



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8338	
Aircraft Registration	ZS-RRF	Date of Accident	28 July 2007	Time of Accident	1445Z	
Type of Aircraft	Robinson R22		Type of Operation	Training		
Pilot-in-command Licence Type		Student	Age	37	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	73.0	Hours on Type	38.7	
Last point of departure		Kimberley Aerodrome (FAKM) – Northern Cape				
Next point of intended landing		Kimberley Aerodrome (FAKM)– Northern Cape				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
In the Vaal River at the General Flying Area (GFA) approximately 40 km North of Kimberley Aerodrome. GPS points: S28°30.761' E024°40.962' and elevation of 3332 feet.						
Meteorological Information		Clouds: Nil, Visibility: 10km, Wind: 300 ⁰ /05kts, Temperature: 11°C, Freezing level: 6000ft AMSL.				
Number of people on board	1 + 0	No. of people injured	0	No. of people killed	1	
Synopsis						
<p>On Saturday 28 July 2007 at 14H00Z, the pilot, who was the sole occupant of the accident helicopter, took off from FAKM on a solo training flight to the Kimberley General Flying Area (KGFA). The aircraft collided with the high tension power lines which were spanned across the Vaal River on his flight back to the departed aerodrome. The aircraft crashed into the water and was then submerged under the water. On 13 August, the pilot's body was found and certified as fatally injured.</p>						
Probable Cause						
<p>The aircraft collided with power lines and crashed into the Vaal River. Contributing factors: The aircraft was flown at a low altitude. The pilot failed to see and identify a hazard whilst he was flying at a low altitude.</p>						
IARC Date				Release Date		



AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Westline Aviation
Manufacturer : Robinson
Model : R22
Nationality : South African
Registration Marks : ZS-RRF
Place : Riverton
Date : 28 July 2007
Time : 1445Z

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 Saturday 28 July 2007 at 1400Z, the pilot, who was the sole occupant in the accident helicopter, took off from FAKM on a solo training flight to the Kimberley General Flying Area (KGFA).
- 1.1.2 At 1625Z the training school informed the authorities [Kimberley Air Traffic Control (KATC), and the South African Police Services (SAPS)] who then informed the authority [South African Civil Aviation Authority (SACAA)] that the aircraft was missing.
- 1.1.3 The SAPS reported that there had been a helicopter crash in the Kimberley Area in Riverton. They also reported that the helicopter had impacted with high tension electrical wires and had crashed into the Vaal River before it was submerged.

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed during the impact sequence with high tension electrical wires and water. See photo 1 and 2.



Photo 1 showing damage to the helicopter.



Photo 2 damage to the starboard side of the helicopter.

1.4 Other Damage

1.4.1 The only other damage was to the electrical cables which failed and had to be replaced. The river was contaminated by fuel when the right-hand fuel tank ruptured during the impact sequence. See photo 3 and 4.



Photo 3 showing the accident site.



Photo 4 showing the submerged helicopter and contamination to the river.

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	37
Licence Number	*****	Licence Type	Student (Helicopters)		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 January 2009				
Restrictions	None				
Previous Accidents	None				

1.5.1 The pilot started his flying career in November 2004. The pilot applied for a Student Pilot's Licence (SPL) fixed wing on 09 November 2004. The student pilot's licence was issued on 02 December 2004 with an expiry date of 01 December 2005. The SPL had the following ratings: Piper PA-28/140/150/151/160/161/180/181.

- 1.5.2 On 23 March 2005 the pilot had his medical test done and on 07 April 2007 a medical certificate was issued which found him unfit from 23 March 2005. The regulator suspended his SPL fixed wing from 12 April 2005 due to his medical report.
- 1.5.3 There were no records for the period 13 April 2005 to 03 January 2007 on the regulators records.
- 1.5.4 On 04 January 2007 the pilot was issued with a Class 2 medical certificate with an expiry date of 31 January 2009.
- 1.5.5 On 10 January 2007 the pilot applied for an SPL fixed wing and the SPL was issued on 21 February 2007 with an expiry date of 20 February 2008.
- 1.5.6 On 02 May 2007 he successfully wrote his examination and on 26 April 2007 he successfully passed his practical test for private pilots at a total of 73.00 flying hours.
- 1.5.7 He applied for a Private Pilot's Licence (PPL) fixed wing on 26 April 2007 and the PPL was issued on 03 May 2007 with an expiry date of 02 May 2008.
- 1.5.8 On 19 July 2007 the pilot applied for SPL helicopters and the SPL was issued on the same day with an expiry date of 18 July 2008. The SPL had the ratings for a Robinson R22 and R44 Astro/ Clipper and Raven. However, the pilot wrote his aircraft type technical on 23 July 2007.
- 1.5.9 The pilot flew solo exercise 30 at 0455Z for 3.1 flying hours. At 0900Z he flew the following solo exercises; 14, 19 and 21 for 1.3 flying hours. At 0930Z he flew dual exercises 21,23,25,26 and 29 for 1.5 flying hours and all these flights were uneventful. At 1400Z and following the abovementioned flights, the pilot was signed off for a solo training flight by his instructor. The pilot flew a total of 6.3 flying hours on the day of the accident prior to the crash.

Flying Experience:

Total Flying Hours	73.0
Total Flying Hours (Helicopters)	41.2
Total Past 90 Days	41.2
Total on Type Past 90 Days	38.7
Total on Type	38.7

1.6 Aircraft Information

Airframe:

Type	R22	
Serial Number	3476	
Manufacturer	Robinson	
Date of Manufacture	2003	
Total Airframe Hours (At time of Accident)	1031.0	
Last MPI (Date & Hours)	20 July 2007	994.5
Hours since Last MPI	36.5	
C of A (Issue Date)	03 October 2003	
C of R (Issue Date) (Present owner)	08 October 2003	
Operating Categories	Standard	

Engine:

Type	Textron-Lycoming (O-360-J2A)
Serial Number	L-39147-36A
Hours since New	1031.0
Hours since Overhaul	TBO not reached

- 1.6.1 The helicopter was newly imported in 2003. On 08 September 2003 an application for the registration of the helicopter was received by the regulator and the helicopter was registered on the same day.

1.7 Meteorological Information

- 1.7.1 The following weather information was issued by the South African Weather Services.

Wind direction	300°	Wind speed	05kts	Visibility	10 km +
Temperature	11°C	Cloud cover	Nil	Cloud base	Nil
Dew point	Not Known				

- 1.7.2 Kimberly Aerodrome issued the following METAR at 1500Z

Wind direction	290°	Wind speed	06kts	Visibility	CAVOK
Temperature	11°C	Cloud cover	Nil	Cloud base	Nil
Dew point	Not Known				

1.8 Aids to Navigation

- 1.8.1 The helicopter was fitted with standard navigational aids certified for this type of aircraft and there was no record of reports of failures on the navigational aids prior to the accident.

1.9 Communications

1.9.1 The helicopter was fitted with standard communication aids certified for this type of aircraft and there was no record of reports of failures on the communication aids prior to the accident.

1.10 Aerodrome Information

1.10.1 The accident occurred in the Vaal River at KGFA in Riverton 16 kilometres north of Kimberley Town at the following coordinates: S28°30.761' E024°40.962' at an elevation of 3332 feet. See photo 4.

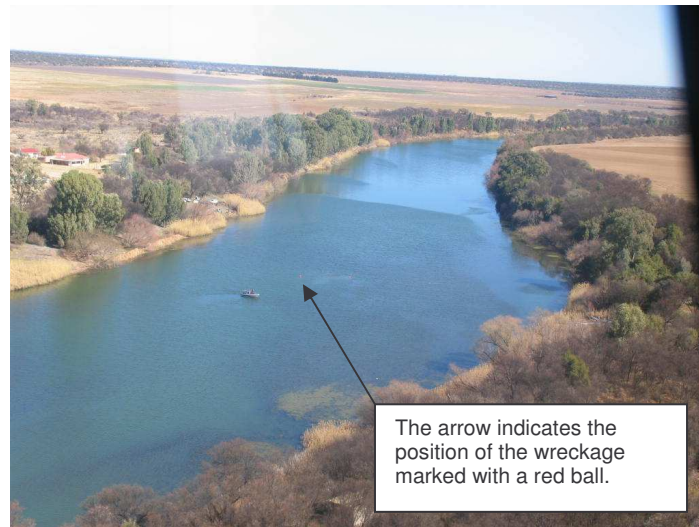


Photo above indicates the accident site (Photo 4).

1.11 Flight Recorders

1.11.1 The helicopter was not fitted with a Cockpit Voice Recorder (CVR) or a Flight Data Recorder (FDR) and it was not a regulatory requirement for the helicopter to be fitted with such recorders.

1.12 Wreckage and Impact Information

1.12.1 The helicopter impacted with electrical wires, which were approximately 10-12 metres high in a straight and level attitude with its main rotor mast before it was flipped over the wires, and in the process the main rotors severed the tail boom.

1.12.2 The helicopter subsequently impacted with the surface of the water on its starboard side before it submerged.

1.12.3 The rest of the airframe was badly wrinkled, this included the firewall and the engine thrust mountings, which failed at some areas and were also bent.

1.12.4 The helicopter came to rest on its starboard side at the bottom of the river, which was approximately 04 metres deep.

1.13 Medical and Pathological Information

1.13.1 The pilot was fatally injured and the cause of death was determined as multiple injuries.

1.13.2 The blood toxicology report revealed the following:

- a. No drugs could be detected.
- b. No alcohol could be detected.

1.14 Fire

1.14.1 There was no evidence of a pre or post-impact fire.

1.15 Survival Aspects

1.15.1 As a result of the pilot being ejected out of the helicopter and the impact forces exerted to the pilot's body during ejection and impact with the water being fairly high, this accident was considered as not being survivable. It was not established if the pilot was strapped in.

1.16 Tests and Research

1.16.1 The airframe and its systems were inspected following this accident and the investigating team concluded that, all damage observed was as the result of the accident sequence. This was evidenced by the load failures observed during inspection of the wreckage.

1.16.2 The engine was removed from the wreckage and taken to an approved maintenance facility which had extensive experience on the engine type. The inspection was conducted in the presence of the SACAA investigators. Visual inspection was carried out and no anomalies were observed. The engine inspection and examination included internal mechanical inspection. The AMO concluded that apart from the damage caused by the impact, nothing abnormal was found and the engine appeared to have been serviceable prior to the impact.

1.17 Organisational and Management Information

1.17.1 The AMO, which was responsible for the maintenance of the aircraft, had a valid certificate (AMO/966). The last audit inspection prior to the accident was carried out on 16 July 2007.

1.17.2 The training school had a valid accreditation certificate (CAA/0038) at the time of the accident issued on 28 March 2007. The last audit inspection prior to the accident was carried out on 07 March 2007. According to available records at the time of compiling this report, the school was maintaining a very high standard of training administration.

1.18 Additional Information

It is not known why the pilot flew low.

1.19 Useful or Effective Investigation Techniques

1.19.1 None

2. ANALYSIS

- 2.1 The pilot was correctly licensed and was the holder of a valid medical certificate. The post-mortem results revealed that the pilot's death was due to multiple injuries.
- 2.2 The aircraft in question was serviceable prior to the accident and no record of any malfunction or defect was recorded that could have contributed, or caused the accident. This was also supported by on-site investigation and the engine teardown inspection from the maintenance organisation.
- 2.3 The prevailing weather conditions at the time of the incident were considered not to have been a factor in this accident, with the reported surface wind being from the north-west at 05 knots. "Clear sky" weather conditions were reported at the time of the accident.
- 2.4 The pilot flew a total of 6.3 flying hours on the day of the accident.
- 2.5 The aircraft collided with the high tension power lines which were spanned across the Vaal River and then it submerged into the river under the water. It is concluded that the pilot was flying low and could not see the high tension wires which were spanned across the river. It also appears that the pilot might have been fatigued due to the fact that he flew 6.3 hours on the day of the accident. Pilot was authorised to fly to the GF. Reason for flying low is unknown.

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 was maintained in accordance with existing regulations and procedures.
- 3.1.3 All control linkages were accounted for, and all damage to the aircraft was attributed to the severe impact with the water. Damage caused also by the wires.
- 3.1.4 The pilot was correctly licensed and qualified for the flight in accordance with existing regulations.

- 3.1.5 There was no evidence that incapacitation or physiological factors had affected the pilot's performance.
- 3.1.6 The aircraft collided with high tension wires, which were spanned across the Vaal River.
- 3.1.8 The blood toxicology report revealed the following:
 - a. No drugs could be detected.
 - b. No alcohol could be detected.

3.2 Probable Cause/s

- 3.2.1 The aircraft collided with power lines and crashed into the Vaal River.
- 3.2.2 Contributing factors:
 - The aircraft was flown at a low altitude.
 - The pilot failed to see and identify a hazard whilst he was flying at a low altitude.

4. SAFETY RECOMMENDATIONS

- 4.1 None.

5. APPENDICES

- 5.1 None.

Submitted through the office of the SM.