



LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL
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Reference Number	CA18/2/3/10360						
Classification	Accident	Date	15 August 2023		Time	1123Z	
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Rand Airport (FAGM), Gauteng Province		Place of Intended Landing		Rand Airport (FAGM), Gauteng Province		
Place of Occurrence	Kromvlei (FAD 183), located 7.8nm southwest of FAGM						
GPS Co-ordinates	Latitude	26°21'32.90"S	Longitude	28° 4'58.49"E	Elevation	5018.4 ft	
Aircraft Information							
Registration	ZS-RVG						
Make; Model; S/N	Robinson; R44 Raven II (Serial Number: 10640)						
Damage to Aircraft	Substantial			Total Aircraft Hours	7 080.2		
Pilot-in-command							
Licence Type	Airline Transport Pilot Licence (ATPL) Helicopter		Gender	Male		Age	73
Licence Valid	Yes	Total Hours	23 327.4		Total Hours on Type	2 501.5	
Total Hours 30 Days	14		Total Flying on Type Past 90 Days	29.0			
People On-board	2+0	Injuries	1	Fatalities	0	Other (on ground)	0
What Happened							
<p>On Tuesday morning, 15 August 2023, a Robinson R44 Raven II helicopter with registration ZS-RVG was engaged in a training flight. On-board the helicopter were a Designated Flight Examiner (DFE) and a pilot with a Commercial Pilot Licence (CPL). The crew was conducting a CPL renewal flight. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>According to the crew, they took off from the Rand Airport (FAGM) at 1049Z and cruised at 6000 feet (ft) above mean sea level (AMSL) whilst routing to the general flying area (GFA) in the south of FAGM to perform the skills test as set out in the CPL competency check report (CA61-06.4). The crew completed hover checks and advanced manoeuvres and were busy with the emergency simulation procedures when the accident occurred. The DFE stated that they initiated an emergency simulation (limited cyclic) at 5 500 ft AMSL in a north-easterly direction and when they tried to recover whilst at 9 ft above ground, a crosswind from the left became strong. The DFE increased the throttle with the intention to initiate a climb, but the helicopter skid gears contacted the ground. The helicopter skidded for approximately 150 metres (m) before it impacted an anthill with the right skid gear. The helicopter entered a dynamic rollover and came to rest on its left side facing the direction from which it had approached. The helicopter sustained damage to both skid gears, main and tail rotor blades, tail boom and airframe. The crew sustained minor to serious injuries; they were air lifted to the hospital for medical observations.</p>							



Figure 1: Run-on landing at 074° heading.



Figure 2: The helicopter came to rest on its left side.

Wind Direction	275°-284°	Wind Speed	16kts	Visibility	9999m
Temperature	25°C	Cloud Cover	Nil	Cloud Base	Nil
Dew Point	-02.3°C	QNH	835.0hPa		

The weather information entered in the table above was issued by the South African Weather Service (SAWS) on 21 August 2023.

**ROBINSON
MODEL R44**

**SECTION 5
PERFORMANCE**

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PERFORMANCE**

GENERAL

IGE hover controllability has been substantiated in 17 knot wind from any direction up to 9600 feet (2930 meters) density altitude. Refer to hover performance charts for allowable gross weight.

Figure 3: Maximum crosswind. (Source: Robinson R44 Pilot's Operating Handbook)

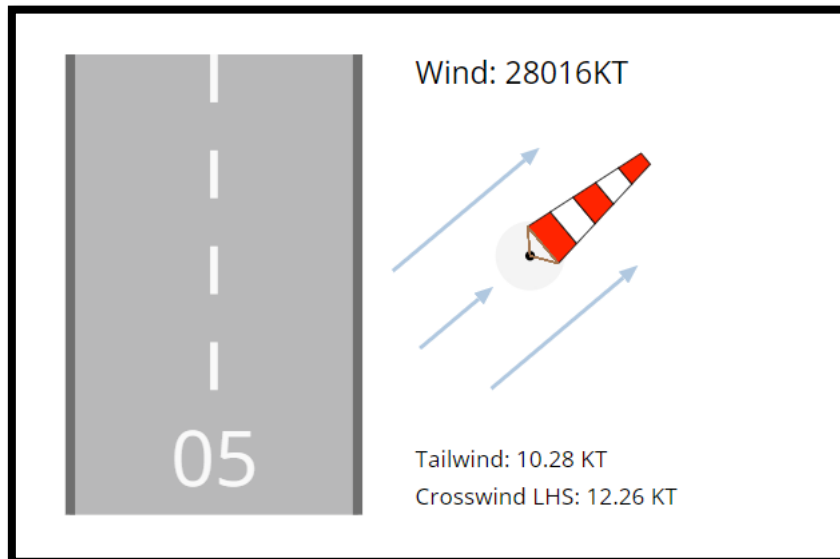


Figure 4: Crosswind and tailwind determination. (Source: <https://aerotoobox.com/crosswind>)

Findings		
1.	The DFE was issued an Airline Transport Pilot Licence (ATPL) Helicopter on 5 June 2023 with an expiry date of 30 June 2024.	
2.	The DFE's Class 1 medical certificate was issued on 7 February 2023 with an expiry date of 30 August 2023 with limitations.	
3.	The student pilot was last issued a Commercial Pilot Licence (CPL) Helicopter on 2 August 2021 with an expiry date of 31 July 2022. On the day of the accident, the licence had lapsed for more than a year. The student completed a familiarisation exercise on 14 August 2023. He was issued a renewed CPL on 7 September 2023 with an expiry date of 31 August 2024.	
4.	The pilot's Class 1 medical certificate was issued on 23 July 2023 with an expiry date of 24 July 2024 with no limitations.	
5.	The aircraft's last annual inspection was conducted on 7 July 2023 at 6984.6 Hobbs hours, after which a Certificate of Release to Service (CRS) was issued with an expiry date of 7 July 2024 or at 7084.6 Hobbs hours, whichever comes first.	
6.	The Certificate of Airworthiness (C of A) was originally issued on 1 April 2005 with an expiry date of 30 April 2024.	
7.	The Certificate of Registration (C of R) was issued to the present owner on 23 November 2017.	
8.	Explanation of the accident event during the limited cyclic exercise: The scenario is that <i>the pilot finds the cyclic has limited movement, and thus, the pilot must land the helicopter</i> . In this scenario, the DFE stated that the pilot could attempt to land using the rudder pedals and different power settings. The DFE demonstrated the exercise and he descended to 9 ft above ground level (AGL) as he wanted the pilot to realise that it is possible to control and land a helicopter with limited cyclic.	
9.	The maximum crosswind for the helicopter type is 17 knots. On the day of the accident, the crosswind was 12.6 knots.	
Probable Cause		
Loss of control of the helicopter during an attempt to recover from a stuck cyclic exercise whilst at 9 feet AGL. The helicopter settled on the ground and then skidded for 150m before the left skid collided with an anthill and it entered a dynamic rollover.		
Contributing Factor(s)		
None.		
Safety Action(s)		
None.		

Safety Message and/or Safety Recommendation/s
None.
About this Report
<p><i>The decision to conduct a limited investigation is based on factors including whether the cause is known and the evidence supporting the cause is clear, the level of safety benefit likely to be obtained from an investigation and that will determine the scope of an investigation. For this occurrence, a limited investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this limited report. The report has been compiled using information supplied in the initial notification, as well as from follow-up desk top enquiries to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar occurrence.</i></p> <p><i>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.</i></p>
Purpose
<p><i>In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011 and ICAO Annex 13, 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 apportion blame or liability.</i></p>
Disclaimer
<p><i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i></p>

**This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa**