



LIMITED ACCIDENT/INCIDENT INVESTIGATION
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Reference Number		CA18/2/3/9999					
Classification	Accident	Date	10 May 2021	Time	1115Z		
Type of Operation		Private (Part 91)					
Location							
Place of Departure		Krugersdorp Airfield (FAKR)		Place of Intended Landing		FAKR	
Place of Accident		Krugersdorp Airfield (FAKR), Runway 35					
GPS Co-ordinates		Latitude	S 26° 05' 06"	Longitude	E 27° 43' 45"	Elevation	5500 ft
Aircraft Information							
Registration		ZS-HDC					
Model/Make		Bell 47					
Damage to Aircraft		Substantial		Total Aircraft Hours		3876.9	
Pilot-in-command							
Licence Valid		Yes		Gender		Male	
						Age	
						60	
Licence Type		Private Pilot Licence (Helicopter)					
Total Hours on Type		197.7		Total Flying Hours		669.0	
People On-board		1 + 0	Injuries	0	Fatalities	0	Other (On Ground)
							0
What Happened							
<p>On 10 May 2021, a pilot on-board a Bell 47 helicopter with registration ZS-HDC took off from Krugersdorp Airfield (FAKR) to practise simulated engine failure (autorotation) exercises. The flight was conducted under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot stated that he entered the practise autorotation at 6300 feet (ft) above mean sea level (AMSL) with the intention to land on Runway 35. The autorotation was stable until the flare stage. The pilot reported that he had misjudged his height above ground and initiated the flare too late, resulting in a hard landing which caused the tail rotor to strike the ground and the main rotor blades to sever the tail boom. The helicopter came to rest in an upright position with the cabin collapsing onto the skids.</p> <p>The helicopter sustained substantial damage during the accident sequence, and the pilot was not injured.</p>							



Figure 1: The helicopter at the accident site. (Source: Pilot)



Figure 2: The helicopter's tail boom with the severed tail rotor. (Source: Pilot)

Helicopter Flying Handbook, Chapter 11 Autorotation:

The lower the speed desired at touchdown is, the more accurate the timing and speed of the flare must be, especially in helicopters with low-inertia rotor systems. If too much collective pitch is applied too early during the final stages of the autorotation, the kinetic energy may be depleted, resulting in little or no cushioning effect available. This could result in a hard landing with corresponding damage to the helicopter. It is generally better practice to accept more ground run than a hard landing with minimal groundspeed. As proficiency increases, the amount of ground run may be reduced.

Probable Cause: The pilot initiated the flare too late as he had misjudged the aircraft's height above ground, causing the tail rotor to strike the ground.	
Safety Action/s	
None.	
Safety Message and/or Safety Recommendation/s	
None.	
Purpose of the Investigation	
<i>In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 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 apportion blame or liability.</i>	
About this Report	
<i>Decisions regarding whether to investigate, and the scope of an investigation are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, no 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 brief report. The report has been compiled using information supplied in the initial notification, as well as follow-up information 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 accident.</i> <i>This report provides an opportunity to share safety message/s in the absence of an investigation.</i> <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>	
Disclaimer	
<i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i>	

This report is issued by:

**Accident and Incident Investigations Division
 South African Civil Aviation Authority
 Republic of South Africa**