SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED ACCIDENT INVESTIGATION REPORT

Reference Number	CA18/2/3/10174						
Classification	Accident	**Date**	15 June 2022	**Time**	0720Z		
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Grand Central Aerodrome (FAGC), Gauteng Province	Place of Intended Landing	Grand Central Aerodrome (FAGC), Gauteng Province				
Place of Occurrence	Runway 17 at FAGC, Gauteng Province						
GPS Co-ordinates	Latitude	S25° 59'.13. 44"	Longitude	E28° 08' .25.97"	Elevation	5325 feet	
Aircraft Information							
Registration	ZS-STV						
Model/Make	Cessna 172M Skyhawk (Serial Number: 172-64720)						
Damage to Aircraft	Substantial	Total Aircraft Hours	7472.8				
Pilot-in-command							
Licence Valid	Yes	Gender	Male	Age	39		
Licence Type	Student Pilot Licence (SPL)						
Total Hours on Type	35.5	Total Flying Hours	39.7				
People On-board	1 + 0	Injuries	0	Fatalities	0	Other (On Ground)	0

What Happened

On Wednesday, 15 June 2022, a student pilot on-board a Cessna 172M Skyhawk aircraft with registration ZS-STV took off on a training flight from Grand Central Aerodrome (FAGC) in Midrand, 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. No flight plan was filed for the flight. The aircraft was operated under the provisions of Part 141 of the Civil Aviation Regulations 2011 as amended.

The student pilot reported that before the flight, he conducted a pre-flight inspection on the aircraft and nothing abnormal was detected. Scrutiny into the aircraft's flight folio revealed no outstanding defects. The weather at FAGC was estimated by the student pilot as follows: visibility of 10 kilometres (km), wind direction/speed of 210/10 knots, temperature at 9° Celsius and no clouds with no significant change.

The aircraft had 26 US gallons of Avgas 100LL in the tanks. At approximately 0545Z, the student pilot commenced with the take-off roll from Runway 17 with the engine power set at 2600 revolutions per minute (RPM). After the aircraft had climbed to an altitude of 7500 feet (ft), the student pilot retarded the throttle lever to 2400 RPM and flew towards FAGC / Brits Aerodrome (FABS) general flying (GF) area where he practised steep turns and simulated precautionary landing exercises. Once satisfied, the student pilot navigated the aircraft back to FAGC for a full stop landing. Upon reaching FAGC, he contacted FAGC air traffic control (ATC) on frequency 122.8-Megahertz (MHz) to request clearance to join Runway 17. After receiving clearance from the ATC, the student pilot joined the traffic pattern and, later, approached at 90 miles per hour (mph). During landing with the flaps extended to 30°, the student pilot thought that the main landing gear wheels had already settled on the runway and he released the back pressure on the control column with the intention to settle the nose gear. However, the aircraft impacted the runway surface very hard with the nose gear, followed by propeller strikes on the runway surface. The aircraft sustained substantial damages.

Before disembarking the aircraft, the student pilot switched off the engine and waited for the Aircraft Rescue and Firefighting (ARFF) team to arrive. The student pilot was not injured; the flight duration was 1.7 hours.

Figures 1 and 2: The aircraft on the runway (left picture). The aircraft with the arrow shows the bent propeller blade tips and nose gear (right picture). (Source: Operator)

Aerodrome information:

FAGC is a Category 3 aerodrome with the licence issued in accordance with (IAW) Part 139 of the Civil Aviation Regulations 2011 as amended. The aerodrome has a single asphalt runway 17/35 that is 1828 metres (m) long and 23m wide with an elevation of 5325ft. The aerodrome has ATC service available during daytime, and communication is carried out on frequency 122.8 MHz. There is a 15 knots windsock installed at the end of Runway 35. The aerodrome has the ARFF services available 24/7.

The Pilot

The pilot was issued a Student Pilot Licence (SPL) by the Regulator (SACAA) on 16 December 2021 with an expiry date of 15 December 2022. According to available information, the student pilot had the aircraft type (Cessna 172) endorsement on his licence IAW the provisions of Part 61.09.1(2)(a) of the Civil Aviation Regulations 2011 as amended. At the time of the accident, the student pilot had flown a total of 39.7 hours, of which 35.4 hours were on the aircraft type. During the past 90 days, the pilot had flown 35.5 hours, including the accident flight. All these hours were flown on the accident aircraft. According to the pilot's logbook, his training was undertaken at FAGC prior to the accident flight.

Aircraft information

The Cessna 172M is a high-wing monoplane of all-metal semi-monocoque construction, manufactured by Cessna Aircraft Company in the United States of America (USA). The aircraft is equipped with fixed tubular spring steel main landing gear struts and a steerable nose landing gear. The aircraft comprises two side-by-side seats and is designed for flight training and personal use. The aircraft was fitted with a Lycoming O-320-E2D engine, with serial number RL-27362-27A and a McCauley 1C160/DTM7553 propeller with serial number 725307. The aircraft had dual control columns which allowed it to be flown from either the left or right pilot seat. The flight control system consists of conventional aileron, rudder and elevator control surfaces. The control surfaces are manually operated through mechanical linkage using a control wheel for ailerons and elevator, and rudder/brake pedals for the rudder.

The aircraft was issued a Certificate of Airworthiness on 8 April 2011 with an expiry date of 30 April 2023. A Certificate of Registration was issued to the present owner of the aircraft on 31 July 2017. The aircraft's last 100-hour mandatory periodic inspection (MPI) was certified on 15 June 2022 at 7466.2 airframe hours. The aircraft flew a further 6.6 hours since the last 100-hour MPI was completed. The aircraft was operated by an Approved Training Organisation (ATO), endorsed by the South African Civil Aviation Authority (SACAA). The ATO certificate was issued on 10 September 2021 with an expiry date of 30 September 2026.

Post-accident aircraft examination

The aircraft was recovered to an approved AMO for further examination. Inspection of the aircraft revealed no evidence of flight control cables disconnection or control restrictions. The horizontal stabiliser and the elevator trim tab were correctly set on neutral position. The student pilot, when interrogated, reported no malfunction of flight instruments. The nose gear oleo was found bent forward, and the nose wheel assembly was displaced due to the hard landing. The wheel hubs circlips had detached, and the grease seal retainers and bearing cones were exposed. The nose gear tyre was found correctly inflated, and the treads were well defined.

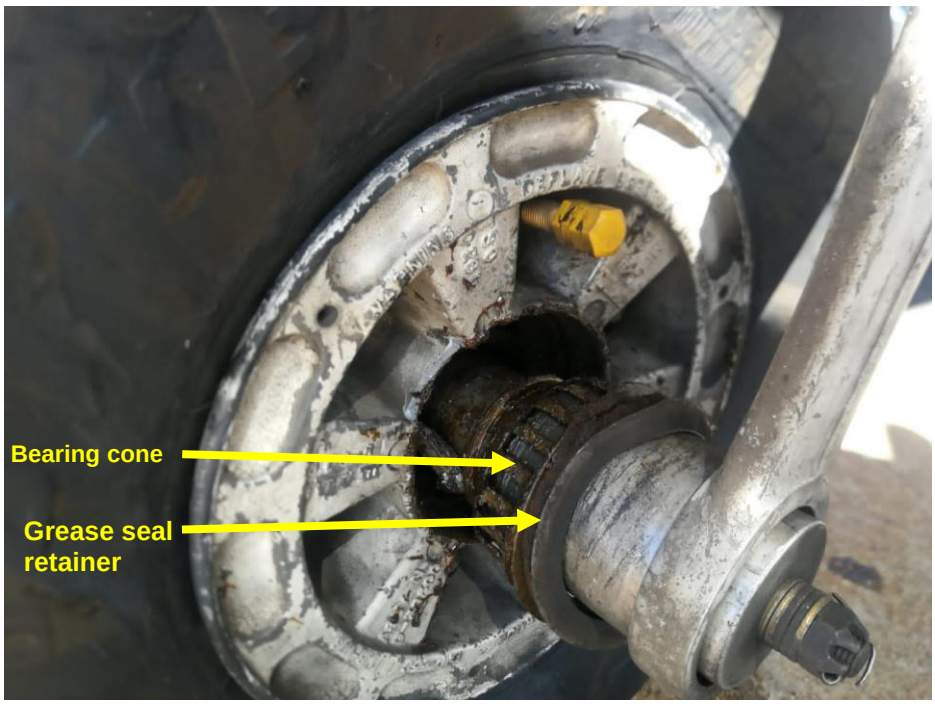

Figure 3: The nose wheel assembly. (Source: Operator)

What was found

(i) The pilot was issued a Student Pilot Licence on 16 December 2021 with an expiry date of 15 December 2022. The aircraft type was endorsed on his licence IAW the provisions of Part 61.09.1(2)(a) of the Civil Aviation Regulations 2011 as amended.

(ii) The pilot had flown 35.5 hours during the past 90 days, including the accident flight, which had a duration of 1.7 hours.

(iii) The student pilot was the sole occupant on-board the aircraft; weight and balance was not compromised.

(iv) The pilot was not injured; he had made use of the aircraft's equipped safety harness, which included a shoulder harness.

(v) The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations 2011 as amended.

(vi) The last 100-hour MPI on the aircraft was certified on 15 June 2022 at 7466.2 airframe hours. The aircraft had accrued 7472.8 airframe hours at the time of the accident flight, meaning that it flew a further 6.6 hours since the last 100-hour MPI was completed.

(vii) The aircraft was issued a Certificate of Airworthiness on 8 April 2011 with an expiry date of 30 April 2023.

(viii) Fine weather conditions prevailed at the time of the flight, which did not contribute to the accident.

(ix) No mechanical defects were found that could have contributed to or have caused the accident. A detailed examination of the flight controls revealed nothing abnormal.

Probable cause

The student pilot thought that the main landing gear wheels had already settled on the runway and had released the back pressure on the control column with the intention to settle the nose gear; however, the aircraft impacted the runway surface very hard with the nose gear, followed by propeller strikes on the runway surface.

Safety Action/s

None.

Safety Message and/or Safety Recommendation/s

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

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 issued by:

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