AIRCRAFT ACCIDENT SHORT REPORT

CA18/2/3/9725: ZS-RCY, Hard landing following a transition from a hover

Date and time	:	22 July 2018, 0822Z
Occurrence type	:	Accident
Aircraft registration	:	ZS-RCY
Aircraft manufacturer and model	:	Robinson Helicopter Company, R22 Beta
Last point of departure	:	Port Elizabeth International Airport (FAPE)
Next point of intended landing	:	Port Elizabeth International Airport (FAPE)
Location of accident site with reference to easily defined geographical points (GPS readings if possible)	:	GPS coordinates: 33°59'14.51" South, 025°36'26.38" East
Meteorological Information	:	Surface wind: 360°/05kts, temperature: 21°C, dew point: 6°C, CAVOK
Type of operation	:	Training (Part 141)
Persons on board	:	1 + 0
Injuries	:	Nil
Damage to aircraft	:	Lower left frame

All times given in this report are Coordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose of the Investigation:

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (2011) this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and ***not to establish blame or liability.***

Disclaimer:

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1. SYNOPSIS

1.1 A student pilot accompanied by an instructor lifted off into an in ground hover and completed a 180° hover turn with the governor switch in the “OFF” position. The student pilot landed the helicopter, put the governor in the “ON” position and the instructor got off the helicopter. As the student pilot took off to conduct solo transitions training, the helicopter yawed to the right and the trailing edge of the left skid made contact with the ground. The pilot lowered the collective to put both skids on the ground.

1.2 Investigation revealed that the helicopter landed hard following a transition from a hover with insufficient left pedal input.

2. FACTUAL INFORMATION

2.1 On Sunday 22 July 2018, a student pilot accompanied by an instructor were on board a Robinson R22 helicopter with registration marking ZS-RCY. The instructor put the governor switch in the “OFF” position and the student pilot lifted off into a hover, completed a 180° hover turn and landed the helicopter successfully. He then put the governor in the “ON” position and the instructor got off the helicopter.

2.2 The student pilot lifted off into a hover to conduct solo transitions training. As he entered into transition from hover the helicopter yawed to the right and the rear part of the left skid impacted the ground hard. The student pilot immediately lowered the collective to put both skids on the ground.

2.3 The helicopter sustained damage to lower left frame. The student pilot sustained no injuries.

2.4 The accident occurred during daylight conditions at a geographical position that was determined to be 33°59’14.51” South 025°36’26.38” East at an elevation of 220ft above mean sea level (AMSL).

Figure 1: Helicopter as it came to rest showing damage to the rear frame

Figure 2: Damage to the rear left frame

3. ADDITIONAL INFORMATION

3.1 When in powered flight in a single-rotor helicopter (counter clockwise rotation), the main rotor tries to remain stationary while the fuselage is subjected to a torque couple trying to rotate it in a direction to the left. Figure 3 shows how the main rotor torque couple is equalised by the anti-torque thrust to the right. The more power input i.e. translating from hover to flight, the more anti-torque left pedal input is necessary to keep the helicopter from yawing to the right.(Source R 22 POH)

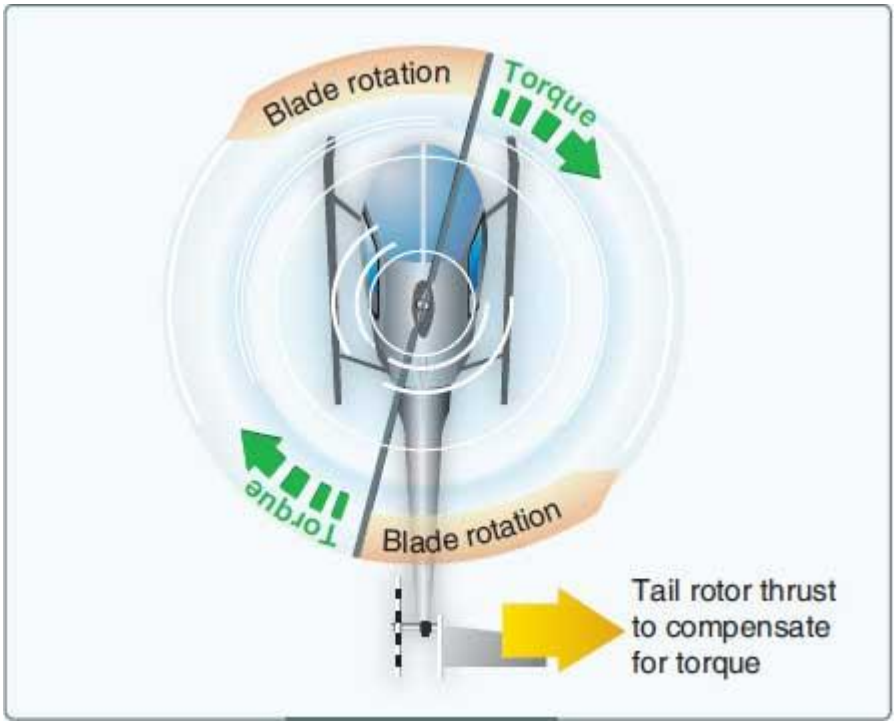

Figure 3: Tail rotor thrust

4. Findings:

4.1 The pilot held a valid Student Pilot licence (Helicopter) which had an expiry date of 23 January 2019 and the helicopter type was endorsed on his licence. His aviation medical certificate had an expiry date of 31 January 2019 with no restrictions.

4.2 He had a total of 57.4 hours flight time of which 53.4 was on the R22 type.

4.3 The last mandatory periodic inspection (MPI) on the helicopter was carried out on 16 June 2018 at 8 635.6 airframe hours.

4.4 The aircraft had a total of 8 722.3 airframe hours at the time of the accident and had flown 86.7 hours since the MPI.

4.5 The aircraft had a valid Certificate of Airworthiness and Certificate of Registration.

4.6 The weather for the time of flight was as follows: FAPE 220830Z 36005KT CAVOK 21/06 Q1025 NOSIG=

4.7 The helicopter landed hard following a transition from a hover with insufficient left pedal input.

5. PROBABLE CAUSE/CONTRIBUTING FACTOR

5.1 The helicopter landed hard following a transition from a hover with insufficient left pedal input.

6. REFERENCES USED IN THE REPORT

6.1 Principles of Helicopter Flight Chapter 9: W.J. Wagtendonk

7. SAFETY RECOMMENDATION

7.1 None.

8. ORGANISATION

8.1 None.