SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10499								
Classification	Accident		**Date**	26 September 2024		**Time**	0700Z		
Type of Operation	Training (Part 141)								
Location									
Place of Departure	Brakpan Aerodrome (FABB), Gauteng Province		Place of Intended Landing		Brakpan Aerodrome (FABB), Gauteng Province				
Place of Occurrence	Right side of Runway 36, at Brakpan Aerodrome (FABB)								
GPS Co-ordinates	Latitude	26°14´17"S	Longitude	028°18´21" E	Elevation	5 300ft			
Aircraft Information									
Registration	ZS-FTB								
Make; Model; S/N	Piper Aircraft Corporation; PA28-180 Cherokee (Serial Number: 28-24110)								
Damage to Aircraft	Substantial			Total Aircraft Hours		18 777.96			
Pilot-in-command									
Licence Type	Student Pilot Licence (SPL)		Gender	Male		Age	19		
Licence Valid	Yes	Total Hours	32.3	Total Hours on Type		31.8			
Total Hours 30 Days	3.6		Total Flying on Type Past 90 Days	17					
People On-board	1+0	**Injuries**	0	**Fatalities**	0	**Other (on the ground)**	0		

What Happened

On Thursday morning, 26 September 2024, a student pilot on-board a Piper PA28-180 Cherokee aircraft with registration ZS-FTB took off on a training flight from Brakpan Aerodrome (FABB) in Gauteng province with the intention to land back at the same aerodrome. 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.

The student pilot stated that he took off from Runway (RWY) 36 and performed three successful circuits of touch-and-go landings. On the fourth circuit, the aircraft approached RWY 36 at approximately 85 knots indicated airspeed (KIAS). Due to the high speed, the aircraft landed hard on its main wheels which caused the right main gear to separate from the fuselage; the nose landing gear collapsed and the propeller blades struck the ground. At this point, the student pilot lost directional control of the aircraft which veered off to the right of the runway. It came to a stop 51 metres (m) from the edge of the runway.

The aircraft sustained substantial damage; the student pilot was not injured.

The accident occurred during daylight at Global Positioning System (GPS) co-ordinates determined to be 26°14´17" South 028°18´21" East, at an elevation of 5 300 feet (ft).

Figure 1: Aerial view of FABB, the landing direction and the accident site. (Source: Google Earth)

Figure 2: ZS-FTB at the accident site. (Source: Operator)

Figure 3: ZS-FTB's left side post-accident. (Source: Operator)

Figure 4: The right main landing gear strut. (Source: Operator)

Figures 5 and 6: The bent propeller blades. (Source: Operator)

Aircraft Performance (Source: Pilot Operating Handbook)

The aircraft's approach speed is between 65 kt and 75 kt.

At the time of landing, the aircraft's flaps were set at 25°.

APPROACH AND LANDING:

Before landing checklist:

1. *Fuel……....on proper tank*
2. *Electric fuel pump…ON*
3. *Mixture……...set*
4. *Flaps……...set*
5. *speed……..65 – 75 knots*
6. *Seat belts……...fastened*

The Weather Information

The weather information in the table below was sourced from the pilot's questionnaire on 26 September 2024.

***FABB** 260700Z 26011KT CAVOK 25/05 Q1023 NOSIG=*

Wind Direction	260°	Wind Speed	11kts	Visibility	9999m
Temperature	25°C	Cloud Cover	Nil	Cloud Base	Nil
Dew Point	5°C	QNH	1023hPa		

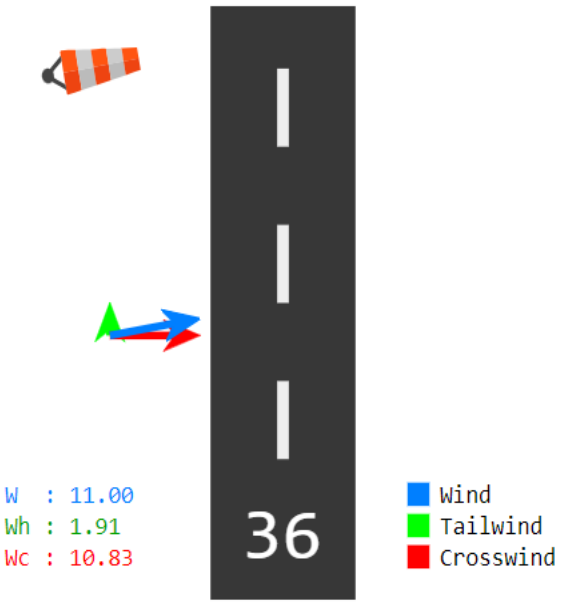

Figure 7: The crosswind component as per the weather report. (Source: https://e6bx.com)

- The meteorological conditions above show a crosswind from the left. Crosswind component calculations were made using an automated formular available at https://e6bx.com website.
- Calculations show that the aircraft was affected by a crosswind component of 10.83 knots (kts) during landing.
- According to the POH, the Piper Cherokee PA28-180 can withstand a crosswind component of 15-17 knots (kts). The crosswind refers to the maximum crosswind velocity an aircraft can effectively withstand during take-off and landing.

Findings

Student Pilot

1. The student pilot was initially issued a Student Pilot Licence (SPL) on 6 March 2024 with an expiry date of 5 March 2025. The aircraft type was endorsed on the student pilot's licence. His Class 2 aviation medical certificate was issued on 28 February 2024 with an expiry date of 28 February 2029. The student pilot was qualified to conduct the flight.

2. The student pilot may not have had sufficient experience to manage crosswind landings or adhere to speed limits during approach. This could increase the likelihood of misjudgement in critical phases of flight.

Aircraft

3. The aircraft's Certificate of Registration (C of R) was issued to the current owner on 7 January 2018. The Certificate of Airworthiness (C of A) was initially issued on 24 February 1967. The latest C of A was issued on 22 February 2024 with an expiry date of 28 February 2025.

4. The last annual inspection of the aircraft was certified on 22 August 2024 at 18 729.58 total airframe hours. At the time of the flight, the aircraft had a total of 18 777.96 airframe hours. The aircraft was flown a further 48.38 hours since the last inspection.

5. The aircraft was issued a Certificate of Release to Service (CRS) on 22 August 2024 at 18 729.58 airframe hours with an expiry date of 21 August 2025 or at 18 829.58 airframe hours, whichever occurs first.

6. No defects were recorded in the flight folio before the accident flight.

7. The aircraft's approach speed was excessive than the recommended speed in the POH. This contributed to a hard landing and loss of directional control, which led to the aircraft veering off the runway.

Environment

8. Although the crosswind component of 10.89 knots was within the aircraft's limits, it might have affected the student pilot's ability to maintain directional control during landing. The cumulative effect of the wind and the excessive speed likely made it difficult for the student pilot to align the aircraft to the runway.

Probable Cause(s)

The aircraft's excessive speed during landing resulted in a hard touch down which caused the separation of the right main landing gear and the collapse of the nose gear. This led to loss of directional control.

Contributing Factor(s)

Poor landing technique.

Failure to reduce speed and to effectively manage approach.

Safety Action(s)

None.

Safety Message and/or Safety Recommendation/s

None.

About this Report

The decision to conduct a limited investigation is based on factors including whether the cause is known and the evidence supporting the cause is clear, the level of safety benefit likely to be obtained from an investigation and that will determine the scope of an investigation. For this occurrence, a limited 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 limited report. The report has been compiled using information supplied in the initial notification, as well as from follow-up desktop enquiries 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 occurrence.

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

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011 and ICAO Annex 13, 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.

Disclaimer

This report is issued by:

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