

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/3/2/1403						
Classification	Serious Incident	Date	19 July 2022		Time	0800Z	
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Wonderboom Aerodrome (FAWB), Gauteng Province		Place of Intended Landing	Wonderboom Aerodrome (FAWB), Gauteng Province			
Place of Occurrence	On Runway 11 at Wonderboom Aerodrome (FAWB), Gauteng Province						
GPS Co-ordinates	Latitude	25°39'11"South	Longitude	28°13'05"East	Elevation	4 048ft	
Aircraft Information							
Registration	ZS-SDA						
Make; Model; S/N	Cessna C172P (Serial Number: 172-76251)						
Damage to Aircraft	Minor		Total Aircraft Hours	4662.3			
Pilot-in-command							
Licence Type	Student Pilot Licence (SPL)		Gender	Female		Age	20
Licence Valid	Yes	Total Hours	55		Total Hours on Type	55	
Total Hours 30 Days	31.9		Total Flying on Type Past 90 Days	31.9			
People On-board	1 + 0	Injuries	0	Fatalities	0	Other (on ground)	0
What Happened							
<p>On Tuesday morning, 19 July 2022 at approximately 0700Z, a student pilot on-board a Cessna 172P aircraft with registration ZS-SDA took off on a training flight from Wonderboom Aerodrome (FAWB) in Gauteng province to the local general flying area (GFA), with the intention to land back at the same take-off aerodrome. The flight was conducted under visual flight rules (VFR) by day and under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The student pilot stated that the flight to the GFA proceeded as expected. Upon her return to FAWB, the aircraft's approach for landing was stable, however, on short final for landing on Runway 11, she decreased the indicated airspeed (IAS) from 70 to 65 knots (kts), with flaps setting at 30°. During the flare, the aircraft landed hard on its main landing gears and, as a result, it bounced into the air. Thereafter, the pilot lost control of the aircraft which drifted slightly to the left-side of the runway centreline. The aircraft touched down hard on the runway again. This time, the student pilot managed to steer the aircraft back to the centreline, and she taxied to the hangar. The aircraft's bottom left-side firewall was damaged. The student pilot was not injured during the incident sequence.</p>							

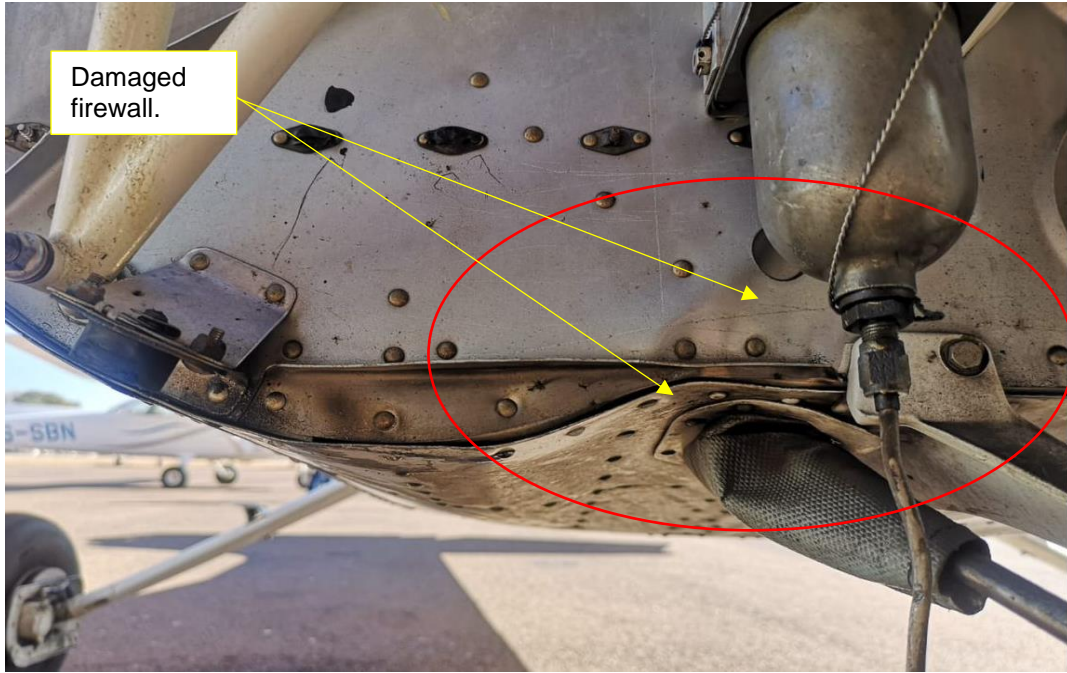


Figure 1: The bent firewall. (Source: Operator)

CESSNA MODEL 172P	SECTION 4 NORMAL PROCEDURES
<h2>INTRODUCTION</h2> <p>Section 4 provides checklist and amplified procedures for the conduct of normal operation. Normal procedures associated with optional systems can be found in Section 9.</p>	
<h2>SPEEDS FOR NORMAL OPERATION</h2> <p>Unless otherwise noted, the following speeds are based on a maximum weight of 2400 pounds and may be used for any lesser weight. However, to achieve the performance specified in Section 5 for takeoff distance, the speed appropriate to the particular weight must be used.</p>	
Takeoff, Flaps Up:	
Normal Climb Out	70-80 KIAS
Short Field Takeoff, Flaps 10°, Speed at 50 Feet	56 KIAS
Enroute Climb, Flaps Up:	
Normal, Sea Level	75-85 KIAS
Normal, 10,000 Feet	70-80 KIAS
Best Rate of Climb, Sea Level	76 KIAS
Best Rate of Climb, 10,000 Feet	71 KIAS
Best Angle of Climb, Sea Level	60 KIAS
Best Angle of Climb, 10,000 Feet	65 KIAS
Landing Approach:	
Normal Approach, Flaps Up	65-75 KIAS
Normal Approach, Flaps 30°	60-70 KIAS
Short Field Approach, Flaps 30°	61 KIAS
Balked Landing:	
Maximum Power, Flaps 20°	55 KIAS
Maximum Recommended Turbulent Air Penetration Speed:	
2400 Lbs	99 KIAS
2000 Lbs	92 KIAS
1600 Lbs	82 KIAS
Maximum Demonstrated Crosswind Velocity:	
Takeoff or Landing	15 KNOTS

Findings

(i) The student pilot was initially issued a Student Pilot Licence (SPL) on 13 June 2021. Her latest licence validation was conducted on 20 May 2022, after which a licence was issued with an expiry date of 19 May 2023. The aircraft type was endorsed on her licence. Her Class 2 medical certificate was issued on 28 May 2021 with an expiry date of 31 May 2026 with no restrictions. The student pilot was licensed and qualified for the flight in accordance with the existing regulations.

- (ii) The aircraft's Certificate of Registration (C of R) was issued to the current owner on 9 June 2021. The aircraft was issued a Certificate of Airworthiness (C of A) on 15 March 2018 with an expiry date of 31 March 2023.
- (iii) According to the aircraft's latest Certificate of Release to Service (CRS) and the logbooks, the last mandatory periodic inspection (MPI) was certified on 20 April 2022 at 4637.6 total airframe hours. At the time of the accident, the aircraft had accumulated 4662.3 hours and had been flown a further 24.7 hours since the last MPI.
- (iv) The last MPI was carried out by an aircraft maintenance organisation (AMO) with a valid AMO approval certificate that was issued on 20 April 2022 with an expiry date of 30 April 2023. The aircraft maintenance engineer (AME) who certified the last MPI was appropriately licensed to carry out maintenance on the aircraft type.
- (v) The aircraft's bottom left-side firewall was substantially damaged; however, the occupant did not sustain any injuries during the serious incident.
- (vi) The wind on the runway in use at the time was not favourable for the pilot to land. The official weather report from the South African Weather Service (SAWS) was as follows:
METAR: FAWB 190800Z 33008KT CAVOK 16/07 Q1027.
There was a 5kt left crosswind component and a 6kt tailwind component when the student pilot landed on Runway 11.

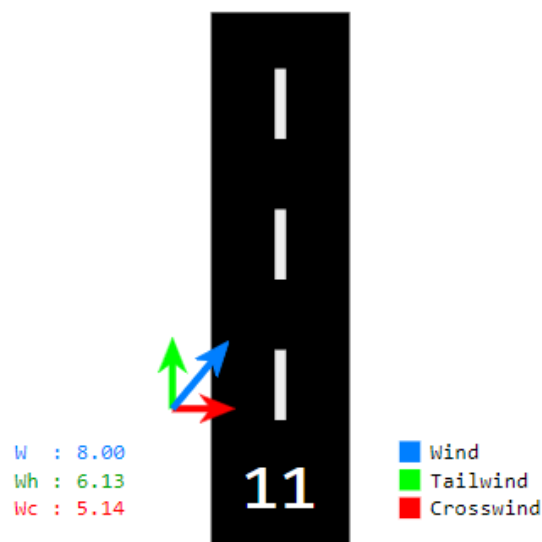


Figure 3: The crosswind component as per the weather report. (Source: <https://e6bx.com>)

- (vii) Figure 3 shows the Landing Approach Knots Indicated Air Speed (KIAS) and the Maximum demonstrated crosswind velocity from the Cessna C172P Pilot's Operating Handbook.

(viii) Although there was a 6kt tailwind component when the aircraft landed on Runway 11, it was not significant, therefore, it was not a contributing factor to this incident.
Probable Cause
The aircraft was flared too early which resulted in the loss of height and a hard landing with the main landing gears, causing the aircraft to bounce and drift slightly to the left-side of the runway centreline.
Contributing Factor(s)
None.
Safety Action
As a result of this serious incident, the Approved Training Organisation (ATO) assigned an instructor to the student pilot before she could be allowed to fly solo again. The training programme was updated accordingly.
Safety Message
To prevent these types of accidents, pilots are reminded to always be vigilant during the critical stages of the flight, such as take-off and landing, and also to carry out a go-around if they are unsure.
About this Report
<i>The decision to conduct a limited investigation are 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 top desktop inquiries 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.</i>
<i>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.</i>
Purpose
<i>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 apportion blame or liability.</i>
Disclaimer
<i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i>

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