



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8703	
Aircraft Registration	ZS-HAN	Date of Accident	2 November 2009		Time of Accident	1420Z
Type of Aircraft	Robinson R22 Beta		Type of Operation		Private	
Pilot-in-command Licence Type		Private Pilot (Helicopter)	Age	39	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	68.4		Hours on Type	56.9
Last point of departure		Rand Airport (S 26° 14' 31.1" E 28° 09' 4.8") FAGM				
Next point of intended landing		Rand Airport (S 26° 14' 31.1" E 28° 09' 4.8") FAGM				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
Threshold of runway 17 at Rand Airport. Elevation 5 483 ft AMSL.						
Meteorological Information		Wind direction: 330°; Wind speed: 7 knots; Temperature: 11°C; Visibility: >10 km; Rain expected in vicinity				
Number of people on board	1 + 1	No. of people injured	0	No. of people killed	0	
Synopsis						
<p>The pilot, accompanied by a passenger, was in the process of taking off for the General Flying Area to build up hours towards his commercial pilot's licence, when the accident occurred.</p> <p>During the takeoff roll, as the airspeed and altitude slowly increased, the low main rotor RPM horn sounded and the light came on. The pilot attempted to roll on the throttle to recover the drop of RPM but to no avail. Due to trees and electrical cables nearby, he abandoned the takeoff and opted to decrease speed and maintain altitude to extend the skidding distance. He said that he was unable to lower the collective as the altitude was already very low, so reduced his speed slightly by easing back on the cyclic and keeping the helicopter as level as possible.</p> <p>The aircraft touched the ground and skidded for approximately 7 m. The left skid dug into the grass shoulder at the edge of the runway, the helicopter rolled to its left, the main rotor blades struck the ground and the aircraft came to rest on its left side.</p>						
Probable Cause						
The left skid dug into the grass shoulder, causing the helicopter to roll onto its left side.						
IARC Date				Release Date		



AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Henley Air (Pty) Ltd
Manufacturer : Robinson Helicopter Company
Model : Robinson R22 Beta
Nationality : South African
Registration Marks : ZS-HAN
Place : Rand Airport
Date : 2 November 2009
Time : 1420Z

All times given in this report are Co-ordinated 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 (1997), 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 legal liability.***

Disclaimer

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

1. FACTUAL INFORMATION

1.1 History of Flight

- 1.1.1 The pilot, accompanied by a passenger, was in the process of taking off for the General Flying Area to build up hours towards his commercial pilot's licence, when the accident occurred.
- 1.1.2 He was cleared to cross runway 17/35 at his own discretion. On the takeoff roll, as the airspeed and altitude slowly increased, the low main rotor RPM horn sounded and the warning light came on. The pilot attempted to roll on the throttle to recover the RPM drop but to no avail. He then abandoned the takeoff due to trees and electrical cables in the northern section of the airport, and opted to decrease speed and maintain altitude to extend the skidding distance. He said that he was unable to lower the collective as the altitude was already very low, so reduced his speed slightly by easing back on the cyclic and keeping the helicopter as level as possible.
- 1.1.3 The aircraft touched the ground and skidded for approximately 7 m before the left skid dug into the grass verge alongside the runway. The helicopter rolled onto its left, the main rotor blades struck the ground and the aircraft came to rest on its left side.
- 1.1.4 The main rotor blades, left windshield, tail boom and left skid were damaged. The pilot and passenger suffered no injuries.

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	-	-	-	-
None	1	-	1	-

1.3 Damage to Aircraft

1.3.1 The helicopter sustained substantial damage to the main rotor blades, left windshield, tail boom and left skid.



Figure 1. The damage to the main rotor blades, windshield and left skid.



Figure 2. The broken tail boom and rotor.

1.4 Other Damage

1.4.1 None.

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	39
Licence Number	*****	Licence Type	Private pilot (H)		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating				
Medical Expiry Date	31 May 2010				
Restrictions	None				
Previous Accidents	None				

Flying Experience

Total Hours	68.4
Total Past 90 Days	8.4
Total on Type Past 90 Days	8.4
Total on Type	56.9

1.6 Aircraft Information

1.6.1 Airframe

Type	Robinson R22 Beta	
Serial Number	1550	
Manufacturer	Robinson Helicopter Company	
Date of Manufacture	1990	
Total Airframe Hours (at time of accident)	6 908.4	
Last MPI (Date & Hours)	8 Oct 2009	6 880.0
Hours since Last MPI	28.4	
C of A (Issue Date)	23 Oct 2009	
C of R (Issue Date) (Present Owner)	6 Feb 2009	
Operating Categories	Standard	

1.6.2 Engine

Type	Avco Lycoming 0-320
Serial Number	L17338-39A
Hours since New	4 078.0
Hours since Overhaul	28.4

This engine was installed new on 21 November 2007.

1.6.3 The helicopter was involved in an accident on 13 June 2006 and sustained substantial damage to the tail rotor gearbox and right lower frame. The aircraft was repaired by an approved maintenance organisation (AMO) and was released to service.

1.6.4 The helicopter was involved on a wire strike incident on 23 February 2009 and sustained minor damage to the main rotor blades. The damage was repaired by an AMO and the aircraft was released to service.

1.6.5 Weight and balance:

Maximum takeoff weight for ZS-HAN

	Weight (lbs)	Arm (inches)	Moment (in.lb)
A/C empty weight	859.51	104.4125	89 743.58
Pilot & pax (104 kg + 81 kg)	407	79.0	32 153
Baggage (0 kg)	0	79.0	0
Fuel main tank (14.6 US gal)	88	108.6	9 556.8
Auxiliary tank (6.6 US gal)	39.6	103.8	4 110.48
Total T/O Weight	1 394.11	97.24	135 563.86

The maximum certificated mass, as stipulated on the pilot's operating handbook, is 1 370 lbs. The helicopter was therefore overloaded by 24.11 lbs.

Note: 1 US gallon = 6 lbs

1.7 Meteorological Information

1.7.1 Weather information as obtained from the pilot's questionnaire:

Wind direction	330°M	Windspeed	7 kts	Visibility	>10 km
Temperature	11°C	Cloud cover	Broken	Cloud base	N/A
Dew point	-				

1.8 Aids to Navigation

1.8.1 The helicopter was fitted with standard navigational instrumentation but this was not applicable as the flight was conducted in an area known to the pilot and he in all likelihood navigated by familiar landmarks over a relatively small area.

1.9 Communications

1.9.1 The aircraft was fitted with a standard VHF transceiver and the pilot broadcast his intentions on frequency 118.7 MHz.

1.10 Aerodrome Information

Aerodrome Location	Rand Airport (Gauteng)	
Aerodrome Co-ordinates	S 26° 14' 31.1" E 28° 09' 04.8"	
Aerodrome Elevation	5 483 ft AMSL	
Runway Designations	35/17	29/11
Runway Dimensions	1 493 m by 15 m	1 660 m by 15 m
Runway in Use	35	
Runway Surface	Tar	
Approach Facilities	VOR, DME, NDB	

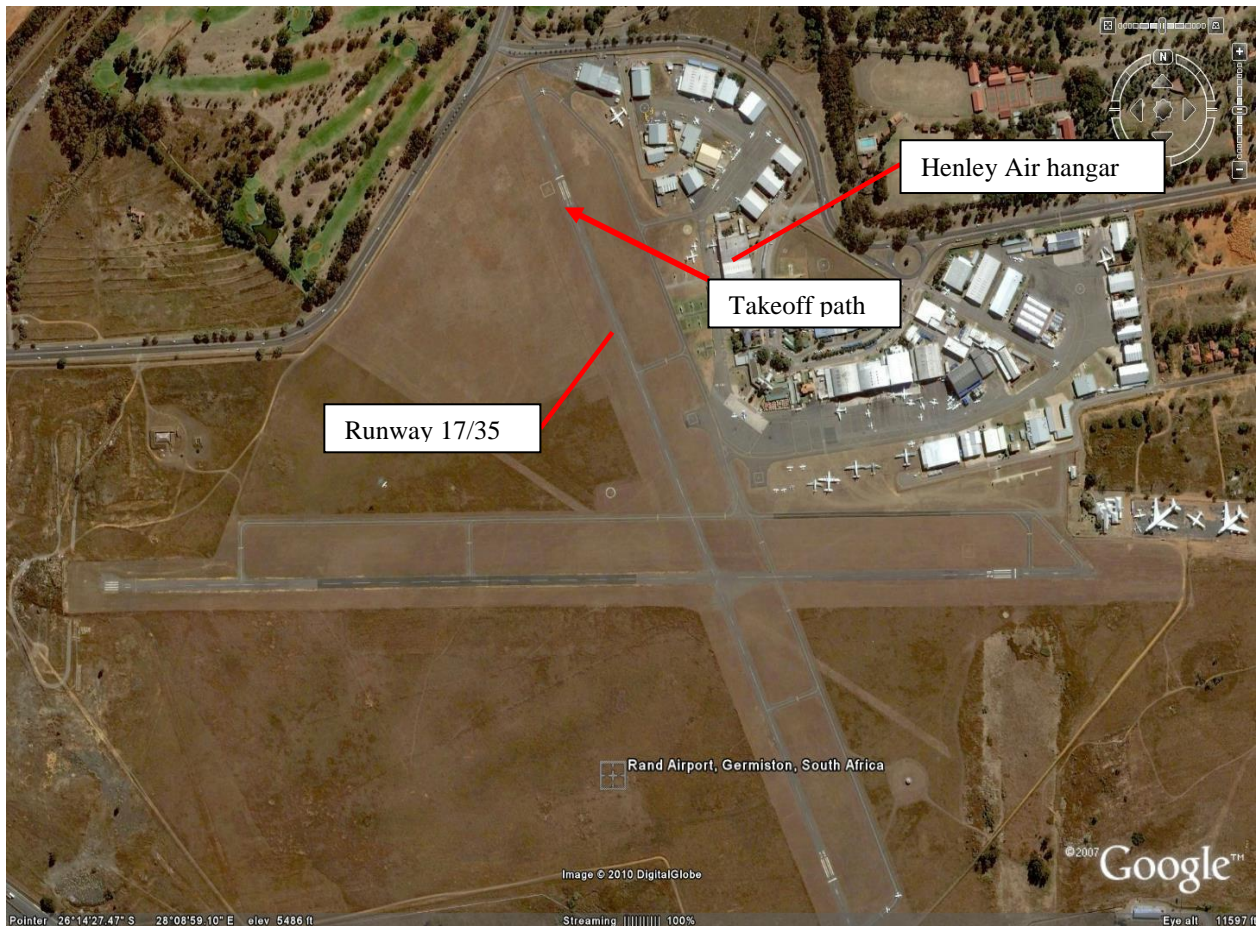


Figure 3. Aerial view of Rand Airport.

1.10.1 The pilot was cleared to cross runway 17/35 at his own discretion and report outbound at 6 000 ft.

1.11 Flight Recorders

1.11.1 South African Civil Aviation Regulations do not require that cockpit voice recorders or flight data recorders be installed in this aircraft type. Neither of these was fitted to ZS-HAN.

1.12 Wreckage and Impact Information

1.12.1 The helicopter impacted with the ground on the threshold of runway 17 and

skidded for approximately 7 m before its left skid dug into the grass shoulder on the edge of the runway.



Figure 4. The left skid dug into the grass at the edge of the runway.

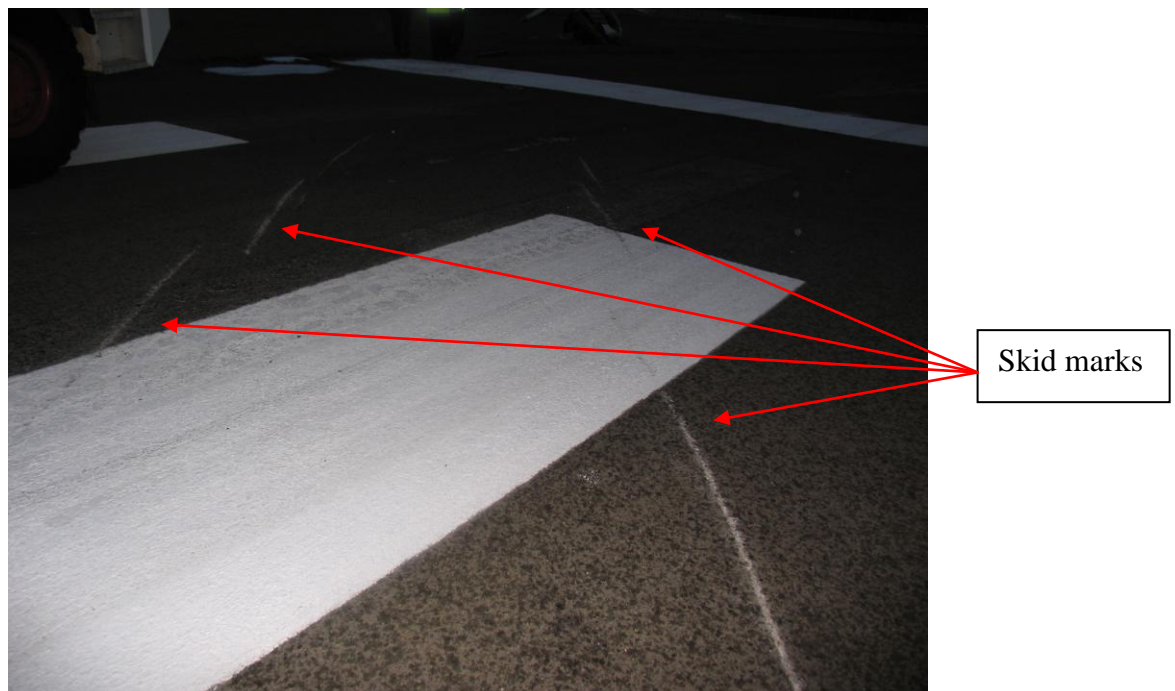


Figure 5. The helicopter skidded for about 7 m.

1.12.2 The main rotor blades impacted with the ground and the helicopter came to rest on its left side.



Figure 6. The main rotor blade impact.

1.13 Medical and Pathological Information

1.13.1 The pilot was in possession of a valid medical certificate.

1.14 Fire

1.14.1 There was no pre- or post-impact fire.

1.15 Survival Aspects

1.15.1 The accident was considered survivable as the pilot and passenger were properly restrained with seatbelts, the impact forces were relatively low, and the cabin remained intact.

1.16 Tests and Research

1.16.1 The engine was ground-tested by an approved AMO and found to be serviceable and operating normally.

1.17 Organisational and Management Information

1.17.1 This was a private flight.

1.17.2 The helicopter was properly maintained by an approved AMO, which had a valid certificate at the time of the accident.

1.18 Additional Information

1.18.1 None.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

- 2.1 The aircraft was serviceable prior to the accident and no record of any malfunction or defect that could have contributed to, or caused, the accident was found. This was supported by the on-site investigation and the engine-run performed by the AMO.
- 2.2 The prevailing weather conditions at the time were considered not to have been a factor in the accident.
- 2.3 On the takeoff roll, as the airspeed and altitude slowly increased, the low main rotor RPM horn sounded and the warning light came on. The pilot attempted to roll on the throttle to recover the drop in RPM, but to no avail. He then abandoned the takeoff due to trees and electrical cables nearby and opted to decrease speed and maintain altitude in order to extend the skidding distance. However, he said that he was unable to lower the collective as the altitude was already very low, so he reduced his speed slightly, easing back on the cyclic and keeping the helicopter as level as possible.
- 2.4 The aircraft touched the ground and skidded for approximately 7 m before the left skid dug into the grass shoulder at the edge of the runway. The helicopter rolled to the left, the main rotor blades struck the ground and the aircraft came to rest on its left side.
- 2.5 It is the writer's opinion that the pilot might have used poor technique during takeoff' which resulted in low main rotor RPM, and he failed to recover.

3. CONCLUSION

3.1 Findings

- 3.1.1 The aircraft had a valid certificate of registration and a valid certificate of airworthiness.
- 3.1.2 The maintenance records indicated that the aircraft had been maintained in accordance with existing regulations and procedures.
- 3.1.3 The pilot was correctly licensed and qualified for the flight in accordance with existing regulations.
- 3.1.4 The pilot was in possession of a valid medical certificate.
- 3.1.5 The helicopter was overloaded by 24.11 ilbs.

- 3.1.6 The weather, which was reported to be fine at the time, did not contribute to the accident.
- 3.1.7 The engine was inspected by an approved maintenance organisation and was found to be serviceable and operating normally.

3.2 Probable Cause/s

- 3.2.1 The left skid dug into the grass shoulder, causing the helicopter to roll onto its left side.

4. SAFETY RECOMMENDATIONS

- 4.1 None.

5. APPENDICES

- 5.1 None.

Report reviewed and amended by the Advisory Safety Panel on 20 April 2010.

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