SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Accident and Incident Investigations Division** Form Number: CA 12-57

LIMITED ACCIDENT INVESTIGATION REPORT

Reference Number	CA18/2/3/10183										
Classification	Accident		**Date**	4 July 2022			**Time**	1300Z			
Type of Operation	Training (Part 141)										
Location											
Place of Departure	Wagtail Aviation Airfield, Free State Province			Place of Intended Landing			Wagtail Aviation Airfield, Free State Province				
Place of Accident	Runway 06 at Wagtail Aviation Airfield, Free State Province										
GPS Co-ordinates	Latitude	S 26°53'34.8"		Longitude	E 27°41'23.7"		Elevation	4740 ft			
Aircraft Information											
Registration	ZU-RKM										
Make/Model	Trojan (Serial Number: 1310)										
Damage to Aircraft	Substantial			Total Aircraft Hours			946.3				
Pilot-in-command											
Licence Valid	Yes		Gender		Male		Age	49			
Licence Type	National Pilot Licence (NPL)										
Total Hours on Type	514.6			Total Flying Hours			370.0				
People On-board	2 + 0	Injuries	0	Fatalities	0		Other (On Ground)	0			
What Happened											

On 4 July 2022, an instructor and a student pilot on-board a tandem two-seater Trojan gyrocopter with registration ZU-RKM were on a circuit training flight at Wagtail Aviation Airfield, Free State province. The flight was conducted in visual meteorological conditions (VMC) by day and under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

The student pilot stated that he completed four touch-and-go circuits on Runway 06 and was on the fifth circuit, with the intention to conduct a full stop landing, whilst the instructor was monitoring the exercises. During the round-out and flare, the gyrocopter was too close to the ground and he lifted the nose high to avoid impacting the ground hard. Thereafter, he lowered the nose, but it was too late because the gyrocopter had lost height and the main rotor blade impacted the runway, followed by the main landing gears. The aircraft rolled over onto its left-side and came to rest in that position.

The duo then shut down the engine and evacuated the gyrocopter, they were uninjured. The gyrocopter sustained substantial damage to the propeller blades, main rotor blades and the left-side of the fuselage.

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

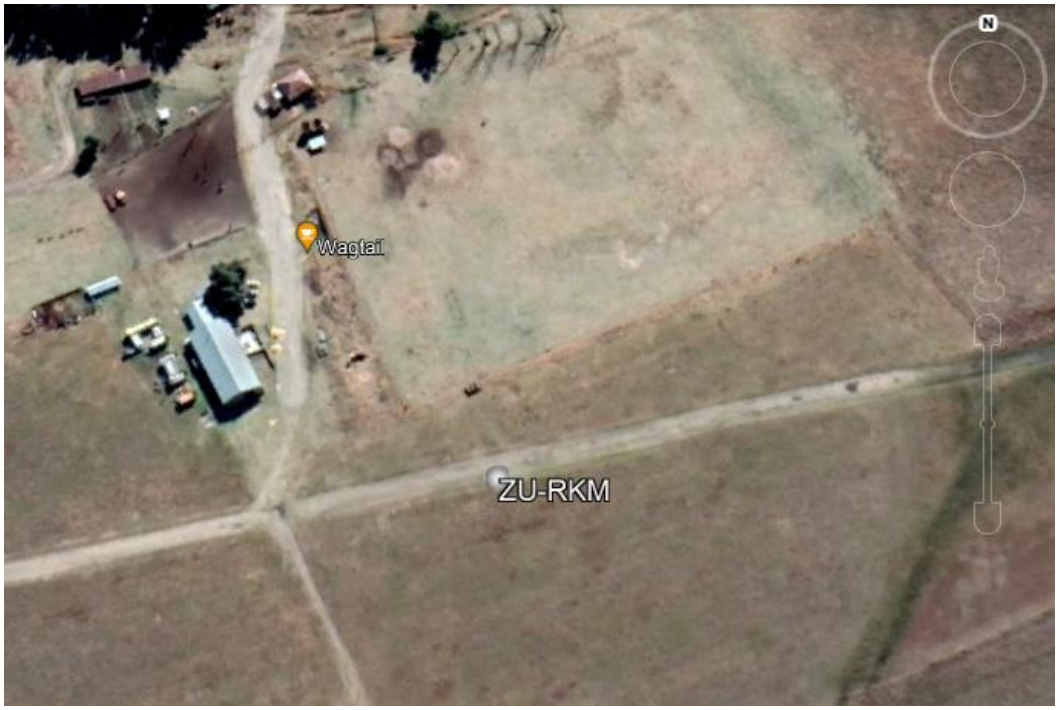

Figure 2: Aerial view of the accident site. (Source: Google Earth)

What was found:

- The student pilot was issued a Recreational Student Licence (National Pilot Learners Certificate) on 9 June 2021 with an expiry date of 8 June 2022, hence, the student pilot's licence was not valid at the time of the accident. A Class 4 medical certificate was issued to the student pilot on 10 May 2021 with an expiry date of 31 May 2024, and with corrective lenses and cardiovascular protocol restrictions. The gyrocopter was endorsed on his licence.

- The student pilot had a total of 58.5 flying hours, of which 8.2 were on the gyrocopter type.

- The instructor was issued a National Pilot Licence (NPL) on 2 September 2021 with an expiry date of 1 September 2023. A Class 4 medical certificate was issued to the instructor on 19 July 2021 with an expiry date of 19 July 2023, and with corrective lenses restriction. The gyrocopter was endorsed on his licence.

- The instructor was issued a Gyro Instructor Grade C on 2 September 2021 with an expiry date of 1 September 2023. He had a total of 514.6 flying hours, of which 370 were on the gyrocopter type.

- The last inspection carried out on the aircraft prior to the accident flight was a 100-hour service on 21 June 2022 and was certified at 945.0 airframe hours. The aircraft was issued a Certificate of Release to Service (CRS) on 21 June 2022 with an expiry date of 21 June 2023 or at 1000.0 hours of flight time, whichever occurs first unless the aircraft is involved in an accident or becomes unserviceable.

- The aircraft was initially issued an Authority to Fly (ATF) on 25 September 2019 with an expiry date of 30 September 2022.

- The flight school was issued a Declared Training Organisation (DTO) certificate on 31 May 2022 with an expiry date of 31 March 2023.

- Section 3: Approach and Landing (Source: Trojan Pilot Operating Handbook)

  3.6.2 The landing

  As you descend with a stable glide slope, at approximately 8m above ground, ease the cyclic back to arrest the rate of decent. This is called the round-out. It is critical that the gyro keeps descending and not climb away or maintain altitude while losing airspeed during the round out. The final flare is executed with the main wheel's inches above the ground (2 to 4) and care must be taken to avoid a rapid conversion of the

last bit of airspeed to lift. This can result in the autogyro effectively rising before falling back again. (Ballooning).

After touchdown, it is critically important to keep the nose wheel off the ground until the autogyro has slowed to a walking pace. The nose wheel can then be lowered gently. Another important factor is to make sure to use the rudder pedals to straighten the nose wheel before gently touching the ground.

As soon as the gyro's groundspeed is almost zero or at a slow walking pace with the nose wheel on the ground, move the stick forward to flatten the disc.

Keep in mind that the rotor is still generating lift, and this must be controlled. If the rotor disk is not kept flat the rotor lift vector can cause the gyro to roll! (Asymmetrical lift).

Probable cause:

The gyrocopter was rounded-out and flared too late, which resulted in the main rotor blades impacting the runway before the gyrocopter rolled on its left-side and remained in that position.

Contributory factor:

The instructor did not take over control of the gyrocopter to avoid losing too much height, resulting in late flaring by the student pilot.

Safety Action

The Approved Training Organisation (ATO) had a post-accident briefing with both the instructor and the student pilot about identifying the early signs of an unstable approach.

Safety Message

None.

Purpose of the Investigation

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****.*

About this Report

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.

This report provides an opportunity to share safety message/s in the absence of an investigation. *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.*
Disclaimer
This report is produced without prejudice to the rights of the AIID, which are reserved.

This report is issued by:

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