

PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10392



Figure 1: File picture of ZS-CZR prior to the accident. (Source: http://www.airteamimages.com/piper-pa-28-cherokee_ZS-CZR_-_private_378747.html)

Description:

On Thursday, 23 November 2023, an instructor pilot and a student pilot on-board a Piper PA-28-180 Cherokee aircraft with registration ZS-CZR took off on a training flight from Runway 03 at Vereeniging Airfield (FAVV), Gauteng province, with the intention to land back at the same airfield.

The instructor pilot stated that a pre-flight inspection was performed on the aircraft, and no anomalies were found. The instructor pilot further stated that after completing the second circuit and whilst on final approach at approximately 300 feet (ft) above ground level (AGL), the engine lost power and, subsequently, the aircraft lost height. The instructor pilot executed a forced landing on an open area at a brick manufacturing plant located approximately 1.38 nautical miles (nm) from the threshold of FAVV Runway 03. During the forced landing, the aircraft's nose strut broke which caused the aircraft to flip over; it came to rest in an inverted position. The aircraft was substantially damaged, and no injuries were reported.

Occurrence Details

Reference Number : CA18/2/3/10392
Occurrence Category : Category 1
Type of Operation : Training (Part 141)
Name of Operator : Unitas Flying School
Aircraft Registration : ZS-CZR
Aircraft Make and Model : Piper, PA-28-180 Cherokee
Nationality : South African
Place : Approximately 1.38nm from Vereeniging Airfield Runway 03
Date and Time : 23 November 2023 at 1430Z
Injuries : None
Damage : Substantial

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.

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.

Investigation Process

The Accident and Incident Investigations Division (AIID) was notified of the occurrence involving a Piper PA-28-180 Cherokee aircraft which occurred near Vereeniging Airfield, Gauteng province, on 23 November 2023 at 1430Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the International Civil Aviation Organisation (ICAO) STD Annex 13 definitions.

The AIID has appointed an investigator-in-charge to conduct an off-site investigation. Notifications were sent to the State of Registry, Operator, Design and Manufacturer in accordance with CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and ICAO Annex 13.

The information contained in this preliminary report is derived from the information gathered during the on-going investigation into the occurrence. Later, an interim or final report may contain altered information in case new evidence is found during the on-going investigation that requires changes to the information depicted in this report.

The AIID reports are made available to the public at:

<https://www.caa.co.za/industry-information/accidents-and-incidents/>

Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:*
Accident — this investigated accident
Aircraft — the Piper PA-28-180 Cherokee involved in this accident.
Investigation — the investigation into the circumstances of this accident
Pilot — the pilot involved in this accident.
Report — this accident report

2. *Photos and figures used in this report were taken from different sources and may have been adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

Disclaimer

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

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
ACCID	Accident
AGL	Above Ground Level
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
CAVOK	Cloud and Visibility OK
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
FDR	Flight Data Recorder
Ft	Feet
FAVV	Vereeniging Airfield
GPS	Global Positioning System
hPa	Hectopascal
kt	Knots
m	Metres
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
TBA	To be announced
VMC	Visual Meteorological Conditions
QNH	Altitude Above Mean Sea Level
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

- 1.1.1 On Thursday, 23 November 2023, an instructor pilot and a student pilot on-board a Piper PA-28-180 Cherokee aircraft with registration ZS-CZR were on a training flight from Vereeniging Airfield (FAVV) in Gauteng province with the intention to land back at the same airfield. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.
- 1.1.2 The instructor pilot stated that a pre-flight inspection was performed on the aircraft and no anomalies were found. The instructor pilot further stated that the first circuit was uneventful. However, after completing the second circuit whilst on final approach at approximately 300 feet (ft) above ground level (AGL), the engine lost power and, subsequently, the aircraft lost height. The instructor pilot executed a forced landing on an open area at a brick manufacturing plant located approximately 1.38 nautical miles (nm) from the threshold of Runway 03. The nose gear strut broke off during the forced landing, which caused the aircraft to flip over; it came to rest in an inverted position. Both occupants were unharmed. The aircraft sustained substantial damage.
- 1.1.3 The accident occurred during daytime at approximately 1.38nm from FAVV Runway 03 threshold at Global Positioning System (GPS) co-ordinates determined to be 26°35'31.80 South 027°56'58.24" East, at a field elevation of 4 855 ft.



Figure 2: The view of the accident site (yellow pin). (Source: Google Earth)

1.2 Injuries to Persons

1.2.1 Both occupants sustained no injuries.

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	-	-	-	-	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	2	-	-	2	-
Total	2	-	-	2	-

Note: Other means people on the ground.

1.3 Damage to Aircraft

1.3.1 The aircraft sustained substantial damage.



Figure 3: The aircraft post-accident. (Source: Instructor pilot)

1.4 Other Damage

1.4.1 None.

1.5 Personnel Information (Instructor pilot)

Nationality	Egyptian	Gender	Male	Age	26
Licence Type	Commercial Pilot Licence (CPL) Aeroplane				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Instrument Rating				
Medical Expiry Date	28 January 2024				
Restrictions	None				
Previous Accidents	None				

Note: Previous accidents refer to past accidents the pilot was involved in, when relevant to this accident.

Flying Experience:

Total Hours	1 763.5
Total Past 24 Hours	TBA
Total Past 7 Days	TBA
Total Past 90 Days	217.2
Total on Type Past 90 Days	93.6
Total on Type	229.3

- 1.5.1 The instructor pilot was initially issued a Commercial Pilot Licence (CPL) by the Regulator (SACAA) on 27 March 2019. The licence was renewed on 4 March 2023 with an expiry date of 31 March 2024. His Class 1 medical certificate was issued on 1 February 2023 with an expiry date of 28 January 2024. The aircraft type was endorsed on his licence.

Personnel Information (Student pilot)

Nationality	Egyptian	Gender	Male	Age	21
Licence Type	Commercial Pilot Licence (CPL) Aeroplane				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Instrument Rating				
Medical Expiry Date	31 March 2024				
Restrictions	None				
Previous Accidents	None				

Flying Experience:

Total Hours	222.5
Total Past 24 Hours	TBA
Total Past 7 Days	TBA
Total Past 90 Days	17.8
Total on Type Past 90 Days	12.8
Total on Type	51.2

- 1.5.2 The student pilot was issued a Commercial Pilot Licence (CPL) by the Regulator (SACAA) on 20 July 2023 with an expiry date of 30 June 2024. His Class 1 medical certificate was issued on 31 March 2023 with an expiry date of 31 March 2024. The aircraft type was endorsed on his licence.

1.6 Aircraft Information

- 1.6.1 Aircraft description (Source: Pilot's Operating Handbook [POH])

The Piper PA-28-180 Cherokee is a single-engine, low-wing monoplane aircraft of conventional design and a fixed tricycle landing gear. The aircraft was manufactured by Piper Aircraft Corporation in the United States of America (USA) and was designed for flight training and for personal use. The aircraft has dual control columns which allows it to be flown from either the left or right pilot seat. The flying controls are conventional, with cables operating the control surfaces. The aircraft is powered by a four-cylinder Lycoming engine rated at 150 brake horsepower (BHP) at 2700 RPM driving a metal two-bladed fixed pitch propeller.

Airframe:

Manufacturer/Model	Piper Aircraft Corporation	
Serial Number	28-518	
Year of Manufacture	1963	
Total Airframe Hours (At Time of Accident)	TBD	
Last Inspection (Date & Hours)	23 October 2023	4 922.0
Hours Since Last Inspection	TBD	
CRS Issue Date	27 October 2023	
C of A (Issue Date & Expiry Date)	31 August 2023	31 August 2024
C of R (Issue Date) (Present Owner)	16 November 2021	
Type of Fuel Used	Avgas 100LL	
Operating Category	Part 141	
Previous Accidents	No	

Note: Previous accidents refer to past accidents the aircraft was involved in, when relevant to this accident.

Engine:

Manufacturer/Model	Textron Lycoming / O-360-A4J
Serial Number	L-18742-36A
Hours Since New	TBA
Hours Since Overhaul	TBA

Propeller:

Manufacturer/Model	Sensenich / 76EM8-0-60
Serial Number	18678K
Hours Since New	TBA
Hours Since Overhaul	TBA

1.6.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was issued by the Regulator on 18 August 1978. The latest C of A was renewed on 21 August 2023 with an expiry date of 31 August 2024.

1.6.3 The last mandatory periodic inspection (MPI) that was conducted on the aircraft was certified on 23 October 2024. The aircraft maintenance organisation (AMO) that conducted the maintenance issued the Certificate of Release to Service (CRS) on 23 October 2023 at 4 922.0 airframe hours with an expiry date of 31 October 2024 or at 5 022.0 airframe hours, whichever comes first.

1.7 Meteorological Information

1.7.1 The weather information below was obtained from the pilot questionnaire.

Wind Direction	030°	Wind Speed	5kt	Visibility	10 km
Temperature	30°C	Cloud Cover	None	Cloud Base	None
Dew Point	12°C	QNH	1025 hPa		

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigational equipment as approved by the Regulator. There were no records indicating that the navigational equipment was unserviceable prior to the flight.

1.9 Communication

1.9.1 The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight.

1.10 Aerodrome Information

1.10.1 The accident occurred on an open area at a brick manufacturing plant approximately 1.38nm from FAVV Runway 03 threshold and at GPS co-ordinates determined as 26°35'31.80" South 027° 56'58.24" East, at an elevation of 4 855ft.

Aerodrome Location	Vereeniging, Gauteng Province
Aerodrome Status	Licensed
Aerodrome Co-ordinates	26°35'31.80" South 027° 56'58.24" East
Aerodrome Altitude	4 855 ft
Runway Headings	03 / 21 and 15 / 33
Runway Dimensions	1605 m X 22 m
Runway Used	03
Runway Surface	Tar
Approach Facilities	Nil
Radio Frequency	122.1 MHz

1.11 Flight Recorders

1.11.1 The aircraft was neither fitted with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by regulation to be fitted to this aircraft type.

1.12 Wreckage and Impact Information

1.12.1 The wreckage was found intact in an inverted position at a brick manufacturing plant in Vereeniging. The aircraft sustained damage to the vertical stabiliser, canopy and nose wheel, which had collapsed.

1.13 Medical and Pathological Information

1.13.1 To be discussed in the final report.

1.14 Fire

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

1.15 Survival Aspects

1.15.1 The accident was considered survivable as both occupants were properly restrained with safety harnesses. The canopy was physically broken during evacuation of the occupants. Both occupants evacuated the aircraft, assisted by people at the accident scene.

1.16 Tests and Research

1.16.1 To be discussed in the final report.

1.17 Organisational and Management Information

1.17.1 The flight was conducted in accordance with the provisions of Part 141 of the CAR 2011 as amended.

1.17.2 The training school had a valid Approved Training Organisation (ATO) Certificate that was issued by the Regulator on 1 November 2023 with an expiry date of 30 September 2028.

1.17.3 The AMO that conducted maintenance on the aircraft had the AMO Certificate that was issued by the Regulator on 27 October 2023 with an expiry date of 31 October 2023.

1.18 Additional Information

1.18.1 To be discussed in the final report.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2 FINDINGS

2.1 General

From the available evidence, the following preliminary findings were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusions heading:

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.

2.2 Findings

2.2.1 The pilot was initially issued a Commercial Pilot Licence (CPL) by the Regulator on 27 March 2019. The pilot renewed his licence which was issued on 4 March 2023 with an expiry date of 31 March 2024.

2.2.2 The pilot had a Class 1 aviation medical certificate that was issued on 1 February 2023 with an expiry date of 28 January 2024 with no restrictions. The aircraft type was endorsed on the pilot's licence.

2.2.3 The aircraft's Certificate of Registration (C of R) was issued by the Regulator to the current owner on 16 November 2021.

2.2.4 The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued on 18 August 1978. The latest C of A had an expiry date of 31 August 2024.

2.2.5 The ATO had a valid ATO Certificate that was issued by the Regulator on 1 November 2023 with an expiry date of 30 September 2028.

2.2.6 The last MPI conducted on the aircraft was certified on 23 October 2023. The AMO that conducted the inspection issued the Certificate of Release to Service (CRS) on 23 October 2023 at 4 922.0 airframe hours with an expiry date of 31 October 2024 or at 5 022.0 airframe hours, whichever comes first.

2.2.7 The AMO had the AMO Certificate that was issued by the Regulator on 27 October 2023 with an expiry date of 31 October 2024.

2.2.8 The flight was conducted in accordance with the provisions of Part 141 of the CAR 2011 as amended.

3 ON-GOING INVESTIGATION

3.1 The AIID investigation is on-going and the investigators will investigate other aspects of this occurrence which may or may not have safety implications.

**This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa**