AIRCRAFT ACCIDENT SHORT REPORT

CA CA18/2/3/9766: A gyrocopter was flown at a low height, collided with a tree and fatally injured a spectator.

Date and time	:	10 February 2019 ,09:45Z
Aircraft registration	:	ZU-DXL
Aircraft manufacturer and model	:	Magni Gyro M 22
Last Point of departure	:	Sunset Shores, Vaal Marina , Gauteng
Next point of intended landing	:	Sunset Shores, Vaal Marina , Gauteng
Location of accident site with reference to easily defined geographical points (GPS readings if possible)	:	26° 51' 0" South 28° 11' 24" East
Meteorological Information	:	Wind: 280°/10kts, Temperature: 28°C, Visibility 9999m
Type of operation	:	Operation of Non-Type Certificated Aircraft (Part 94)
Persons on board	:	1+1
Injuries	:	Both occupants on-board sustained minor injuries and one bystander was fatally injured
Damage to aircraft	:	Minor damage

All times given in this report are Coordinated 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 interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or accidents and ***not to apportion blame or liability.***

Disclaimer:

1 SYNOPSIS

1.1 A pilot and a passenger were on an operation to scatter the ashes of the passenger's father in the Vaal River. After completing the operation, the pilot decided to carry out a low fly past over the spectators who were witnessing the scattering of the ashes. Whilst on a low fly past, the pilot impacted one of the trees, resulting in the instability of the gyrocopter and loss of height before the main rotor struck one of the spectators.

1.2 The investigation revealed that the gyrocopter was operated at a low height and thus, impacted a tree, which rendered it (gyrocopter) unstable while losing height before striking one of the spectators. The gyrocopter impacted the ground hard and this resulted in the nose gear separating.

2. FACTUAL INFORMATION

2.1 On Sunday, 10 February 2019 at 0915Z, a pilot and a passenger departed Sunset Shores Aerodrome near the Vaal Marina area in Gauteng Province. The purpose of the flight was to scatter the ashes of the passenger's deceased father. The flight was carried out under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011.

2.2 The pilot reported that the engine's performance had rapidly degraded and had elected to carry out a precautionary landing in an open area next to the Vaal Dam. While in short final approach, the pilot banked to the left to better align the gyrocopter with the intended landing area when one of the rotor blades impacted a tree. Once the gyrocopter had landed and the engine shut down, a spectator notified the pilot that one of the rotor blades of the gyrocopter had struck a spectator. The gyrocopter sustained minor damage on the nose gear, rotor blades and tail fin. The pilot and the passenger sustained minor injuries while a spectator was fatally injured.

2.3 Video evidence showed the gyrocopter flying along the river before going inland and passing over houses. It was seen flying below the treetop prior to impacting one of the trees. After the impact, the gyrocopter became unstable before its rotor stroke one of the spectators.

2.4 Following the accident, no fault could be found with the engine and the gyrocopter systems and specifically no reason for the alleged degrading of the engine's performance could be established. The damage sustained by the gyrocopter was because of the impact with the ground.

2.5 The pilot reported that the weather prior to the accident flight was: Wind: 280°/10kts, Temperature: 28°C, Visibility 9999m at a geographical position that was determined to be 26° 51' 0" South 28° 11' 24" East.

Figure 1: Google Earth image of the final flight path. (Source: Google Earth)

Figure 2: The tree clipped by the gyrocopter.

Figure 3: The Gyrocopter as it came to rest.

2.6 The regulation CAR Part 91.06.32 states that *no aircraft shall be flown over an open-air assembly of persons at a height less than 1000 feet above the highest obstacle, within a radius of 2000 feet from the aircraft. No aircraft shall circle over or do repeated overflights over an open-air assembly of persons at a height less than 3000 feet above the surface.* See Appendix 1.

3 FINDINGS

3.1 Man

3.1.1 The pilot had a national pilot licence (NPL) issued on 18 February 2014. The last skills test was carried out on 28 February 2017, with an expiry date of 27 February 2019. The pilot held the necessary gyrocopter (aircraft) rating and category to operate the gyrocopter and had 159.3 hours on type with total flying time of 1934.6 hours.

3.1.2 The pilot had a valid class two aviation medical certificate which was issued on 17 October 2018, with an expiry date of 31 October 2019. There was a restriction for the pilot to wear corrective lenses.

3.2 Machine

3.2.1 The gyrocopter was issued with a certificate of registration on 21 February 2017.

3.2.2 The last maintenance mandatory periodic inspection (MPI) was conducted on 6 March 2018 at 744.5 hours. The gyrocopter was issued with a certificate of release to service on 6 March 2018 with an expiry date of 4 March 2019 or at 844.5 airframe hours (whichever elapses first). The gyrocopter had flown 68.4 hours since its last MPI.

3.2.3 The gyrocopter was issued with an authority to fly on 10 April 2018, with an expiry date of 5 April 2019. There were no listed defects prior to the flight, neither did the pilot report any defects prior flight.

3.2.5 A ground run and visual inspection was carried out after the recovery of the gyrocopter. The engine operated normally and no defects were prevalent. No defects were found with the airframe and its systems.

3.4 **Environment**

3.4.1 The flight was conducted under visual flying rules (VFR) by day. Fine weather conditions prevailed at the time of the accident.

3.4.2 The pilot reported the weather prior to the accident flight to be: Wind: 280°/10kts, Temperature: 28°C, Visibility 9999m. The pilot did not obtain an official weather report.

3.4.3 Video evidence showed the gyrocopter flying along the river before going inland and passing over houses. It was seen flying below the treetop prior to impacting one of the trees. After the impact, the gyrocopter became unstable before its rotor blade stroke one of the spectators.

3.4.4 The pilot was flying low above the gathering of people, which is in contravention of the CAR 2011, Part 91.06.32.

3.4.5 The investigation revealed that the gyrocopter was operated at a low height and thus, impacted a tree, which rendered it (gyrocopter) unstable while losing height before striking one of the spectators with its rotor blade. The gyrocopter impacted the ground hard and this resulted in the nose gear separating.

4 PROBABLE CAUSE

4.1 The gyrocopter was operated at a low height and thus, impacted a tree, which rendered it (gyrocopter) unstable while losing height before striking one of the spectators with its rotor blade.

5 CONTRIBUTING FACTORS

5.1 None.

6 SAFETY RECOMMENDATION

6.1 None.

7 ORGANISATION

7.1 This was a private flight conducted under the provisions of SA-CARs Part 94.

8 TYPE OF SAFETY ACTION

8.1 None.

9 APPENDICES

9.1 Appendix A: CAR 2011, Part 91

Appendix A

Minimum heights

91.06.32 (1) Except when necessary for taking off, or landing, or except with prior written approval of the Director, no aircraft—

(a) shall be flown over congested areas or over an obvious open-air assembly of persons at a height less than 1 000 ft above the highest obstacle, within a radius of 2 000 ft from the aircraft;

(b) when flown elsewhere than specified in paragraph (a), shall be flown at a height less than 500 ft above the ground or water, unless the flight can be made without hazard or nuisance to persons or property on the ground or water and the PIC operates at a height and in a manner that allows safe operation in the event of an engine failure; and

(c) shall circle over or do repeated overflights over an obvious open-air assembly of persons at a height less than 3 000 ft above the surface.

(2) A helicopter shall be permitted to be flown at heights less than those prescribed in subregulation (1) (a), provided that—

(a) the operation is conducted without unnecessary nuisance or hazard to persons and property on the ground or water; and

(b) the PIC operates at a height and in a manner that allows safe operation in the event of an engine failure.

(3) Except when necessary for take-off or landing, or with the express permission of the Director, an aircraft shall at night, in IMC or when operated in accordance with IFR, be flown—

(a) at a height of at least 1 000 ft above the highest terrain or obstacle where the height of such terrain or obstacle does not exceed 5 000 ft above sea level within 5 NM of the aircraft in flight; or

(b) at a height of at least 2 000 ft above the highest terrain or obstacle located within 5 NM of the aircraft in flight where the height of such terrain or obstacle exceeds 5 000 ft above sea level: Provided that within areas determined by the Director the minimum height may be reduced to 1 000 ft above the highest terrain or obstacle located within 5 NM of the aircraft in flight, and the aircraft is flown in accordance with such procedures as the Director may determine.

(4) The PIC of an aircraft shall, in addition to the requirements of this regulation, comply with any altitude restrictions prescribed for the area or route to be operated within or over.

[Editorial Note: Height restrictions may also be imposed by other persons than the Director. Such restrictions may be found in Volume 1 of “Aviation Law in South Africa” in the section Miscellaneous Legislation and in the AICs.]