AIRCRAFT ACCIDENT SHORT REPORT

CA18/2/3/9690: ZU-RLK, High rate of descent during landing sequence

Date and time	**:** 2 March 2018, 1430Z
Location	**:** Vivo, Limpopo Province
Occurrence category	**:** Category 2
Occurrence type	**:** Accident
Aircraft registration	**:** ZU-RLK
Aircraft manufacturer and model	**:** RAF 2000 GTX FI
Last point of departure	**:** Private farm in the Alldays area, Limpopo Province
Next point of intended landing	**:** Private landing strip in the Vivo area, Limpopo Province
Location of accident site with reference to easily defined geographical points (GPS readings if possible)	**:** S23°02'0.9" E029°11'22.65"
Meteorological Information	**:** Wind: 045°/8 kt, temperature: 30°C, CAVOK
Type of operation	**:** Private (Part 94)
Persons on board	**:** 1
Injuries	**:** Minor
Damage to aircraft	**:** Substantial

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 (2011) this report was compiled in the interests of the promotion of aviation safety and the reduction of the risk of aviation accidents or accidents and ***not to establish blame or liability****.*

Disclaimer:

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

SYNOPSIS

The pilot, being the sole occupant on-board the gyrocopter, departed a private aerodrome near the town of Alldays with the intention of flying to another private aerodrome near the town of Vivo in the Limpopo Province.

Approximately 10 minutes after take-off, the gyrocopter experienced an electrical failure. The failure was assumed on the basis that the digital meters (engine and rotor tachometers) had gone blank. Voltmeter indication was not considered as a reference by the pilot to verify that an electrical failure had indeed occurred.

The pilot carried out a precautionary landing on a gravel road he identified from the air in order to investigate the cause of the electrical failure. At a height of approximately 50 ft above ground level (AGL), the gyrocopter suddenly descended rapidly, resulting in it impacting hard with the road surface. The pilot reported that prior to ground impact, he applied full power, but the gyrocopter continued to descend. From the time of experiencing the electrical failure to the point of coming to rest, approximately two minutes elapsed.

The gyrocopter skidded for 60 m then rolled over to the right during the landing sequence, and was substantially damaged. The pilot received minor injuries.

FACTUAL INFORMATION

- The pilot held a valid national pilot's licence (NPL) and held the required rating to operate the gyrocopter.
- The pilot held a valid aviation medical certificate at the time of the accident.
- The gyrocopter held a valid Certificate of Release to Service and Authority to Fly.
- The last maintenance recorded on this gyrocopter was certified on 18 December 2017.
- The root cause of the electrical failure could not be determined with certainty.
- The airspeed indicator was mechanically driven through the pitot tube, which was located in the nose of the gyrocopter. It would have remained operational even in the case of a complete electrical failure.
- No on-site investigation was conducted by the Accident and Incident Investigation Division (AIID).
- When flown at a slow forward airspeed, the rate of descent for gyrocopters is very high. The Federal Aviation Administration (FAA)'s *Rotorcraft Flying Handbook* further states: *"An unintentional high rate of descent can also occur as a result of failing to monitor and maintain proper airspeed. In powered flight, if the gyro plane is flown below minimum level flight speed, a descent results even though full engine power is applied."* This explains the reason why a positive rate of climb was not attained prior to the gyrocopter impacting the ground.
    - Aeronautical decision-making was made impulsively. A more thorough fault-finding process was required to verify the true extent of the failure and whether there was a good chance of successfully carrying out corrective action prior to committing to the precautionary landing.
    - According to the pilot, all instruments fitted to the gyrocopter were of a digital type except the airspeed indicator. (No evidence of the instrument panel could be provided.) During full electrical failure, the pilot would be left with only airspeed as a reference.

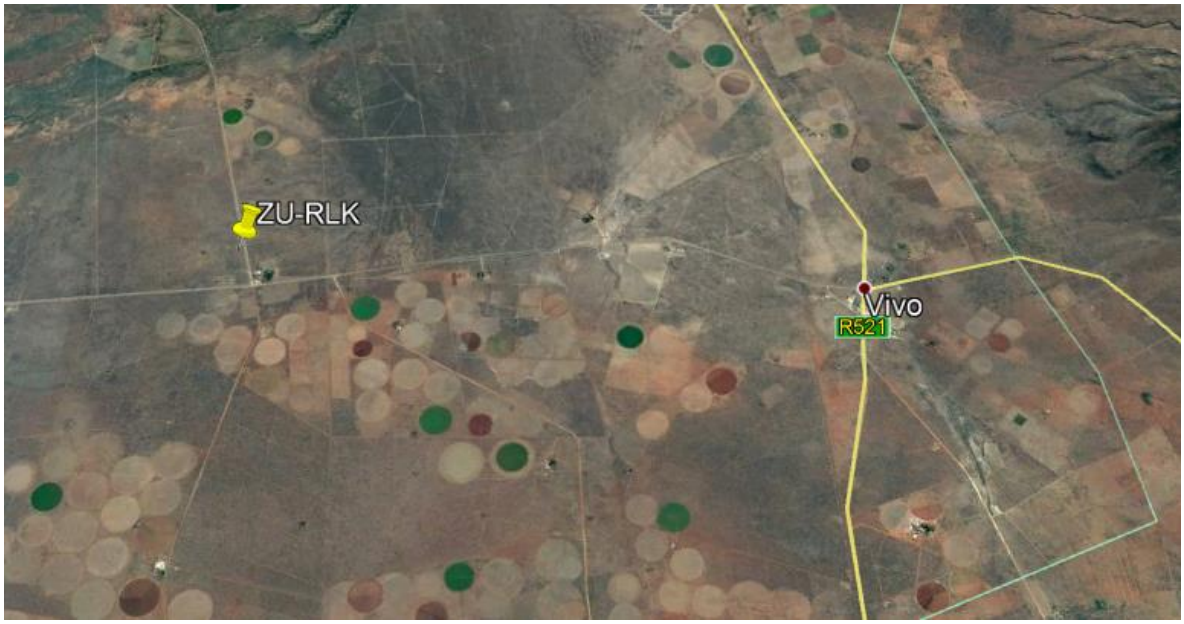

Figure 1: Location of the accident in relation to the town of Vivo

Figure 2: The gyrocopter as it came to rest

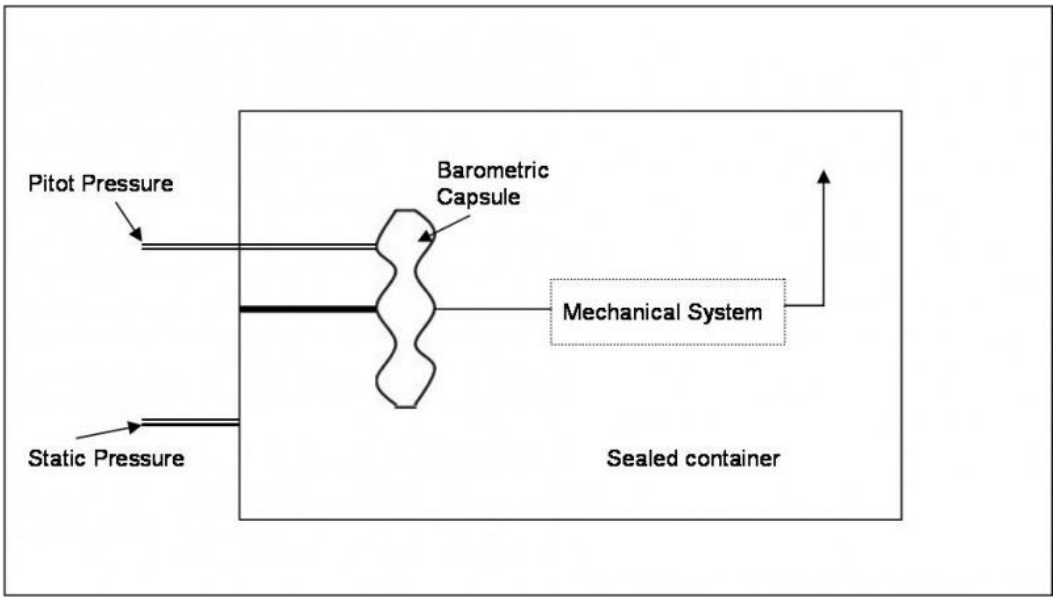

Figure 3: An example of a simple airspeed indication system with no electrical input (www.skybrary.aero)

PROBABLE CAUSE

The probable cause of the accident was as a result of an unsuccessful forced landing.

REFERENCES USED ON THE REPORT

Rotorcraft Flying Handbook, FAA, www.rafsa.co.za

SAFETY RECOMMENDATIONS

None

ORGANISATION

This was a private flight.

TYPE OF SAFETY ACTION

None.

SAFETY MESSAGE

Pilots who operate gyrocopter aircraft are reminded of the hazards of flying at very low forward airspeeds. The pilot operating handbook should be adhered to when doing slow flying, and minimum height above ground level should always be maintained.

Further emphasis should be placed on emergency procedure fault-finding and rectification, as well as aeronautical decision-making during training for gyrocopter pilots.