training of pilots – autorotation with landing, the engine of helicopter Hughes 269C, registration No. OM-ARS, failed when the pilot turned the gas down to idling. The helicopter landed safely on the planned landing surface of airport LZPW.

Person appointed for investigation of the serious incident:

Lic. Jaroslava Mičeková

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

During training of air force pilots of the Slovak Republic the crew was training the autorotation with ground landing. The entry into autorotation over the airport LZPW was made by lowering the collective pitch lever to the minimum value of rotor-propeller angle of attack and by turning down the gas to idling. After turning down the gas, the pilot-instructor registered an rpm drop to zero. The engine continued the autorotation and landed safely on the planned surface of the airport.

Subsequent start of the engine showed no deficiencies. The helicopter was put out of operation and the engine was tested.

The crew was not injured.

The helicopter was not damaged.

Daytime: day

Time of serious incident: 18 h 30 min

1.2 Injuries to persons

| Injuries | Crew | Passengers | Others |
|----------|------|------------|--------|
| Fatal | - | - | - |
| Serious | - | - | - |
| Minor | - | - | - |
| None | 2 | - | - |

1.3 Damage to helicopter

No damage.

1.4 Other damage

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

1.5 Personnel information

Pilot-in-command – instructor

Citizen of the Slovak Republic, aged of 45 years, holder of CPL(H) licence No. SK 07060015, issued by the Civil Aviation Authority of the Slovak Republic, with marked validity until 31.3.2012.

Qualifications:

Helicopters type: Mi-2, AS-350S, Schweizer 269C, AS 355/355N

Instructor: Mi-2, Schweizer 269C, AS 355N

Medical certificate of 1st class with marked validity until 8.2.2012.

Flying experience:

| | | |
|---|----------------|----------------|
| Total flight hours: | 3 789 h 20 min | 14 090 flights |
| In it for previous 90 days: | 23 h 45 min | 115 flights |
| In it for previous 90 days with the helicopter type: | 23 h 25 min | 112 flights |
| In it on the day of serious incident (incl. critical flight): | 1 h 00 min | 5 flights |

Pilot-cadet

Citizen of the Slovak Republic, aged of 32 years, cadet licence No. FTO-1/2010-10.

Qualifications:

Helicopter type: Mi-17

1.6 Information about helicopter

a) Airframe

| | |
|----------------------|-------------------------------|
| Type: | S269C |
| Serial No.: | S 1257 |
| Year of manufacture: | 1987 |
| Manufacturer: | Hughes Helicopters (Sikorsky) |

Total number of operating hours since manufacture: 4 219 h 50 min

Certificate of airworthiness No. 0793/01.

b) Engine

Type: Lycoming HIO 360 D1A
Serial No.: L-4297-51A
Manufacturer: Lycoming

The engine was built in the helicopter in 2007.

Total number of operating hours: 1099h 40 min since G/O

c) Weight of helicopter at the time of serious incident:

| | | | |
|----------------------------|-----------------------|-------|----|
| Empty weight of helicopter | | 630,0 | kg |
| Weight of crew | | 150,0 | kg |
| Weight of baggage | | 0,0 | kg |
| Weight of fuel | about 0 l x 0,72 kg/l | 30,0 | kg |
| Weight of oil | about 0 l x 0,90 kg/l | 9,0 | kg |

Total weight of helicopter at the time of serious incident: 819,0 kg

Maximum permissible take-off weight of helicopter according to Flight Manual is 930 kg.

Apart from the crew, the helicopter carried no cargo likely to influence the change of c.g. position or aircraft trimming.

At the time of serious incident the weight of helicopter was within the permitted range.

Regular overhaul of the helicopter was implemented after 4 171 hours and detected no deficiencies or faults likely to cause the serious incident.

Type of used fuel: AVGAS 100.

1.7 Meteorological situation

The location of the occurrence had a stable weather without precipitation at the time of serious incident. The lower cloud base according to meteorological information SYNOP 3-4/8 was 10 000ft. Visibility above 10 km. According to information from METAR report the wind was 090/04 KT at 18:00 and variable 2 KT at 19:00. Air temperature was + 23 °C.

On the basis of this information it can be concluded that meteorological conditions on the place location and at the time of serious incident had no effect on the flight of the helicopter and thus could not participate in the occurrence.

1.8 Aids to navigation

Not applicable.

1.9 Communications

The helicopter was equipped by a radio station enabling two-way radio communication at every moment of the flight with all air stations.

1.10 Aerodrome information

Not applicable.

1.11 Flight recorders and other recording systems

The helicopter is not equipped by a flight recorder.

1.12 Wreckage and impact information

Not applicable.

1.13 Medical and pathological information

Not applicable.

1.14 Fire

No fire broke out.

1.15 Survival aspects

The search or rescue using SAR means was not required.

1.16 Tests and research

During the engine test and in accordance with the manual of Schweizer HMI the following parameters were verified:

| | | |
|--|--|-------------------|
| - quality and purity of fuel and fuel filter in the engine, "EXTERNAL" running check, check of fuel pump | | NO FINDING |
| - check of air filter and air inlet tract of the engine injector | | NO FINDING |
| - check of engine idling speed on the position IDLE – NR connected | | FINDING |
| - check of engine idling speed on the position IDLE – NR disconnected | | FINDING |
| - check of engine idling speed on the position IDLE OVERRIDE – NR connected | | FINDING |
| - check of drop of magnet 1 and magnet 2 (or position L and R) | | NO FINDING |
| - check of adjustment and locking of engine control rods | | NO FINDING |
| - check of richness of fuel mixture AVGASS | | NO FINDING |

On 25.08.2011 the engine test was implemented with the aim to check and adjust the parameters of the engine:

| <u>Checked parameters:</u> | <u>Measured value:</u> | <u>Value after adjust.:</u> |
|---|------------------------|-----------------------------|
| - IDLE speed + connected NR | 900 -1000 | 1450 |
| - IDLE OVERRIDE speed + connected NR | 700 -1200 | 1300 |
| - IDLE OVERRIDE speed + disconnected NR (max. value 1600 RPM) | 1000 | 1400 |

During the engine tests the parameters were OK.

The pilot-instructor made a control flight with autorotation without deficiencies.

1.17 Organizational and management information

Not applicable.

1.18 Additional information

Not applicable.

1.19 Useful or effective investigation techniques

Standard investigation methods were used.

2. ANALYSIS

- 2.1 The investigation detected low speed in the idling mode, which oscillated around the minimum value of idling speed.

In accordance with the manual of Schweizer HMI, Chapters 4 - 5, engine speed in the idling mode was adjusted, the engine was tested and a control flight with autorotation was made – without deficiencies.

3. CONCLUSIONS / CAUSE OF SERIOUS INCIDENT

3.1 Findings

- the crew had valid qualifications for the flight in question,
- the helicopter had valid documentation and did not show any faults before the serious incident,
- the helicopter fulfilled the conditions of airworthiness before the critical flight,
- the helicopter was not damaged in the serious incident,
- the meteorological conditions had no effect on the occurrence of the serious incident,
- the crew of the helicopter was not injured in this serious incident.

3.2 Causes of serious incident:

Main cause:

- engine failure at a low value of adjusted idling speed, which oscillated around the limit of minimum speed required for stable engine operation.

Contributing factor:

- technical solution (design) of fixation of the screw used for adjustment of idling speed (protection against angular displacement due to vibrations).

4. SAFETY RECOMMENDATIONS

On the basis of investigation of causes of serious incident of
Helicopter type **S269C**
Registration No. **OM – ARS**
Date of serious incident: **24.08.2011**

the helicopter operator has implemented the following preventive measure:

- during pre-flight engine tests of helicopters S269C attention will be paid to idling speed. In case of fluctuation of idling speed value around the lower limit the helicopter will not be cleared for flight until the engine revolutions are adjusted and put outside the range of minimum idling speed.

Bratislava, 23.04.2012