SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10420								
Classification	Accident		**Date**	15 February 2024		**Time**	0930Z		
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	Left of Runway 29 at Wonderboom Aerodrome (FAWB)								
GPS Co-ordinates	Latitude	25º39'19.11" S	Longitude	028º13'16.81" E		Elevation	4 095 ft		
Aircraft Information									
Registration	ZS-JLF								
Make; Model; S/N	Piper Aircraft Corporation; PA-28-140 (Serial Number: 28-7525229)								
Damage to Aircraft	Substantial			Total Airframe Hours		15 091.58			
Pilot-in-command									
Licence Type	Student Pilot Licence (SPL)			Gender	Male		Age	21	
Licence Valid	Yes	Total Hours	26.4		Total Hours on Type		25.3		
Total Hours 90 Days	22.7		Total Flying Hours on Type Past 90 Days		22.7				
People On-board	1 + 0	**Injuries**	0	**Fatalities**	0	**Other (on the ground)**	0		

What Happened

On Thursday morning, 15 February 2024, a student pilot on-board a Piper PA-28-140 aircraft was engaged in a solo consolidation flight from Wonderboom Aerodrome (FAWB), Gauteng province, with the intention to land back at the same aerodrome. 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 flew three circuits with the flight instructor and, thereafter, took off on a solo consolidation flight. The student pilot took off without incident and performed the first touch-and-go on Runway 29. On his second circuit, he stated that he turned base leg approximately 3 nautical miles (nm) east of the N1 highway but did not start with his descent as the engine was underperforming; he had to constantly apply more engine power to maintain a straight and level flight.

Once abeam the N1 highway, he stated that he informed the air traffic control (ATC) officer of his position, and thereafter, applied the carburettor heat to the 'hot' position and reduced power to commence with the descent. Approximately 2 minutes later, he moved the carburettor heat control

lever back to the 'cold' position. The aircraft continued to descend below the glide path which required that the student pilot keep adding more power whilst on final approach.

The student pilot stated that because of poor performance of the engine, he intended to perform a full stop landing, but as he was already cleared by ATC for the touch-and-go on Runway 29, he opted to proceed with the exercise. The wind was 290° at 12 knots. At 80 miles per hour (mph), the student pilot commenced with the flare but realised that the indicated airspeed was bleeding off fast, therefore, he pushed the nose forward to prevent the aircraft from stalling but realised that he had not gained any height and was close to the runway surface. As a result, the propeller struck the runway and the student pilot became *"a bit unconscious and lost control for a moment".* The nose landing gear strut collapsed as the aircraft veered off the runway to the left. The ATC activated the crash alarm and the Aerodrome Rescue and Firefighting (ARFF) personnel responded to the scene. Several propeller strike markings were visible on the runway surface (see Figure 1).

No person was injured during the accident. The aircraft sustained substantial damage. One of the runway lights was severed as the aircraft veered off the runway.

The accident occurred during day light at Global Positioning System (GPS) co-ordinates determined to be 25º39'19.11" South 028º13'16.81" East, at an elevation of 4 095 feet (ft).

Figure 1: Propeller strike markings on the edge of the runway. (Source: ARFF)

Figure 2: The severed runway light. (Source: ARFF)

Figure 3: The aircraft as it came to rest next to the runway. (Source: ARFF)

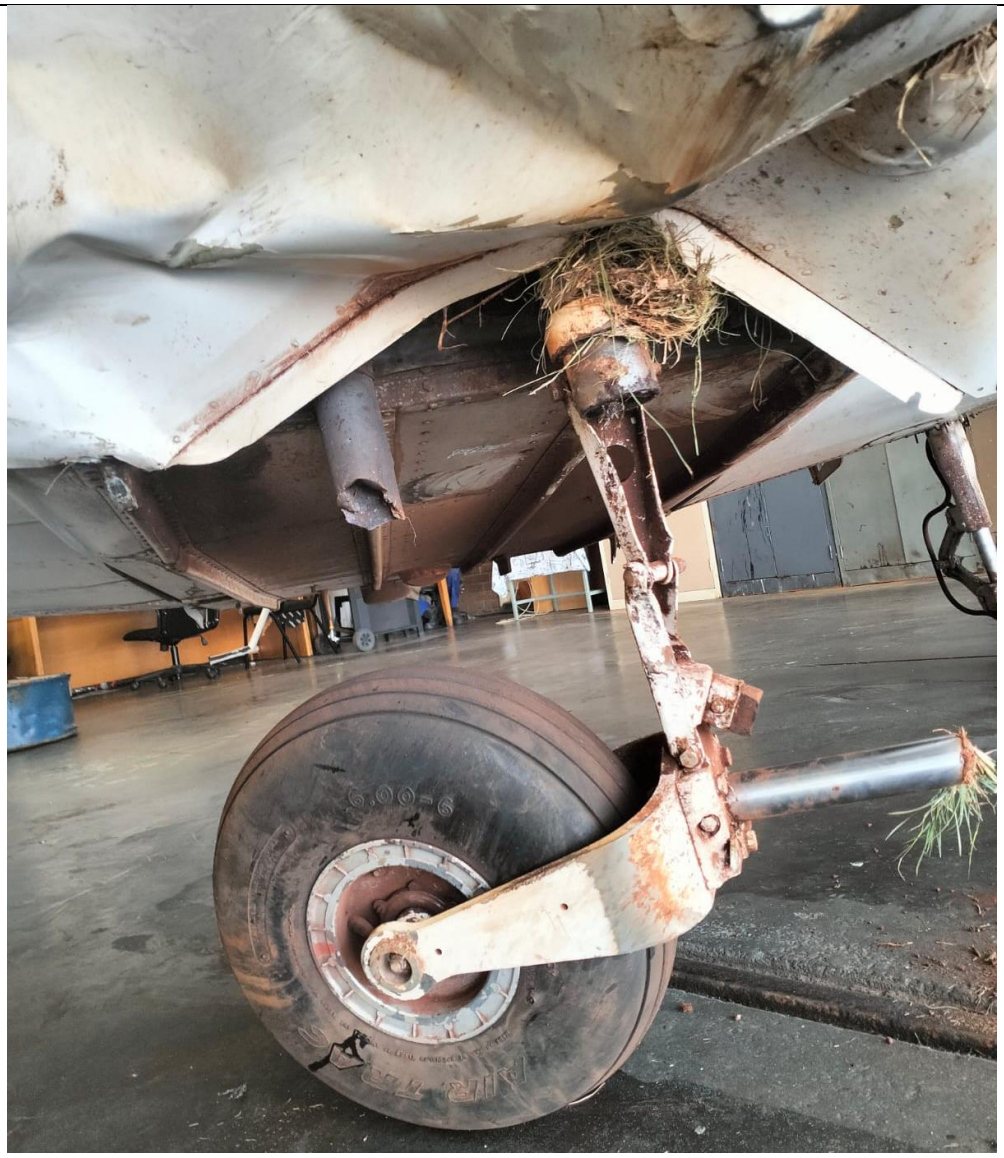


Figure 4: Damage to the nose landing gear oleo and aircraft structure.

Meteorological Information

The meteorological aerodrome report (METAR) for FAWB on 15 February 2024 at 0900Z was obtained from the South African Weather Service (SAWS) aviation website: www.aviation.weathersa.co.za

FAWB 150900Z AUTO 36008KT //// // ////// 27/17 Q1017=

Wind Direction	360º	Wind Speed	8 knots	Visibility	9999 m
Temperature	27ºC	Cloud Cover	Nil	Cloud Base	CAVOK
Dew Point	17ºC	QNH	1017hPa		

Density Altitude
(Source: https://wahiduddin.net/calc/calc_da.htm)

The density altitude at the time was calculated to be 6 531 feet.

Aerodrome

FAWB is a licensed aerodrome with two runways. The main runway is orientated 11/29 and is 1828 metres (m) long and 30m wide. The second runway is orientated 06/24 and is 1267m long and 22m wide. The ARFF personnel are stationed at the aerodrome. They had dispatched to the accident site following the activation of the crash alarm by the ATC. The student pilot was cleared for a touch-and-go landing on Runway 29. The aerodrome chart is attached to this report as Appendix A (Source: www.caa.co.za).

Air Traffic Control

FAWB is a manned aerodrome. The tower frequency is 118.35 Megahertz (MHz). The student pilot was in radio communication with the ATC officer for the duration of the flight. The tower communication recordings were requested from the service provider. From the recordings, it was confirmed that the ATC had cleared the aircraft for a touch-and-go landing on Runway 29 with 290° wind at 12 knots. The student pilot read back the clearance. The ATC activated the crash alarm when the aircraft veered off the runway. After the aircraft came to rest next to the runway, the ATC was still in radio contact with the student pilot. The ATC requested the student pilot to stand by and hold his position as the emergency services personnel were on their way to him.

Findings

1. Personnel Information

1.1 The student pilot had a Student Pilot Licence (SPL) that was initially issued by the Regulator (SACAA) on 3 August 2023 with an expiry date of 2 August 2024. The student pilot had flown a total of 26.4 hours of which 25.3 hours were on the aircraft type.

1.2 The student pilot was issued a Class 2 aviation medical certificate on 4 July 2023 with an expiry date of 31 July 2028.

1.3 There was no evidence of an engine malfunction or poor performance as the student pilot was able to manipulate the power without difficulty to maintain flight.

2. Aircraft Information

2.1 The last maintenance inspection that was conducted on the aircraft before the accident flight was certified on 22 November 2023 at 15 014.88 airframe hours. The aircraft had accrued 76.7 hours since the maintenance inspection.

2.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued on 30 November 2014. The latest C of A that was reissued had an expiry date of 28 February 2024. 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 June 2022.

2.4 The aircraft was issued a Certificate of Release to Service (CRS) on 22 November 2023 with an expiry date of 21 November 2025 or at 15 114.88 airframe hours, whichever occurs first.

2.5 The aircraft was fitted with a Lycoming O-320-E2A engine with serial number L17707-27A.

2.6 The aircraft was fitted with a Sensenich 74DM6-0-58 propeller with serial number A59500.

3. Approved Training Organisation (ATO)

3.1 The ATO was issued an approval certificate by the Regulator on 28 September 2022 with an expiry date of 30 November 2027.

Probable Cause

The aircraft touched down hard in a nose-down attitude towards the left of the runway centreline, and the aircraft veered off the runway.

Contributing Factors

(i) Insufficient use of rudder to maintain directional control.
(ii) Density altitude at the time could have impaired the aircraft's performance.

Safety Action

The student pilot is set to undergo additional training at the ATO before he is considered to fly solo again.

Feedback received from the ATO:

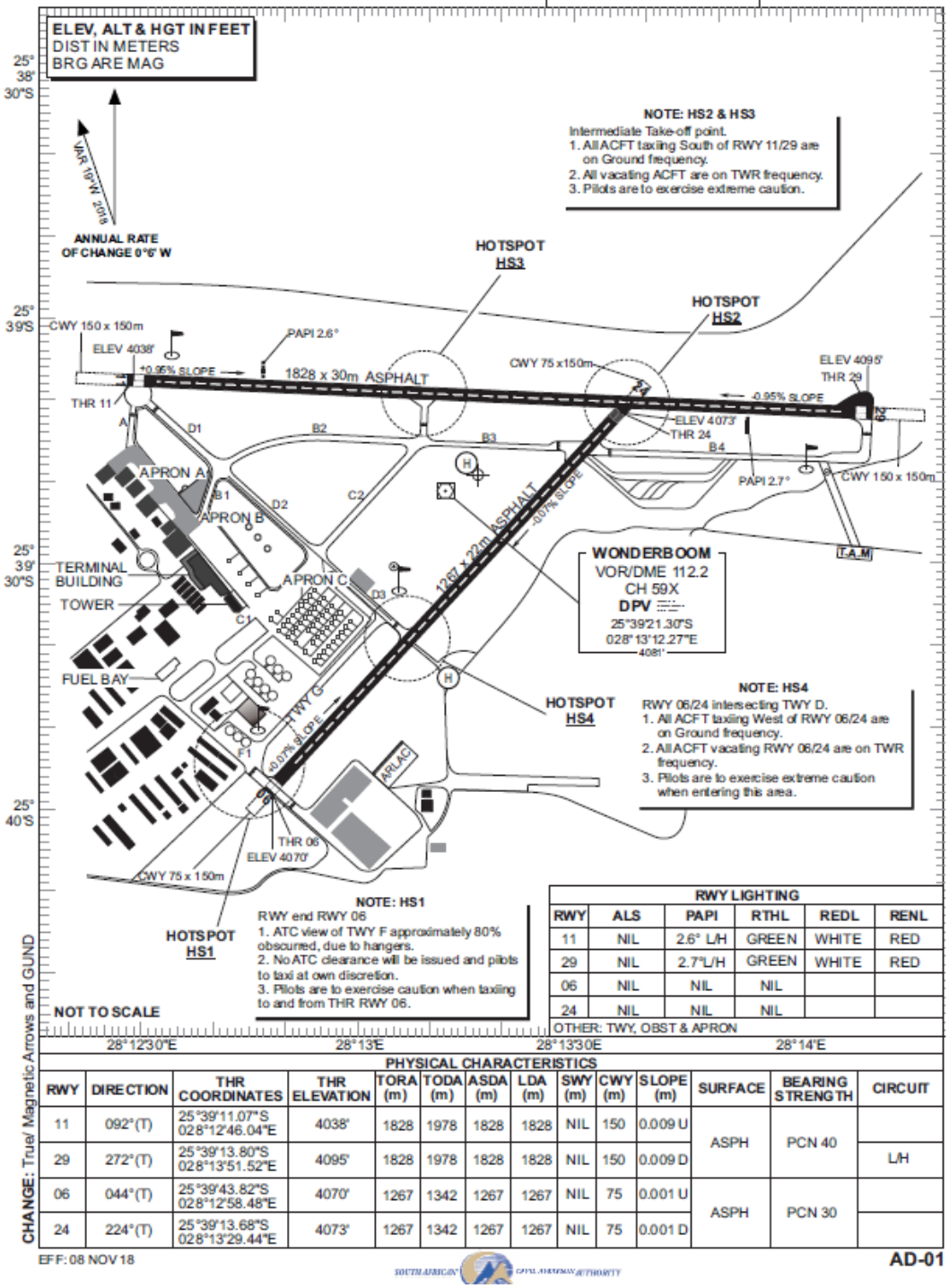
"The student will be re-briefed on approach and landings, and he will be sent back to the simulator for additional training. He will also receive additional circuit training. No solo flights on ZS-JLF due to the lack of performance during high-density altitude conditions. His next solo check will be done by the CFI."

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

Appendix A

AERODROME/ HELIPORT CHART - ICAO | 25°39'19.11"S 028°13'16.81"E | **ELEV 4095'** **GUND 80.3'** | WONDERBOOM TWR: 118.35 GND: 120.60 | **WONDERBOOM (PRETORIA)** FAWB



RWY LIGHTING

RWY	ALS	PAPI	RTHL	REDL	RENL
11	NIL	2.6° L/H	GREEN	WHITE	RED
29	NIL	2.7°L/H	GREEN	WHITE	RED
06	NIL	NIL	NIL		
24	NIL	NIL	NIL		

OTHER: TWY, OBST & APRON

PHYSICAL CHARACTERISTICS

RWY	DIRECTION	THR COORDINATES	THR ELEVATION	TORA (m)	TODA (m)	ASDA (m)	LDA (m)	SWY (m)	CWY (m)	SLOPE (m)	SURFACE	BEARING STRENGTH	CIRCUIT
11	092°(T)	25°39'11.07"S 028°12'46.04"E	4038'	1828	1978	1828	1828	NIL	150	0.009 U	ASPH	PCN 40	
29	272°(T)	25°39'13.80"S 028°13'51.52"E	4095'	1828	1978	1828	1828	NIL	150	0.009 D			L/H
06	044°(T)	25°39'43.82"S 028°12'58.48"E	4070'	1267	1342	1267	1267	NIL	75	0.001 U	ASPH	PCN 30	
24	224°(T)	25°39'13.68"S 028°13'29.44"E	4073'	1267	1342	1267	1267	NIL	75	0.001 D			

EFF: 08 NOV 18

AD-01