SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/3/2/1451										
Classification	Serious Incident			**Date**	22 May 2024			**Time**	0840Z		
Type of Operation	Training (Part 141)										
Location											
Place of Departure	Ermelo Aerodrome (FAEO), Mpumalanga Province			Place of Intended Landing				Ermelo Aerodrome (FAEO), Mpumalanga Province			
Place of Occurrence	Runway 31 at Ermelo Aerodrome (FAEO), Mpumalanga Province										
GPS Co-ordinates	Latitude	26º29'42.95" S		Longitude	029º58'47.98" E			Elevation	5 795ft		
Aircraft Information											
Registration	ZS-FOW										
Make; Model; S/N	Piper Aircraft Corporation; PA-28-235 (Serial Number: 28-11150)										
Damage to Aircraft	Minor				Total Airframe Hours			4 328.2			
Pilot-in-command											
Licence Type	Student Pilot Licence (SPL)			Gender	Male			Age	42		
Licence Valid	Yes	Total Hours		49.6		Total Hours on Type		17.7			
Total Hours 90 Days	17.7			Total Flying Hours on Type Past 90 Days				17.7			
People On-board	1 + 0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**		0			

What Happened

On Wednesday morning, 22 May 2024, a student pilot on-board a Piper PA-28-235 with registration ZS-FOW took off from Ermelo Aerodrome (FAEO) in Mpumalanga 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.

According to the student pilot and the owner of the aircraft, he was engaged in solo circuit training and had flown one uneventful circuit when a pilot on-board another aircraft called inbound for a full-stop landing at FAEO. The pilot of the other aircraft asked the student pilot what the prevailing wind was at the aerodrome as well as the runway in use, to which the student pilot responded with the requested information.

The student pilot account was as follows: *"On the second landing, my airspeed was a bit too high, due to a tailwind that picked up when over the threshold. This created a higher stress level for me. I continued to try and land the plane, but because of the high speed, she (the aircraft) did not want to land. She (the aircraft) started oscillating (jumping up and down), I then realised landing was not going to happen safely. I gave full power, and then did a go-around, and safely landed on the second*

attempt. Up to this point, I did not even know there was a propeller strike, when I got out of the plane, I saw the propeller was bent."

The aircraft sustained minor damage to the two propeller blades. No person was injured during the serious incident.

The serious incident occurred in daylight at Global Positioning System (GPS) co-ordinates determined to be 26º29'42.95" South 029º58'47.98" East, at an elevation of 5 795 feet (ft).

Figure 1: Ermelo Aerodrome. (Source: Google Earth)

Figure 2: Propeller strike marks on the runway. (Source Pilot)

Figure 3: The propeller blade tips with bent signatures. (Source Pilot)

Meteorological Information

The weather information in the table below was obtained from the student pilot via the pilot questionnaire.

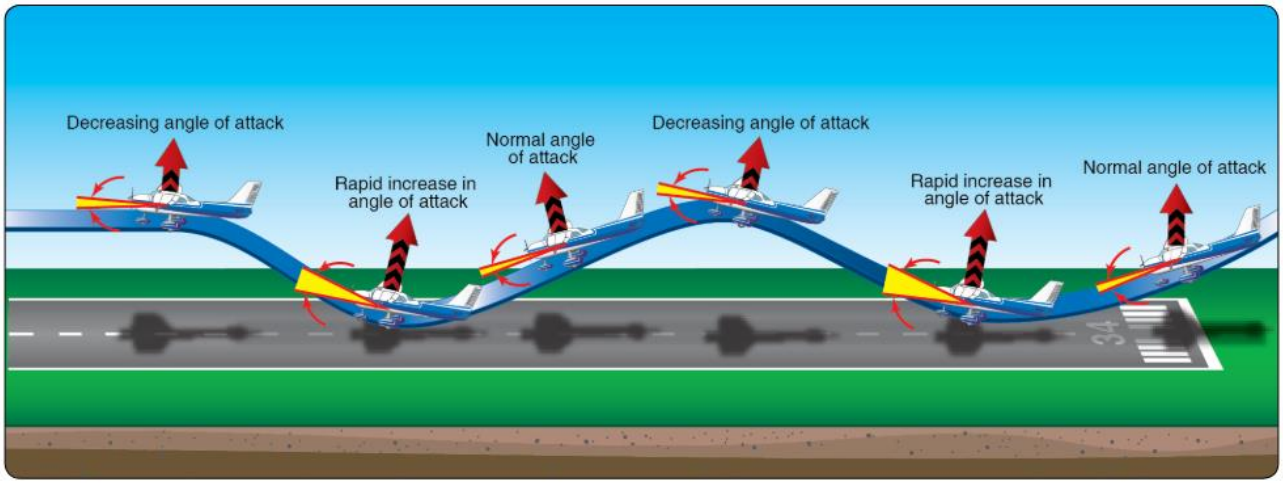
Wind Direction	135°	Wind Speed	5 -10 kt	Visibility	9999 m
Temperature	10ºC	Cloud Cover	Nil	Cloud Base	CAVOK
Dew Point	Unknown	QNH	Unknown		

Aerodrome Information

FAEO is a licensed aerodrome with a single asphalt surface runway orientated 13/31. The runway is 1 460m long and 10m wide. (Source: https://www.caa.co.za/industry-information/aeronautical-information-aerodrome-and-helistop-directory/)

Porpoising
Source:
https://www.faa.gov/sites/faa.gov/files/regulations_policies/handbooks_manuals/aviation/airplane_handbook/10_afh_ch9.pdf

Porpoising 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. 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.



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 try 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. Personnel Information

1.1 The pilot had a Student Pilot Licence (SPL) that was initially issued on 17 May 2021. The pilot had flown a total of 49.6 hours of which 17.7 hours were on the aircraft type.

1.2 The student pilot was issued a Class 2 aviation medical certificate on 1 June 2022 with an expiry date of 1 June 2024.

1.3 The student pilot started his pilot training on 17 May 2021 and had flown 49.6 hours until the day of this serious incident on 22 May 2024.

2. Aircraft Information

2.1 The last maintenance inspection that was conducted on the aircraft before the serious incident flight was certified on 16 November 2023 at 4 304.3 airframe hours. The aircraft had accrued 23.9 hours since the last maintenance inspection.

2.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued on 30 November 2018. The latest C of A had an expiry date of 31 December 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 18 December 2023.

2.4 The aircraft was issued a Certificate of Release to Service (CRS) on 16 November 2023 with an expiry date of 15 November 2024 or at 4 404.3 airframe hours, whichever occurs first.

2.5 The aircraft was fitted with a Lycoming O-540-B4B5 engine with serial number L-12592-40. The engine was operated for 4 328.2 hours since new, and 623.5 hours since the last overhaul at the time of the serious incident.

2.6 The aircraft was fitted with a Hartzell HC-C2YK-1BF propeller with serial number AW2374. The propeller was operated for 4 328.2 hours since new, and 623.5 hours since the last overhaul at the time of the serious incident.

3. Aerodrome

3.1 FAEO is a licensed aerodrome. The student pilot elected to use Runway 31.

4. Approved Training Organisation (ATO)

4.1 The ATO had an operational certificate that was issued by the Regulator (SACAA) on 27 January 2022 with an expiry date of 30 November 2027.

Probable Cause

The student pilot approached the runway with a tailwind, which resulted in a higher ground speed, and the aircraft porpoised as he attempted to land on the runway. The propeller blade tips struck the runway surface as the aircraft was in a nose-low attitude.

Contributing Factors

(i) The student pilot's lack of experience on the aircraft type.

(ii) Not making a proper assessment of the prevailing wind, which resulted in a tailwind landing.

Safety Action

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