SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT

Reference Number	CA18/2/3/10475								
Classification	Accident		**Date**	6 August 2024			**Time**	0730Z	
Type of Operation	Training (Part 141)								
Location									
Place of Departure	Cape Winelands Aerodrome, (FAWN) Western Cape Province		Place of Intended Landing	Cape Winelands Aerodrome, (FAWN) Western Cape Province					
Place of Occurrence	On Runway 05 at Cape Winelands Aerodrome, Western Cape Province								
GPS Co-ordinates	Latitude	33°46'18.70" S	Longitude	018°44'23.34" E		Elevation	414 ft		
Aircraft Information									
Registration	ZS-PUW								
Make; Model; S/N	Cessna 150 (Serial Number: 150-59992)								
Damage to Helicopter	Substantial			Total Aircraft Hours		4882.46			
Pilot-in-command									
Licence Type	Student Pilot Licence (SPL)			Gender	Male		Age	26	
Licence Valid	Yes	Total Hours		44.2	Total Hours on Type			44.2	
Total Hours Past 30 Days	3.4			Total Flying Hours on Type Past 90 Days				29.1	
People On-board	1 + 0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**		0	

What Happened

On Tuesday morning, 6 August 2024, a solo student pilot on-board a Cessna 150 aircraft with registration ZS-PUW took off on a training flight from Cape Winelands Aerodrome (FAWN) in the Western Cape province with the intention to land at the same aerodrome. The training school was approved to operate from Cape Winelands. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

The student pilot was initially accompanied by the instructor pilot; he executed three touch-and-go which were uneventful. Thereafter, the instructor pilot disembarked from the aircraft and the student pilot took off on a solo consolidation flight. This was the student pilot's fourth solo consolidation. The student pilot took off from Runway 05 and climbed to 800 feet (ft) above ground level (AGL) and executed the after-take-off checks. He then turned crosswind and continued climbing to 1200 ft AGL before turning left downwind and conducting the downwind checks. The wind direction was between 050° and 080° at 05 knots (kts). On final approach with the flaps at 30 degrees and the speed at 70 kts, the student pilot radioed other traffic to advise them of his intention to land on Runway (RWY) 05. During approach for landing at 70 kts, the aircraft was slightly towards the left of the runway centreline. The student pilot tried to correct the alignment by applying the right rudder. Upon touch

down at 60 kts, the aircraft bounced before it impacted hard on the runway with the nose gear. As a result, the nose gear broke off and the propeller impacted the runway surface. The student pilot did not attempt to execute a go-around. He was not injured during the accident sequence. The aircraft sustained damage to the nose landing gear and the propeller.

The accident occurred at Global Positioning System (GPS) co-ordinates determined to be 33°46'18.70" South 018°44' 23.34" East, at an elevation of 414 feet (ft).

Figure 1: The yellow pin indicates the point at which the aircraft came to rest. (Source: Google Earth)

Figure 2: The aircraft post-accident. (Source: Operator)

Aircraft Performance: Normal Landing Procedure (Source: Aircraft's POH)

(1) Airspeed–60-70 KIAS (flaps UP)
(2) Wing Flaps–as desired (below 85 KIAS)
(3) Airspeed–50-60 KIAS (flaps DOWN)
(4) Touchdown–main wheels first
(5) Landing Roll–lower nose wheel gently
(6) Braking–minimum required

Bounce Landing (Source: Airplane Flying Handbook FAA-H-8083-3C, Page 9-34)

In a bounced landing that is improperly recovered, the airplane comes in nose first, initiating a series of motions imitating the jumps and dives of a porpoise (Figure 3). The improper airplane attitude at touchdown may be caused by inattention, not knowing where the ground is, miss-trimming, or forcing the airplane onto the runway.

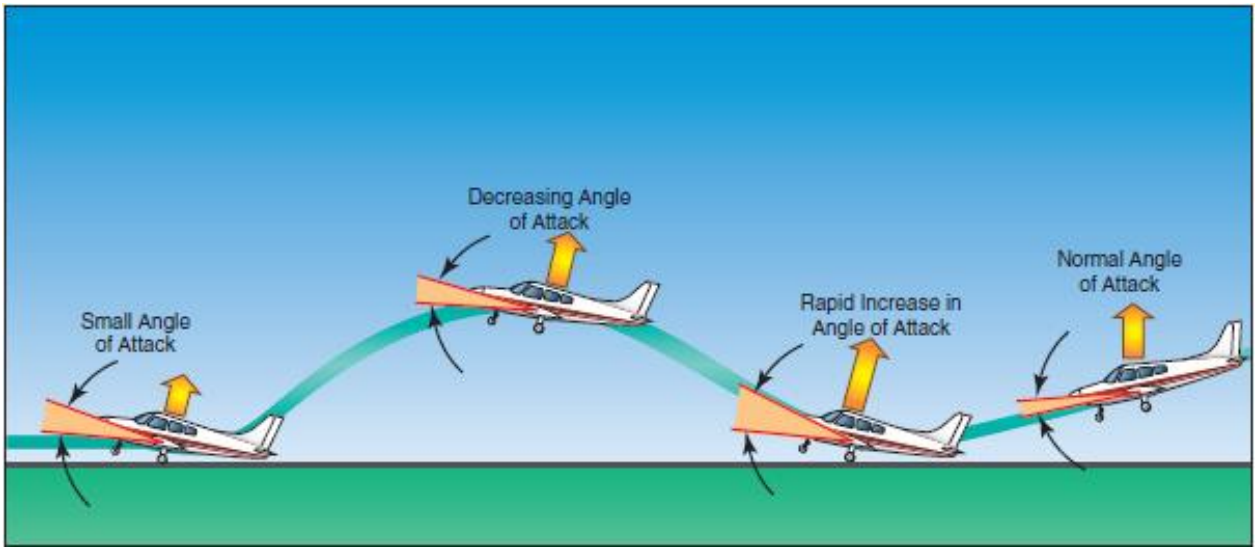

Figure 3: Illustration of the bounce landing.

Ground effect decreases elevator control effectiveness and increases the effort required to raise the nose. Not enough elevator or stabilator trim can result in a nose low contact with the runway and a porpoise develops.

Porpoising can also be caused by improper airspeed control. Usually, if an approach is too fast, the airplane floats and the pilot tries to force it on the runway when the airplane still wants to fly. A gust of wind, a bump in the runway, or even a slight tug on the control wheel sends the airplane aloft again.

The corrective action for a porpoise is the same as for a bounce and similarly depends on its severity. When it is very slight and there is no extreme change in the airplane's pitch attitude, a follow-up

landing may be executed by applying sufficient power to cushion the subsequent touchdown and smoothly adjusting the pitch to the proper touchdown attitude.

When pilots attempt to correct a severe porpoise with flight control and power inputs, the inputs are often untimely may increase the severity of each successive contact with the surface. These unintentional and increasing pilot-induced oscillations may lead to damage or collapse of the nose gear. When porpoising is severe or seems to be getting worse, the safest procedure is to execute a go-around immediately by applying full power while simultaneously maintaining directional control and lowering the nose to a safe climb attitude.

Findings

1. The student pilot was initially issued the Student Pilot Licence (SPL) by the Regulator (SACAA) on 5 April 2024 with an expiry date of 4 April 2025. The student pilot had flown a total of 44.2 hours on the aircraft type. He had the aircraft type endorsed on his licence.

2. The pilot had a valid Class 2 aviation medical certificate that was issued on 20 March 2024 with an expiry date of 20 March 2025 with the restriction to wear corrective lenses.

3. The present owner was issued the aircraft's Certificate of Registration (C of R) by the Regulator on 29 April 2022.

4. The aircraft had a valid Certificate of Airworthiness (C of A) that was issued on 11 August 2024 with an expiry date of 31 August 2025.

5. The last annual inspection of the aircraft was conducted and certified on 10 June 2024 at 4783.5 total airframe hours. The aircraft was issued a Certificate of Release to Service (CRS) on 10 June 2024 at 4783.5 hours with an expiry date of 9 June 2025 or at 4883.8 hours, whichever occurs first. There were no defects recorded in the aircraft maintenance documents at the time of the flight.

6. The flight school was issued an Approved Training Organisation (ATO) Certificate by the Regulator on 25 June 2024 with an expiry date of 31 March 2029.

7. The student pilot delayed flaring during landing and the nosewheel struck the runway hard and bounced. Subsequently, the nose gear collapsed, and the wheel separated from the aircraft which led to the propeller also striking the runway.

8. Fine weather conditions prevailed at the time of the flight; the weather was not considered a contributory factor to this accident.

Probable Cause
The aircraft landed hard due to the delayed flare which resulted in a bounce. This was followed by the collapse of the nose gear and the subsequent wheel separation.
Contributing Factor
None.
Safety Action(s)
None.
Safety Message
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 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. *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 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