SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10485						
Classification	Accident	**Date**	31 August 2024		**Time**	1309Z	
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Grand Central Airport (FAGC), Gauteng Province	Place of Intended Landing	Grand Central Airport (FAGC), Gauteng Province				
Place of Occurrence	Approximately 850 metres (m) from the threshold of Runway 35 at FAGC in Gauteng Province						
GPS Co-ordinates	Latitude	25°59´28.5” S	Longitude	28°08´34.2" E	Elevation	5 325ft	
Aircraft Information							
Registration	ZS-IOI						
Make; Model; S/N	Cessna Aircraft Company; C172L (Serial Number: 172-60301)						
Damage to Aircraft	Substantial	Total Aircraft Hours	15592.1				
Pilot-in-command							
Licence Type	Student Pilot Licence (SPL) Aeroplane	Gender	Male	Age	22		
Licence Valid	Yes	Total Hours	69.1	Total Hours on Type	29.1		
Total Hours 30 Days	5.3	Total Flying on Type Past 90 Days	20.8				
People On-board	1+0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Saturday afternoon, 31 August 2024, a student pilot (SP) on-board a Cessna 172L aircraft with registration ZS-IOI was on a training flight from Grand Central Airport (FAGC) in Gauteng province to Brits Aerodrome (FABS) general flying area (GFA) in North West province, with the intention to return to FAGC. 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 SP stated that the flight segments to the GFA and back to FAGC were uneventful. He performed all the necessary checks on downwind leg for Runway 35 (RWY35) at FAGC and prepared the aircraft for a full-stop landing. The SP anticipated a slight right crosswind and did not select full flaps on the base leg but kept them (flaps) at 10°. During landing, the SP flared too early, and the aircraft ballooned. During the second attempt to land, the aircraft sank faster. Fearing that the aircraft would land nose wheel first, the SP opened the throttle to maximum power and pulled back on the control column. The aircraft climbed to approximately 30 feet (ft) above the ground. At that point, the left wing stalled and hit the ground, which caused the aircraft to roll to the right. Thereafter, the right wingtip hit the ground, and the aircraft came to a stop in a nose down and tail high attitude on the shoulder of Runway 35 before Taxiway Tango. The aircraft was substantially damaged. The SP was not injured during the accident sequence.

Figure 1: The aircraft as it came to a stop after exiting the runway. (Source: Owner)

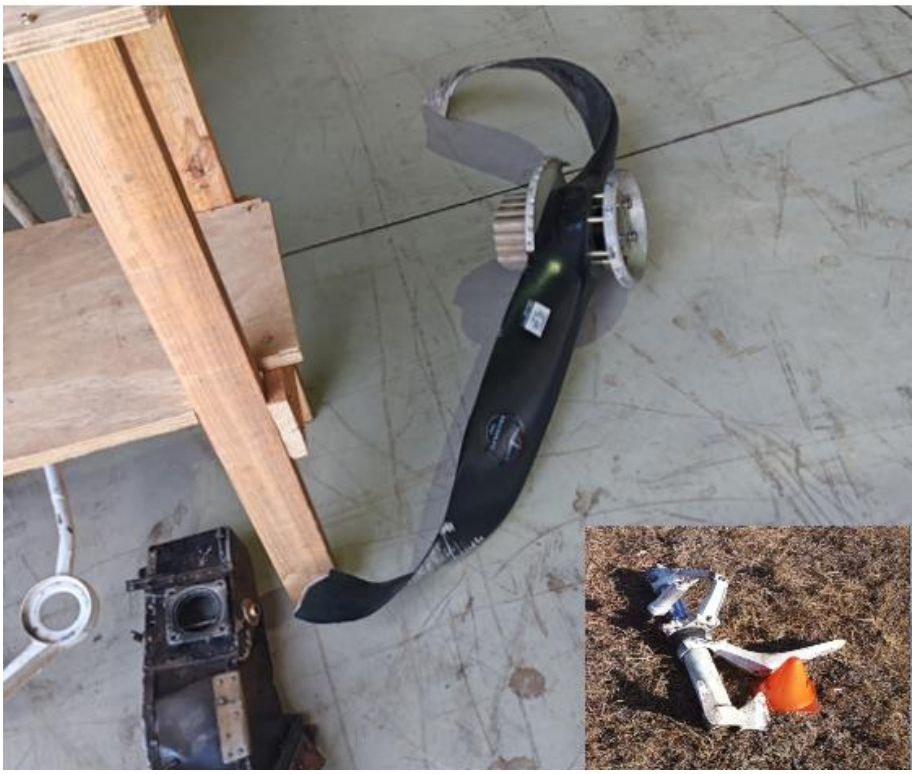

Figure 2: The damage on the propeller blades indicates maximum power on impact with the ground. The inset picture shows the nose gear strut after the accident.

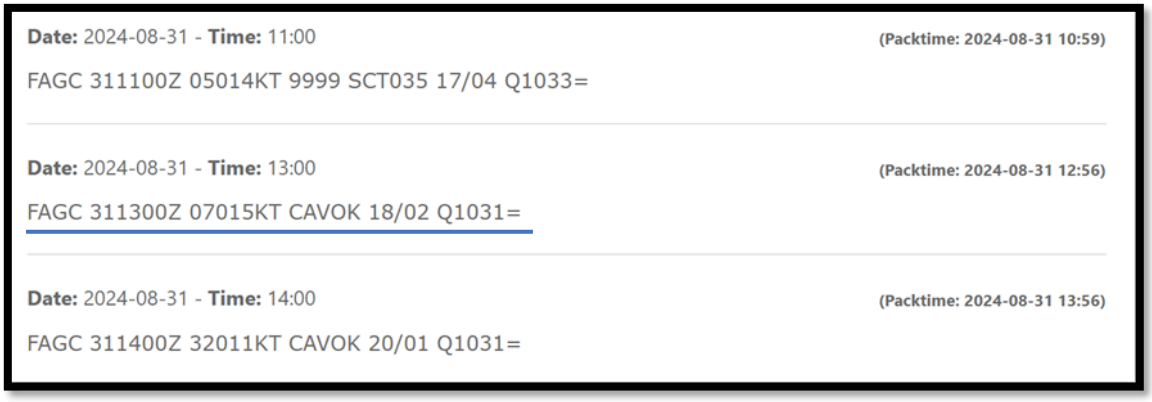

Figure 3: Aerodrome Traffic Information Services (ATIS) at 1300Z indicates wind at 070° at 15 knots. (Source: SAWS)

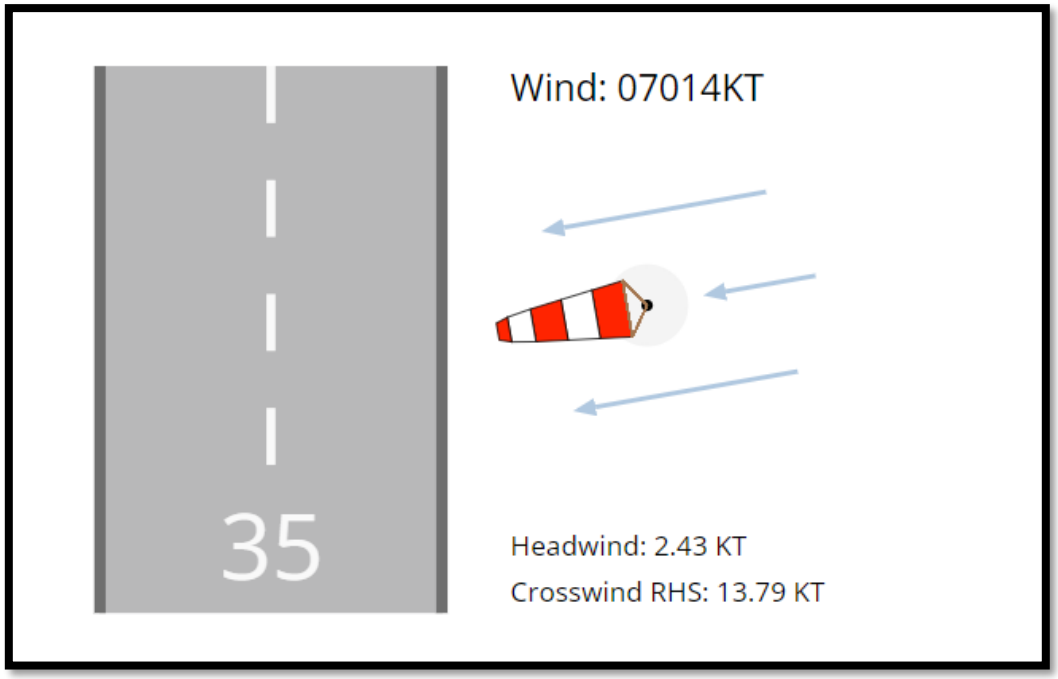

Figure 4: Crosswind calculation on Runway 35. (Source: https://aerotoolbox.com/crosswind/)

CROSSWIND LANDING.

When landing in a strong crosswind, use the minimum flap setting required for the field length. If flap settings greater than 20° are used in sideslips with full rudder deflection, some elevator oscillation may be felt at normal approach speeds. However, this does not affect control of the aircraft. Although the crab or combination method of drift correction may be used, the wing-low method gives the best control. After touchdown, hold a straight course with the steerable nose wheel and occasional braking if necessary.

The maximum allowable crosswind velocity is dependent upon pilot capability rather than airplane limitations. With average pilot technique, direct crosswinds of 15 MPH can be handled with safety.

Figure 5: Crosswind description in the Pilot's Operating Handbook. (Source: C172L-POH)

Findings

1. Personnel Information

1.1 The student pilot (SP) had a Student Pilot Licence (SPL) that was issued on 31 May 2024 with an expiry date of 28 May 2025. The SP had flown a total of 29.1 hours of which 3.3 hours were solo flights.

1.2 The SP was issued a Class 2 aviation medical certificate on 22 April 2024 with an expiry date of 30 April 2029 with no limitations.

2. Aircraft Information

2.1 The last 50-hour annual inspection that was conducted on the aircraft before the accident flight was certified on 23 August 2024 at 15 585.0 airframe hours. The accident occurred at 15 592.10 airframe hours. This means that the aircraft had accrued 7.1 hours since the last inspection.

2.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued by the Regulator on 15 September 1980. The latest C of A was issued on 2 August 2024 with an expiry date of 1 August 2025. The aircraft was airworthy when it was dispatched for the flight.

2.3 The aircraft's Certificate of Registration (C of R) was issued to the present owner on 27 October 2023.

2.4 The aircraft was issued a Certificate of Release to Service (CRS) on 27 August 2024 with an expiry date of 26 August 2025 or at 15 685.0 airframe hours, whichever occurs first.

2.5 The approved training organisation (ATO) had a valid ATO Certificate that was issued on 28 February 2024 with an expiry date of 28 February 2025.

2.6 The aircraft maintenance organisation (AMO) which maintained the aircraft had an AMO Certificate that was issued on 30 September 2021 with an expiry date of 30 June 2026.

2.7 The maximum crosswind component of the aircraft is 15 miles per hour (MPH) which is equivalent to 13 knots. On the day of the accident flight, it was 13.8 knots which was too much to manage for the SP with only 3.3 hours on solo flights. Post-accident, the ATO set up an 8-hour remedial programme for the SP which included flaring technique, ballooning and bouncing recovery, as well as crosswind landings.

Probable Cause(s)

The student pilot did not set up the aircraft for a crosswind landing and flared too early which caused the aircraft to balloon and stall before it landed with the nose wheel first.

Contributing Factor(s)

- The crosswind was more than the limit the aircraft could handle.
- The student pilot delayed conducting a go-around after the first missed attempt.
- The student pilot had limited crosswind landing experience.

Safety Action(s)

A remedial programme was set up for the student pilot.

Safety Message and/or Safety Recommendation/s
Message: Instructors are advised to conduct thorough briefings in adverse weather conditions to satisfy themselves that the student pilots would be safe when flying solo.
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 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