

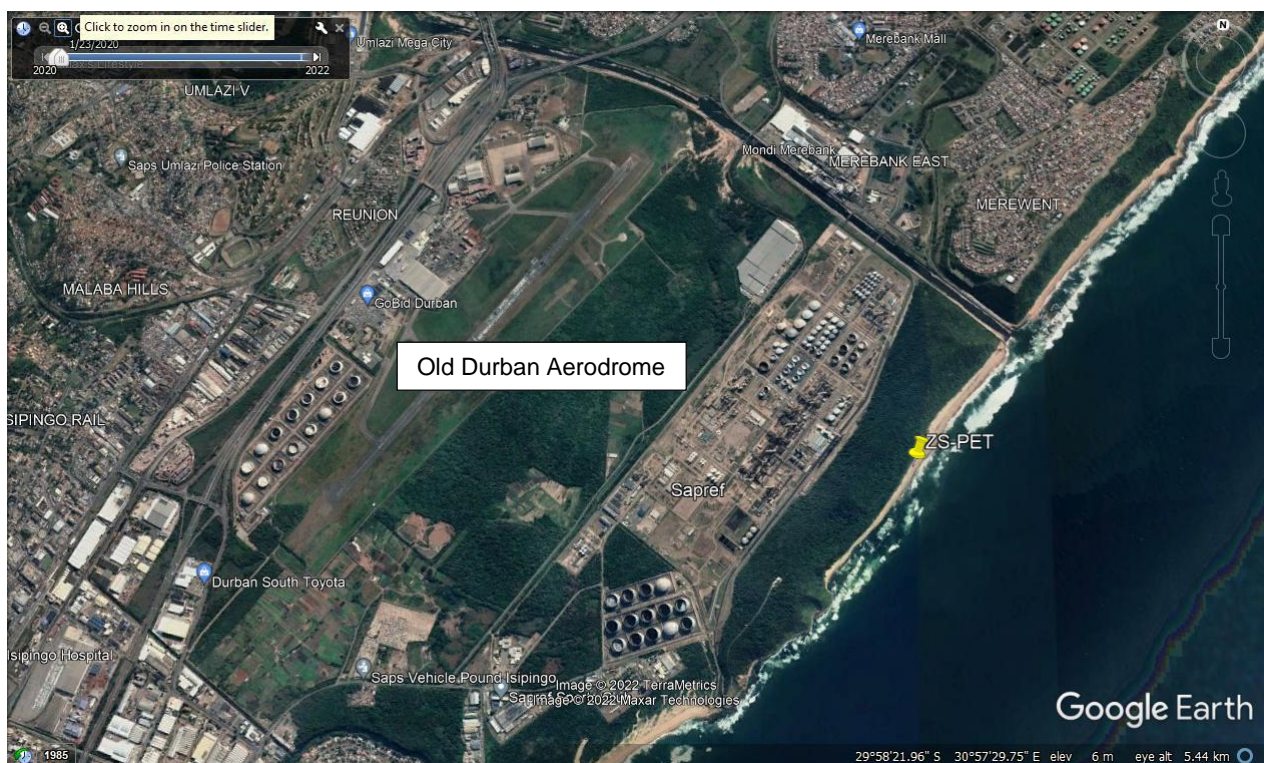
**LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL**

<b>Reference Number</b>	CA18/3/2/1402						
<b>Classification</b>	Serious Incident	<b>Date</b>	4 September 2022	<b>Time</b>	0910Z		
<b>Type of Operation</b>	Training (Part 141)						
<b>Location</b>							
Place of Departure	Port Alfred Aerodrome (FAPA), Eastern Cape Province	Place of Intended Landing	Virginia Aerodrome (FAVG), KwaZulu-Natal Province				
Place of Occurrence	On the beach near the old Durban Aerodrome						
GPS Co-ordinates	Latitude	29°58'32.95" S	Longitude	030°58'22.60" E	Elevation	20 feet	
<b>Aircraft Information</b>							
Registration	ZS-PET						
Make; Model; S/N	Piper Aircraft Corporation; PA-28-180 (Serial Number: 28-7305163)						
Damage to Aircraft	None		Total Aircraft Hours	13 936.0			
<b>Pilot-in-command</b>							
Licence Type	Student Pilot Licence		Gender	Female		Age	28
Licence Valid	Yes	Total Hours	113.9		Total Hours on Type	71.5	
Total Hours Past 90 days	39.6		Total Flying Hours on Type Past 90 days	7.3			
<b>People On-board</b>	1 + 0	<b>Injuries</b>	0	<b>Fatalities</b>	0	<b>Other (on ground)</b>	0
<b>What Happened</b>							
<p>On Sunday morning, 4 September 2022, a student pilot on-board a Piper PA-28-180 aircraft with registration ZS-PET was engaged in a training flight. She took off on a navigational flight from Port Alfred Aerodrome (FAPA) in the Eastern Cape at 0612Z to Virginia Aerodrome (FAVG) in KwaZulu-Natal. The estimated flight time was 2 hours 37 minutes. The student pilot stated that the aircraft was refuelled to capacity (48 US gallons or 181 litres) prior to the flight, which equated to a 5-hour flight endurance. Visual meteorological conditions (VMC) by day prevailed at the time of the flight. The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot stated that during the flight, the engine parameters were within the normal operating range. She was flying at 3 500 feet (ft) above ground level from FAPA to Margate. As she approached Margate, she requested from Johannesburg East Area Control on frequency 129.1-Megahertz (MHz) if she could descend to 1 500 feet (ft). But a few minutes later, the engine stopped. The student pilot opted to turn towards the coastline and attempted an engine restart, but the engine did not respond. She then opted to perform a forced landing on a beach from a height of approximately 600ft. The landing was successful, and no damage was caused to the aircraft. As it was a remote section of the</p>							

beach, the student pilot attempted to contact air traffic control (ATC) at FAVG on the very high frequency (VHF) 121.50-Megahertz (MHz). However, the connection could not be established.

The student pilot then selected the squawk code 7700 on the aircraft's transponder. This code indicates that the aircraft has an emergency and it immediately alerts the ATC and other emergency rescue units (such as Search and Rescue). The aircraft was detected on the secondary surveillance radar (SSR) and a helicopter that was conducting a pipeline inspection in the area was routed to the location of the aircraft. The helicopter pilot transported the student pilot to FAVG.

The student pilot was not injured during the incident. The student pilot opted to land the aircraft on the beach at Global Positioning System (GPS) coordinates determined to be 29°58'32.95" South 030°58'22.60" East at an elevation of 20ft.



**Figure 1:** The location of the incident is indicated by the yellow pin. (Source: Google Earth)



**Figure 2:** The aircraft as it came to rest on the beach. (Source: AMO)

### The Student Pilot

The student pilot was issued a Student Pilot Licence (SPL) Integrated Course by the Regulator (SACAA), which was valid until 8 November 2022. At the time of the incident, the student pilot had flown a total of 113.9 hours of which 71.5 hours were on the aircraft type. The student pilot had a valid Class 1 aviation medical certificate which was issued on 20 October 2021 with an expiry date of 31 October 2022.

### The Aircraft

The aircraft, a Piper PA-28-180 with serial number 28-7305163 was manufactured in 1973. The last maintenance inspection prior to the accident flight was certified on 12 August 2022 at 13 909.0 airframe hours. A further 27.0 hours were flown with the aircraft since the maintenance inspection. The last renewal was conducted in September 2021. The Certificate of Airworthiness (C of A) was initially issued on 20 September 2016. The latest C of A had an expiry date of 30 September 2022. A Certificate of Registration (C of R) was issued to the current owner on 29 June 2004. A Certificate of Release to Service (CRS) was issued on 18 August 2022 with an expiry date of 11 December 2023 or at 14 009.0 hours, whichever occurs first. The aircraft was fitted with a Lycoming O-360-A4A engine with serial number L-15995-36A. The engine's total time since new (TTSN) was 21 992.0 hours and the time since overhaul (TSO) was 1 294.0 hours.

## Weather Information

Presented in the table below is the meteorological aerodrome report (METAR) data for King Shaka International Aerodrome (FALE) on 4 September 2022 at 0900Z. FALE 040900Z 03010KT 350V060 CAVOK 25/17 Q1012 NOSIG=

Wind Direction	030°	Wind Speed	10 knots	Visibility	> 10km
Temperature	25°C	Cloud Cover	Nil	Cloud Base	Nil
Dew Point	17°C	QNH	1012 hPa		

## Approved Training Organisation (ATO)

The training organisation was issued an ATO certificate on 21 November 2019 by the Regulator, which was valid until 30 November 2024. The aircraft was duly authorised as per the Training Operations Specifications certificate, which was issued by the Regulator with an effective date of 17 May 2022 and an expiry date of 30 November 2022. The student pilot had completed and signed the solo authorisation form, which was authorised by the flight instructor. According to her navigation log, the flight time was estimated to be 2 hours 37 minutes.

## On-site Observations and Engine Ground-run by the AMO

A team from the aircraft maintenance organisation (AMO) was dispatched from Port Alfred to recover the aircraft, which was on the beach near Durban. Following their assessment, they submitted the following information:

- (i) *We inspected the aircraft for any visual damage, both inside and outside. We could not identify any visual damage that could have led to the forced landing or damage caused by the forced landing.*
- (ii) *The right tank did not show visible level (amount) of fuel when viewed from filler cap, but we drained about 4 litres of Avgas – considered to be un-usable fuel.*
- (iii) *Forty (40) litres of Avgas were drained from the left tank.*
- (iv) *On 7 September 2022, an engine ground-run was conducted with the engine still in the airframe. A fuel container was attached to the fuel system, whereafter the system was primed, and the engine started with minimal effort.”*



- (v) The photograph in Figure 3 was taken during the engine ground-run with the engine revolutions per minute (RPM) gauge indicating a reading of 2 000rpm.



**Figure 3:** Photograph taken during the engine ground-run. (Source: AMO)

Emergency Procedures, Engine Power Loss In-flight

**CHEROKEE ARCHER**

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**ENGINE POWER LOSS IN FLIGHT**

Complete engine power loss is usually caused by fuel flow interruption, and power will be restored shortly after fuel flow is restored. If power loss occurs at low altitude, the first step is to prepare for an emergency landing (See POWER OFF LANDING). Maintain an airspeed of at least 80 MPH IAS, and if altitude permits, proceed as follows:

1. Fuel Selector - Switch to another tank containing fuel.
2. Electric Fuel Pump - On
3. Mixture - Rich
4. Carburetor Heat - On
5. Engine Gauges - Check for an indication of the cause of power loss.
6. Primer- Check Locked
7. If no fuel pressure is indicated, check tank selector position to be sure it is on a tank containing fuel.

When power is restored:

8. Carburetor Heat - Off
9. Electric Fuel Pump - Off

If the above steps do not restore power, prepare for an emergency landing.

If time permits:

1. Ignition Switch - "L" then "R" then back to "BOTH."
2. Throttle and Mixture - Different settings. (This may restore power if the problem is too rich or too lean a mixture, or if there is partial fuel system restriction.)
3. Try other fuel tank. (Water in the fuel could take some time to be used up, and allowing the engine to windmill may restore power. If power loss is due to water, fuel pressure indications will be normal.)

**NOTE**

If engine failure was caused by fuel exhaustion, power will not be regained after tanks are switched until empty fuel lines are filled, which may require up to ten seconds.

If power is not restored, proceed with POWER OFF LANDING procedure.

**Findings**

- (i) The student pilot was issued a Student Pilot Licence (SPL) Integrated Course by the Regulator (SACAA).
- (ii) The student pilot had flown a total of 113.9 hours of which 71.5 hours were on the aircraft type.
- (iii) The student pilot was airborne for 2 hours and 58 minutes when she performed the forced landing on the beach.

- (iv) This flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.
- (v) The last maintenance inspection that was carried out on the aircraft prior to the accident flight was certified on 12 August 2022 at 13 909.0 airframe hours. A further 27.0 hours were flown since the said inspection.
- (vi) The aircraft was issued a Certificate of Airworthiness on 20 September 2016 with an expiry date of 30 September 2022.
- (vii) Fine weather conditions prevailed at the time of flight, with the wind from the north-east at 10 knots.
- (viii) No person was injured during the incident sequence.
- (ix) The aircraft did not sustain any damage during the landing sequence on the beach.
- (x) Four (4) litres of fuel was drained from the right tank and forty (40) litres from the left tank.
- (xi) An engine test-run was conducted post recovery and no anomalies were noted that prevented normal engine operation.

**Probable Cause**

Following an engine stoppage in-flight, an uneventful forced landing was executed on the beach. The engine stoppage was attributed to fuel mismanagement, which resulted in fuel starvation to the engine.

**Contributing Factor(s)**

None.

**Safety Action(s)**

None.

**Safety Message and/or Safety Recommendation/s**

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 desk top 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**