# AIRCRAFT ACCIDENT SHORT REPORT

**CA18/2/3/9700: ZS-RGJ, Hard landing after an unsuccessful rapid deceleration (quick stop) training flight**

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| **Date and time** | : | 05 April 2018, 1027Z |
| **Occurrence type** | : | Accident |
| **Aircraft registration** | : | ZS-RGJ |
| **Aircraft manufacturer and model** | : | Robinson Helicopter Company, R22 Beta |
| **Last point of departure** | : | Virginia Airport (FAVG), KwaZulu-Natal Province |
| **Next point of intended landing** | : | Virginia Airport (FAVG), KwaZulu-Natal Province |
| **Location of accident site with reference to easily defined geographical points (GPS readings if possible)** | : | GPS coordinates: 29°46'9.76" South, 031°3'32.25" East |
| **Meteorological Information** | : | Fine weather conditions prevailed |
| **Type of operation** | : | Training (Part 141) |
| **Persons on board** | : | 1 + 0 |
| **Injuries** | : | Nil |
| **Damage to aircraft** | : | Damage to the skid gear and lower fuselage |

*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:

*This report is produced without prejudice to the rights of the CAA, which are reserved.*

## 1. SYNOPSIS

1.1 A student pilot took off for rapid decelerations (quick stops) training flight at Virginia Airport (FAVG). During levelling off at the end of a quick stop, the low RPM horn sounded and the aircraft suddenly lost height. The pilot lifted the collective to stop the aircraft from losing more height, but the aircraft made contact with the ground hard and then lifted off the ground with the right skid only. The aircraft then pivoted about the left skid and the pilot stopped the roll by applying the cyclic and right pedal. Once the aircraft stopped rolling, the pilot lowered the collective to settle the aircraft back on the ground. The aircraft sustained damage and the pilot sustained no injuries.

1.2 Investigation revealed that the helicopter landed hard following a loss of rotor RPM due to insufficient collective input at the end of a quick stop.

## 2. FACTUAL INFORMATION

2.1 On Thursday 05 April 2018, a student pilot was on board a Robinson R22 helicopter with registration marking ZS-RGJ conducting quick stops training.

2.2 During levelling off at the end of the quick stop, the low RPM horn went off and the aircraft suddenly lost height. The pilot increased the collective to stop the aircraft from losing more height, but the aircraft hit the ground hard and then lifted off the ground with the right skid only. The aircraft then pivoted about the left skid and the pilot stopped the turn by applying the cyclic and right pedal. Once the aircraft stopped turning, the pilot decreased the collective to settle the aircraft back on the ground.

2.3 The helicopter sustained damage to the tail cone root and the lower left hand frame. The student pilot sustained no injuries.

2.4 The accident occurred during daylight conditions at a geographical position that was determined to be 29°46’9.76” South 031°3’32.25” East at an elevation of 40ft above mean sea level (AMSL).


Figure 1: Helicopter after landing

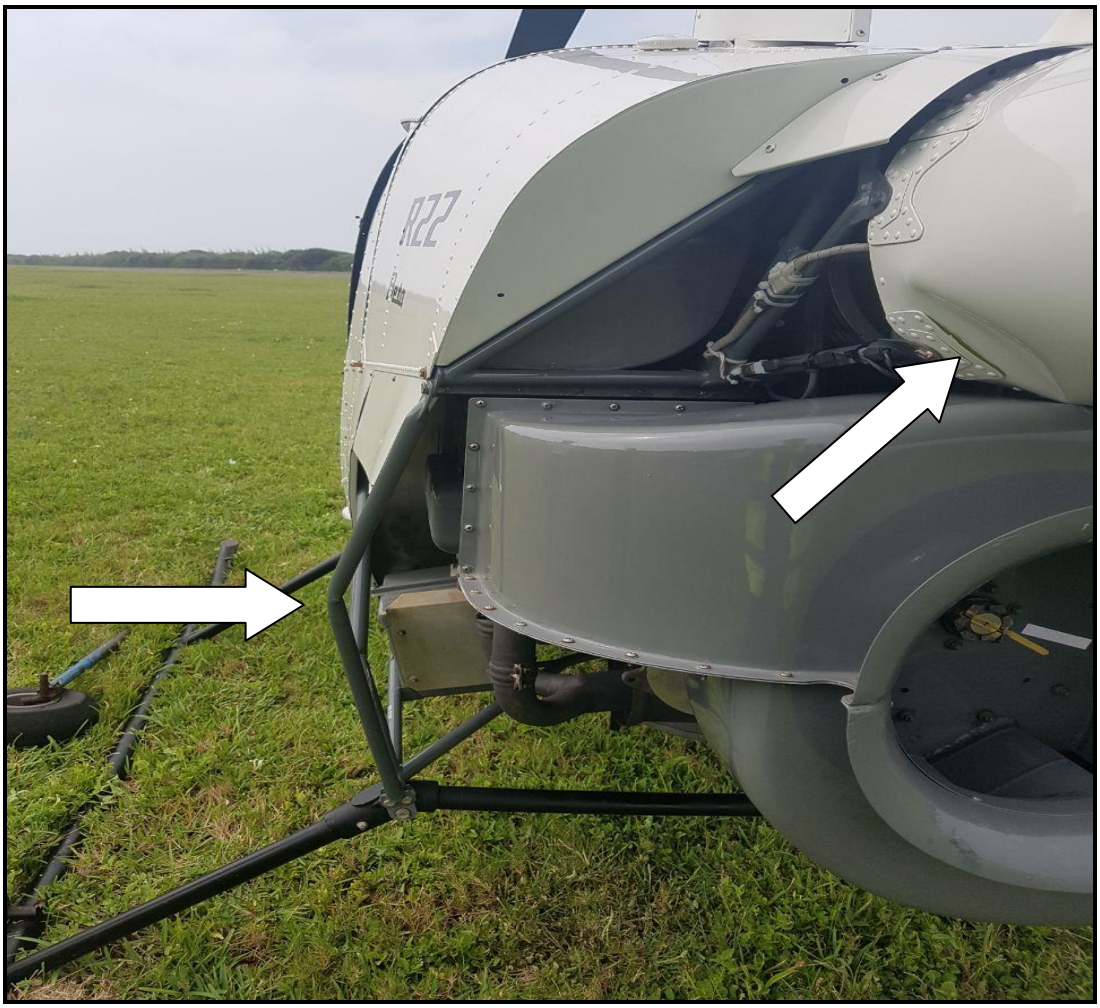


Figure 2: Damage to the structure

## 3. ADDITIONAL INFORMATION

*3.1 Rapid Deceleration or Quick Stop is used to decelerate from forward flight to a hover. It is often used to abort take-offs, to stop if something blocks the helicopter's flight path, or simply to terminate an air taxi maneuver. A quick stop is usually practiced on a runway, taxiway or over a large grassy area away from other traffic or obstacles.*

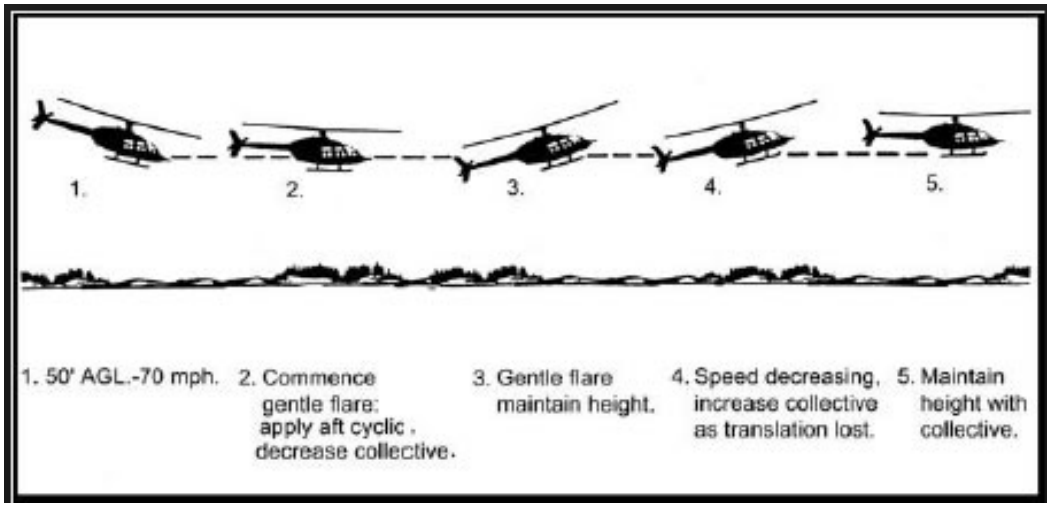


Figure 3: Quick stop

*3.2 Some of the common errors of a quick stop are: Failing to maintain proper rotor rpm and waiting too long to apply collective pitch (power) during the recovery, resulting in excessive manifold pressure or an over torque situation when collective pitch is applied rapidly. (R22 POH)*

## 4. Investigation Revealed The Following:

4.1 The pilot held a valid Student Pilot licence (Helicopter) which had an expiry date of 21 January 2019 and the helicopter type was endorsed on his licence. His aviation medical certificate had an expiry date of 31 December 2018 with corrective lens restrictions.

4.2 He had a total of 73.3 hours flight time, all of which was on the R22 type.

4.3 The last mandatory periodic inspection (MPI) on the helicopter was carried out on 19 September 2017 at 4243.0 airframe hours.

4.4 The aircraft had a total of 4336.4 airframe hours at the time of the accident and had flown 93.4 hours since the last inspection.

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

4.6 Fine weather conditions prevailed at the time of the accident.

4.7 The helicopter landed hard following a loss of rotor RPM due to insufficient collective input at the end of a quick stop.

## 5. PROBABLE CAUSE/CONTRIBUTING FACTOR

5.1 The helicopter landed hard following a loss of rotor RPM due to insufficient collective input at the end of a quick stop.

## 6. REFERENCES USED IN THE REPORT

6.1 FAA Helicopter Flying Handbook Chapter 10: Advanced Flight Maneuvers

## 7. SAFETY RECOMMENDATION

7.1 None.

## 8. ORGANISATION

8.1 None.