

## AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8424	
<b>Helicopter Registration</b>	ZS-HTP	<b>Date of Accident</b>	18 January 2008		<b>Time of Accident</b>	0900Z
<b>Type of Helicopter</b>	Robinson 22		<b>Type of Operation</b>	Training		
<b>Pilot-in-command Licence Type</b>		Student	<b>Age</b>	24	<b>Licence Valid</b>	Yes
<b>Pilot-in-command Flying Experience</b>		Total Flying Hours	67.3		Hours on Type	67.3
<b>Last point of departure</b>		Virginia Aerodrome FAVG (Durban)				
<b>Next point of intended landing</b>		Virginia Aerodrome FAVG (Durban)				
<b>Location of the accident site with reference to easily defined geographical points (GPS readings if possible)</b>						
West of Ballito, Coordinates: S29° 30' 08" E031° 11' 1"						
<b>Meteorological Information</b>	Surface Wind:10 kt, Visibility: CAVOK					
<b>Number of people on board</b>	1 + 0	<b>No. of people injured</b>	0	<b>No. of people killed</b>	0	
<b>Synopsis</b>						
<p>The student pilot took off from Virginia aerodrome on a solo flight to the general flying area to practice the quick stop. She completed the exercises and had gone into transition when she saw telephone wires in close proximity. When she tried to avoid the wires by turning to the left, the tail rotor made contact with the wires.</p> <p>The student pilot sustained no injuries, but the helicopter sustained major damage to the tail boom, tail drive shaft, tail rotor gearbox, cabin and the skids.</p>						
<b>Probable Cause</b>						
<p>The helicopter's tail rotor made contact with the telephone wires and crashed.</p> <p>The accident was attributed to the pilot's failure to watch out for obstacles / hazards.</p>						
<b>IARC Date</b>				<b>Release Date</b>		

**AIRCRAFT ACCIDENT REPORT**

**Name of Owner/Operator** : Starlite Aviation  
**Manufacturer** : Robinson  
**Model** : R22  
**Nationality** : South Africa  
**Registration Marks** : ZS-HTP  
**Place** : West of Ballito  
**Date** : 18 January 2008  
**Time** : 0900Z

*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 On 18 January 2008 the student pilot took off from Virginia Aerodrome to the general flying area to practice quick stop exercises. After completion of the exercise she went into transition, and while in transition she saw telephone wires and tried to avoid them by turning to the left. The tail rotor made contact with the wires and the helicopter hit the ground.

**1.2 Injuries to Persons**

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

**1.3 Damage to Aircraft**

1.3.1 The helicopter sustained major damage to the tail boom, tail rotor drive shaft, tail rotor gearbox and blades, and the cabin was twisted and the skid bent.

**1.4 Other Damage**

1.4.1 Telephone wires sustained damage.

## 1.5 Personnel Information

Nationality	Botswana	Gender	Female	Age	24
Licence Number	* * * * *	Licence Type	Student		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Nil				
Medical Expiry Date	14 November 2008				
Restrictions	Nil				
Previous Accidents	Nil				

### Flying Experience:

Total Hours	67.3
Total Past 90 Days	67.3
Total on Type Past 90 Days	67.3
Total on Type	67.3

## 1.6 Aircraft Information

### Airframe:

Type	R22	
Serial Number	0827	
Manufacturer	Robinson	
Year of Manufacture	1988	
Total Airframe Hours (At time of Accident)	4534.6	
Last MPI (Date & Hours)	22 December 2007	4499.7
Hours since Last MPI	34.9	
C of A (Issue Date)	23 December 2005	
C of R (Issue Date) (Present owner)	25 April 2002	
Operating Categories	Standard	

### Engine:

Type	Lycoming O320-B2C
Serial Number	RL-14839-39A
Hours since New	6636.6
Hours since Overhaul	574.9

## 1.7 Meteorological Information

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

Wind direction	090°	Wind speed	10kt	Visibility	9999
Temperature	27°C	Cloud cover	4/8	Cloud base	5000'
Dew point	Unknown				

## **1.8 Aids to Navigation**

1.8.1 The helicopter was fitted with standard navigational equipment certified for this helicopter type. No abnormalities were reported prior to the accident.

## **1.9 Communications**

1.9.1 There was no communication between the accident helicopter and people on the ground. The helicopter was operated in a general flying area (uncontrolled airspace).

1.9.2 The helicopter was equipped with standard communication systems and none were reported unserviceable prior to or during the accident.

## **1.10 Aerodrome Information**

1.10.1 The accident did not occur at the aerodrome.

## **1.11 Flight Recorders**

1.11.1 The helicopter was not equipped with any flight recorders, which was not a regulatory requirement.

## **1.12 Wreckage and Impact Information**

1.12.1 During the transition the student pilot saw telephone wires in close proximity. When she tried to avoid them by turning to the left, the tail rotor made contact with the telephone wires and the helicopter crashed. The helicopter sustained major damage to the tail boom, tail rotor drive shaft, tail rotor gearbox and blades, and the cabin was twisted and the skid bent.

## **1.13 Medical and Pathological Information**

1.13.1 None.

## **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 damage to the cabin area minimal and the student pilot was properly restrained with the safety harness.

## **1.16 Tests and Research**

1.16.1 None.

## **1.17 Organisational and Management Information**

1.17.1 This was a training flight. The training school had a valid ATO (Aviation Training Organisation) approval.

1.17.3 The AMO (aircraft maintenance organisation) responsible for maintenance of the helicopter had a valid AMO approval certificate. The AMO was appropriately authorised to conduct maintenance on the type.

## **1.18 Additional Information**

1.18.1 None

## **1.19 Useful or Effective Investigation Techniques**

1.19.1 None.

## **2. ANALYSIS**

2.1 The student pilot took off from Virginia Aerodrome on a solo flight to the general flying area. After completion of the quick stop exercise and while in transition, the student pilot saw the telephone wires and tried to avoid them by turning to the left.

2.2 The student pilot failed to maintain a proper look-out. The tail rotor made contact with the telephone wires and crashed.

2.3 No evidence of maintenance anomalies and/or defects was reported by the pilot prior to and during the flight. The helicopter had flown for 34.9 airframe hours without any problem since the last MPI (mandatory periodic inspection).

2.4 Weather information from the pilot's questionnaire revealed that fine weather conditions prevailed in the area at the time of the flight and subsequent accident. Therefore it is concluded that weather was not a contributory factor to the accident.

## **3. CONCLUSION**

### **3.1 Findings**

3.1.1 The student pilot had a valid licence and was properly rated.

3.1.2 The pilot was practicing quick stops in the general flying area.

3.1.3 The pilot sustained no injuries at the time of the accident.

- 3.1.4 According to available records the helicopter was equipped and maintained in accordance with existing regulations.
- 3.1.5 The flight was duly authorised by the aviation training organisation.
- 3.1.6 The helicopter sustained major damage in the accident.
- 3.1.7 The helicopter collided with the telephone wires during transition after completing the quick stop exercise.
- 3.1.8 Weather was not a factor in this accident.

### **3.2 Probable Cause/s**

- 3.2.1 The helicopter's tail rotor made contact with the telephone wires and crashed.
- 3.2.2 The accident was attributed to the pilot's failure to look out for obstacles / hazards.

## **4. SAFETY RECOMMENDATIONS**

- 4.1 None.

## **5. APPENDICES**

### **Appendix A - Extract from the Rotorcraft flying handbook**

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

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## Appendix A - Extract from the Rotorcraft flying handbook

5.1 The information below is an extract from the Rotorcraft flying handbook.

5.1.1 Quick stop (Rapid deceleration). In normal operations, use the rapid deceleration or quick stop manoeuvre to slow the helicopter rapidly and bring it to a stationary hover. The manoeuvre requires a high degree of coordination of all controls. It is practiced at an altitude that permits a safe clearance between the tail rotor and the surface throughout the manoeuvre, especially at the point where the pitch attitude is highest. The altitude at completion should be no higher than the maximum safe hovering altitude prescribed by the manufacturer. In selecting an altitude at which to begin the manoeuvre, you should take into account the overall length of the helicopter and the height/velocity diagram. Even though the manoeuvre is called a rapid deceleration, it is performed slowly and smoothly with the primary emphasis on coordination.

The information below is an extract from the aviation training school's procedure.

5.1.2 The main use of quick stop is for emergency situations, where the pilot is required to make an abrupt halt to the helicopter's forward motion. An example could be on an approach to landing noticing wires in front of the helicopter; a quick stop could be attempted to avoid collision with the wires. The quick stop also is the introduction for the low level engine cut exercise. It is a very good coordination exercise.

### ***The technique is explained as follows:***

- Set the helicopter up at 50 feet AGL, normal cruise speed.
- Tail rotor clearance is essential.
- Fly level with the ground for about 100 m.
- Helicopter balanced, level and speed not too high.
- Lead with collective, lower first.
- Before helicopter sinks apply aft cyclic.
- Reduce speed but maintain height.
- Pedal control very important.
- Keep the nose lined up on the reference point.
- Progressively increase the attitude without gaining/losing height until you have the top of the instrument panel level with the horizon. As you reach 40 KIAS, lower the attitude to place the woolometer on the horizon.
- Increase collective to prevent a descent, check yaw with pedal.
- Check cyclic forward and to the left whilst applying collective as you go through transition (approaching the hover).
- As the helicopter is about to stop, apply forward cyclic (especially in strong headwinds).
- Level fuselage.
- Apply collective to prevent sinking.
- Maintain a stable hover.
- Descend to normal hover height 3-5 feet AGL.
- To prevent an over speed in RPM, monitor the gauge, if you do the exercise not too harshly, it should not happen. The needles might split a little.

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