

## AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

|                                                                                                                                                              |                                                                                                                                                        |                                 |                |                                |                         |                          |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------|--------------------------------|-------------------------|--------------------------|-----|
|                                                                                                                                                              |                                                                                                                                                        |                                 |                | <b>Reference:</b>              |                         | CA18/2/3/10629           |     |
| <b>Aircraft Registration</b>                                                                                                                                 | ZS-WEZ                                                                                                                                                 | <b>Date of Accident</b>         | 2 January 2026 |                                | <b>Time of Accident</b> | 0812Z                    |     |
| <b>Type of Aircraft</b>                                                                                                                                      | Piper PA-22-160 Tri-Pacer                                                                                                                              |                                 |                | <b>Type of Operation</b>       | Private (Part 91)       |                          |     |
| <b>Pilot-in-command Licence Type</b>                                                                                                                         | Airline Transport Pilot Licence (ATPL)                                                                                                                 |                                 |                | <b>Age</b>                     | 46                      | <b>Licence Valid</b>     | Yes |
| <b>Pilot-in-command Flying Experience</b>                                                                                                                    | <b>Total Flying Hours</b>                                                                                                                              |                                 |                | 10 706                         | <b>Hours on Type</b>    | 346.7                    |     |
| <b>Last Point of Departure</b>                                                                                                                               | Beaufort West Airport (FABW), Western Cape Province                                                                                                    |                                 |                |                                |                         |                          |     |
| <b>Next Point of Intended Landing</b>                                                                                                                        | Bram Fischer International Airport (FABL), Free State Province                                                                                         |                                 |                |                                |                         |                          |     |
| <b>Damage to Aircraft</b>                                                                                                                                    | Destroyed                                                                                                                                              |                                 |                |                                |                         |                          |     |
| <b>Location of the accident site with reference to easily defined geographical points (GPS readings if possible)</b>                                         |                                                                                                                                                        |                                 |                |                                |                         |                          |     |
| Dominee Kotze Street near Ferreiras Air Rifle Benchrest Club in Bloemfontein, Free State province, at GPS co-ordinates South 29°12'28.26" East 026°10'47.57" |                                                                                                                                                        |                                 |                |                                |                         |                          |     |
| <b>Meteorological Information</b>                                                                                                                            | Wind direction: variable; Wind speed: 03 kts; Visibility: more 10km; Temperature: 23°C; Dew point: 10°C; Cloud cover: few clouds at 2 500ft; QNH: 1017 |                                 |                |                                |                         |                          |     |
| <b>Number of People On-board</b>                                                                                                                             | 1 + 0                                                                                                                                                  | <b>Number of People Injured</b> | 0              | <b>Number of People Killed</b> | 1                       | <b>Other (On Ground)</b> | 0   |

### Synopsis

On Friday, 2 January 2026, a pilot on-board a Piper PA-22-160 Tri-Pacer aircraft registered ZS-WEZ took off on a private flight from Stellenbosch Airfield (FASH) in Western Cape province to The Coves Airstrip near Hartbeespoort in North West province. According to available information, the pilot had planned two fuel stops en route at Beaufort West Airport (FABW) in Western Cape province and Bram Fischer International Airport (FABL) in Free State province.

The aircraft took off from FASH and landed safely at FABW. After landing, the pilot uplifted 76 litres (L) of Avgas 100LL which brought the total to 80L. Thereafter, he took off to FABL. According to the air traffic control officer (ATCO) on duty at FABL, at approximately 0803Z, ZS-WEZ reported inbound and entered FABL airspace. However, at about 0809Z, the aircraft disappeared from radar. The ATCO notified the Aeronautical Rescue Coordination Centre (ARCC), and a search and rescue mission was initiated. The ZS-WEZ wreckage was located at Dominee Kotze Street in Bloemfontein, Free State province, approximately 8 nautical miles (nm) west of FABL. Post-accident investigation determined that the aircraft had an in-flight engine stoppage due to fuel exhaustion, descended rapidly whilst striking treetops before impacting the ground. The aircraft was destroyed and the pilot was fatally injured.

### Probable Cause

Loss of lift after complete loss of engine power due to fuel exhaustion. This resulted in an unsuccessful forced landing during which the aircraft impacted the treetops and, later, the ground.

### Contributing Factor

Poor flight planning and fuel mismanagement.

|                 |              |                         |              |
|-----------------|--------------|-------------------------|--------------|
| <b>SRP Date</b> | 14 July 2026 | <b>Publication Date</b> | 16 July 2026 |
|-----------------|--------------|-------------------------|--------------|

## Occurrence Details

**Reference Number** : CA18/2/3/10629  
**Occurrence Category** : Category 2 (Accident)  
**Type of Operation** : Private (Part 91)  
**Name of Operator** : Gareth Gordon  
**Aircraft Registration** : ZS-WEZ  
**Aircraft Make and Model** : Piper PA-22-160 Tri-Pacer  
**Nationality** : South African  
**Registration** : ZS-WEZ  
**Place** : Dominee Kotze Street near Ferreiras Air Rifle  
Benchrest Club in Bloemfontein, Free State Province  
**Date and Time** : 2 January 2026 at 0812Z  
**Injuries** : Fatal  
**Damage** : Destroyed

## 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.*

*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.*

## Investigation Process

The Accident and Incident Investigations Division (AIID) was notified of the occurrence on 2 January 2026 at 0812Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the International Civil Aviation Organisation (ICAO) STD Annex 13 definitions. Notifications were sent to the State of Registry, Operator, Design and Manufacturer in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The South African Civil Aviation Authority appointed an investigator who dispatched to the accident site.

### Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:*  
*Accident — this investigated accident*  
*Aircraft — the Piper PA-22-160 Tri-Pacer involved in this accident*  
*Investigation — the investigation into the circumstances of this accident*  
*Pilot — the pilot involved in this accident*  
*Report — this accident report*
- Photos and figures used in this report were taken from different sources and may have been adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

## Disclaimer

*This report is produced without prejudice to the rights of the South African Civil Aviation Authority (SACAA), which are reserved.*

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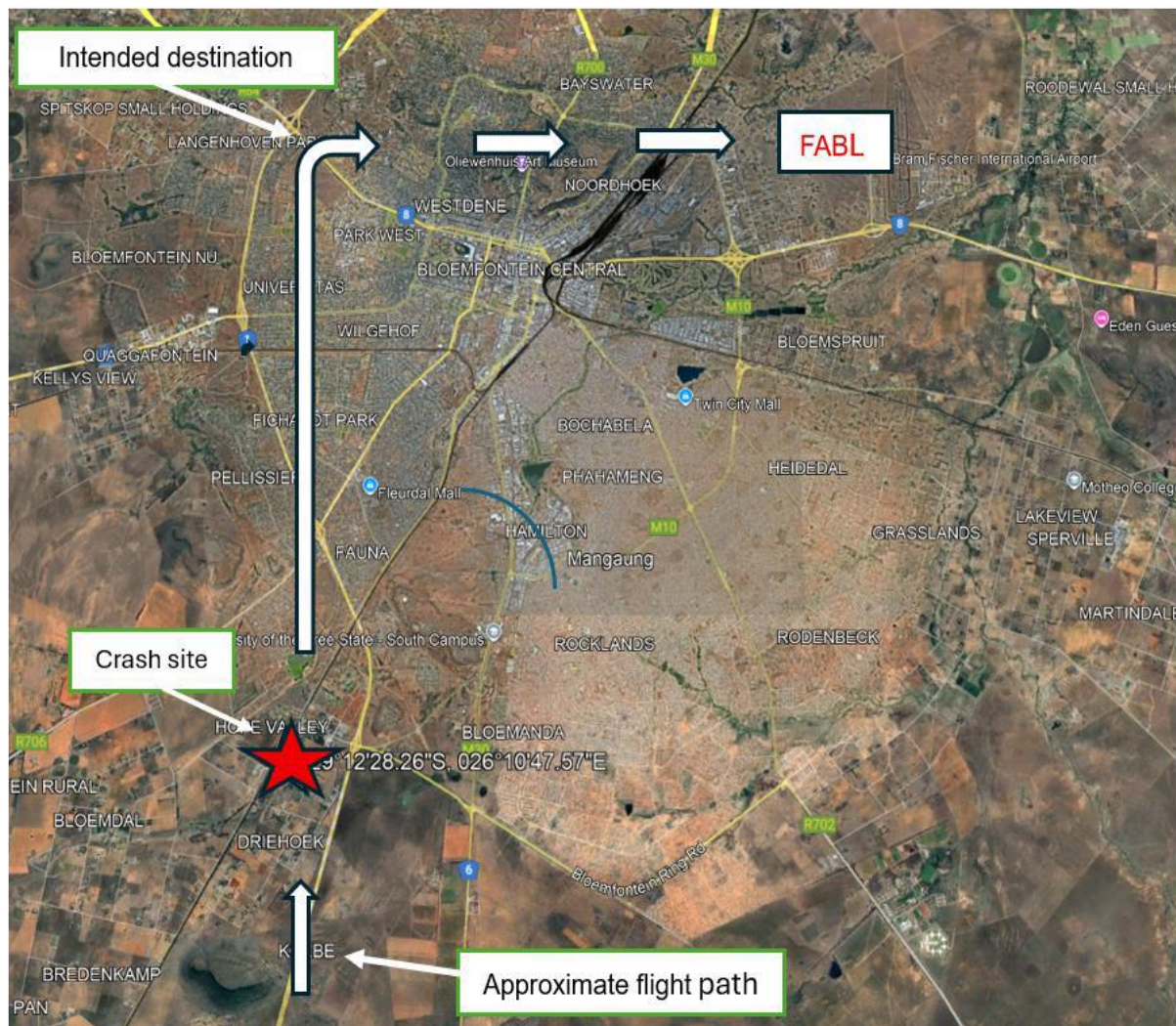
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| Abbreviation | Description                                   |
|--------------|-----------------------------------------------|
| °            | Degrees                                       |
| °C           | Degrees Celsius                               |
| AGL          | Above Ground Level                            |
| AIID         | Accident and Incident Investigations Division |
| AMO          | Aircraft Maintenance Organisation             |
| ARCC         | Aeronautical Rescue Coordination Centre       |
| ARFF         | Aircraft Rescue and Firefighting              |
| ATCO         | Air Traffic Control Officer                   |
| ATPL         | Airline Transport Pilot Licence               |
| Avgas        | Aviation Gasoline                             |
| C of A       | Certificate of Authority                      |
| C of R       | Certificate of Registration                   |
| CRS          | Certificate of Release to Service             |
| CVR          | Cockpit Voice Recorder                        |
| E            | East                                          |
| ELT          | Emergency Locator Transmitter                 |
| EMS          | Emergency Medical Services                    |
| FABL         | Bram Fischer International Airport            |
| FABW         | Beaufort West Airport                         |
| FAGA         | Gariep Dam Airport                            |
| FASH         | Stellenbosch Airport                          |
| FDR          | Flight Data Recorder                          |
| FL           | Flight Level                                  |
| Ft           | Feet                                          |
| GPS          | Global Positioning System                     |
| hPa          | Hectopascal                                   |
| km           | Kilometre/s                                   |
| kts          | Knot/s                                        |
| M            | Metre/s                                       |
| METAR        | Meteorological Aerodrome Report               |
| MHz          | Megahertz                                     |
| POH          | Pilot's Operating Handbook                    |
| S            | South                                         |
| SAPS         | South African Police Services                 |
| SASAR        | South African Search and Rescue               |
| TBO          | Time Between Overhaul                         |
| Z            | Zulu                                          |

## **1. FACTUAL INFORMATION**

### **1.1. History of Flight**

- 1.1.1. On Friday, 2 January 2026, a pilot on-board a Piper PA-22-160 Tri-Pacer aircraft registered ZS-WEZ took off on a private flight from Stellenbosch Airfield (FASH) in Western Cape province to The Coves Airstrip near Hartbeespoort in North West province. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011, as amended.
- 1.1.2. According to available information, the pilot had planned two fuel stops en route at Beaufort West Airport (FABW), Western Cape province, and Bram Fischer International Airport (FABL), Free State province. The aircraft took off from FASH and reached FABW safely; the pilot uplifted 76 litres (L) of Avgas 100LL which brought the total to 80L in both fuel tanks. Thereafter, he took off to FABL. The air traffic control officer (ATCO) on duty at FABL stated that ZS-WEZ entered FABL airspace and the pilot reported inbound at approximately 0803Z. At about 0809Z, the aircraft disappeared from radar, and the ATCO notified the Aeronautical Rescue Coordination Centre (ARCC) and a search and rescue mission was initiated. The ZS-WEZ wreckage was later located at Dominee Kotze Street in Bloemfontein, Free State province, approximately 8 nautical miles (nm) west of FABL.
- 1.1.3. An eyewitness who was outside of his house, approximately 350 metres (m) from the accident site, reported seeing a small aircraft flying at a low level, as well as heard the engine switching off and re-starting about three times before the aircraft descended in a nose-down attitude and crashed. The eyewitness further stated that he notified the South African Police Service (SAPS); subsequently, the Emergency Medical Services (EMS), the Aircraft Rescue and Firefighting (ARFF) and the South African Search and Rescue (SASAR) personnel were notified and all teams swiftly responded to the scene. The aircraft was destroyed by impact forces; the pilot was fatally injured.
- 1.1.4. The accident occurred during daylight at Global Positioning System (GPS) co-ordinates determined to be South 29°12'28.26" East 026°10'47.57", at an elevation of approximately 4 592 feet (ft).



**Figure 1:** The approximate accident site and the intended flight path to FABL. (Source: Google Earth)

## 1.2. Injuries to Persons

| Injuries     | Pilot    | Crew     | Pass.    | Total On-board | Other    |
|--------------|----------|----------|----------|----------------|----------|
| Fatal        | 1        | -        | -        | 1              | -        |
| Serious      | -        | -        | -        | -              | -        |
| Minor        | -        | -        | -        | -              | -        |
| None         | -        | -        | -        | -              | -        |
| <b>Total</b> | <b>1</b> | <b>-</b> | <b>-</b> | <b>1</b>       | <b>-</b> |

Note: Other means people on the ground.

## 1.3. Damage to Aircraft

### 1.3.1. The aircraft was destroyed during the accident.



**Figure 2:** The wreckage at the accident site.

#### 1.4. Other Damage

1.4.1. None.

#### 1.5. Personnel Information

|                     |                                        |               |      |     |    |
|---------------------|----------------------------------------|---------------|------|-----|----|
| Nationality         | South African                          | Gender        | Male | Age | 46 |
| Licence Type        | Airline Transport Pilot Licence (ATPL) |               |      |     |    |
| Licence Valid       | Yes                                    | Type Endorsed | Yes  |     |    |
| Ratings             | Instrument and Instructor Grade II     |               |      |     |    |
| Medical Expiry Date | 31 December 2026                       |               |      |     |    |
| Restrictions        | None                                   |               |      |     |    |
| Previous Accidents  | None                                   |               |      |     |    |

Note: Previous accidents refer to past accidents in which the pilot was involved, when relevant to this accident.

#### Flying Experience:

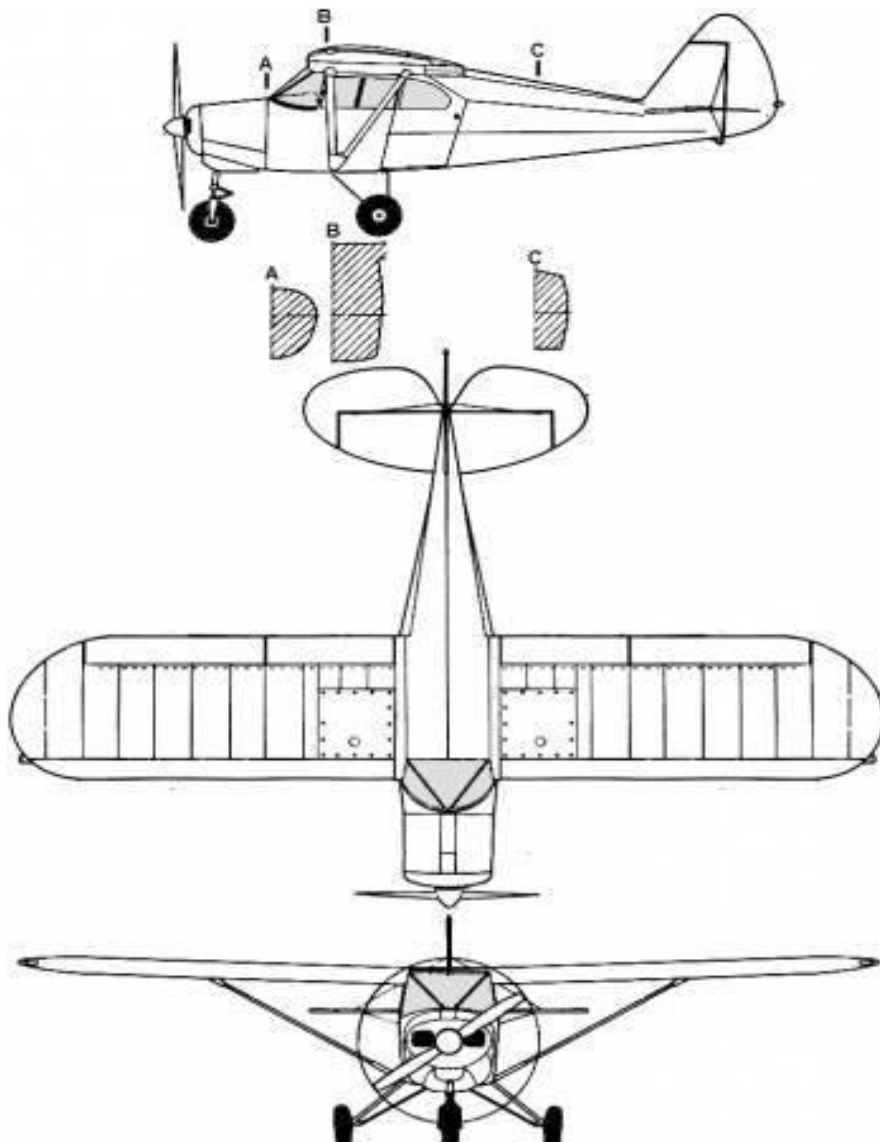
|                            |        |
|----------------------------|--------|
| Total Hours                | 10 732 |
| Total Past 24 Hours        | 4      |
| Total Past 7 Days          | 12.7   |
| Total Past 90 Days         | 94.8   |
| Total on Type Past 90 Days | 16.7   |
| Total on Type              | 346.7  |

- 1.5.1. The pilot had an Airline Transport Pilot Licence (ATPL) that was initially issued by the Regulator (SACAA) on 14 December 2007. The licence was revalidated on 17 December 2025 with an expiry date of 31 December 2026.
- 1.5.2. The pilot had a Class I aviation medical certificate that was issued on 10 December 2025 with an expiry date of 31 December 2026.

## 1.6. Aircraft Information

### 1.6.1. Aircraft Description (Source: Pilot's Operating Handbook [POH])

*The aircraft was converted from PA-20 to a Piper PA-22-160 Tri-Pacer. It is a tail wheel, four-seat, high-wing, fabric-covered light aircraft equipped with fixed tricycle landing gear and powered by a 160-horsepower Lycoming O-320-B3A engine. The aircraft has a fuel tank capacity of 36 United States (US) gallons.*



**Diagram 1:** The PA-22-160 Tri-Pacer. (Source: POH)

**Airframe:**

|                                            |                             |              |
|--------------------------------------------|-----------------------------|--------------|
| Manufacturer/Model                         | Piper / PA-22-160 Tri-Pacer |              |
| Serial Number                              | 22-808                      |              |
| Year of Manufacture                        | 1989                        |              |
| Total Airframe Hours (At Time of Accident) | 1 279.9                     |              |
| Last Inspection (Date & Hours)             | 17 June 2025                | 1 261.8      |
| Airframe Hours Since Last Inspection       | 18.1                        |              |
| CRS Issue Date                             | 28 May 2025                 |              |
| C of A (Issue Date & Expiry Date)          | 17 June 2025                | 30 June 2026 |
| C of R (Issue Date) (Present Owner)        | 03 May 2018                 |              |
| Operating Category                         | Private (Part 91)           |              |
| Type of Fuel Used                          | Avgas 100LL                 |              |
| Previous Accidents                         | None                        |              |

Note: Previous accidents refer to past accidents in which the aircraft was involved, when relevant to this accident.

**Engine:**

|                      |                      |
|----------------------|----------------------|
| Manufacturer/Model   | Lycoming / O-320-B3A |
| Serial Number        | L-992-39             |
| Hours Since New      | 1279.7               |
| Hours Since Overhaul | Not yet              |

- 1.6.2 The engine was within its prescribed time between overhaul (TBO) of 2 000 hours.
- 1.6.3 According to the POH, the engine fuel consumption rate is 34L per hour. The aircraft had a fuel capacity of 136L with a fuel endurance of approximately 4 hours.
- 1.6.4 According to the flight folio records, on 27 December 2025, the pilot departed from The Coves Airstrip to FASH; the fuel tanks had 136L of Avgas. The first leg was to Gariep Dam Airfield (FAGA) in Free State province, approximately 307nm from The Coves Airstrip. At FAGA, the pilot purchased 138L of Avgas of which 92L was uplifted, bringing the fuel in the tanks to 127L. The remaining 46L was carried on-board in two jerry cans. The flight to Beaufort West Airport (FABW), Western Cape province, was approximately 179nm from FAGA. Upon arrival at FABW, 61L of fuel was uplifted, bringing the fuel on-board to 131 litres apart from the fuel in the jerry cans. Later, the aircraft departed from FABW to FASH which was approximately 218nm. Approximately 61.5L of fuel remained on-board upon arrival at FASH.
- 1.6.5 On 30 December 2025 during a pre-flight inspection at FASH, the pilot transferred 25L of fuel from one jerry can into the aircraft's fuel tanks, bringing the total to 86.5L. He then conducted a local flight in the Western Cape of approximately 1 hour and landed back at FASH. On 2 January 2026, the day of the accident, the pilot transferred the remaining 21L of fuel from

the jerry can into the aircraft's tanks during the pre-flight inspection, bringing the total fuel on-board to 73.5L. He then departed from FASH to The Coves Airstrip in Gauteng, with two planned refuelling stops at FABW and FABL. The first leg from FASH to FABW was uneventful. The pilot uplifted 76L of fuel, bringing the total on-board to 80L. This fuel upliftment was not recorded in the flight folio. The pilot then departed from FABW to the next refuelling stop at FABL, which was approximately 270nm away. According to the distance calculations, more than 86 litres of fuel was required for the flight to FABL.

| Date        | Departure Destination | Distance (Nm) | Duration (Hours) | Fuel @ Start(Litres) | Fuel Required (Litres/ Leg) | Fuel Remaining | Fuel Upliftment |
|-------------|-----------------------|---------------|------------------|----------------------|-----------------------------|----------------|-----------------|
| 27 Dec 2025 | Cove to FAGA          | 307           | 2.9              | 136                  | 101                         | 35             | 92 litres       |
| 27 Dec 2025 | Gariep to FABW        | 179           | 1.6              | 127                  | 57.0                        | 70             | 61 litres       |
| 27 Dec 2025 | FABW to FASH          | 218           | 2.0              | 131                  | 69.5                        | 61.5           | 25 litres       |
| 30 Dec 2025 | FASH/ Coff/ FASH      | -             | 1                | 86.5                 | 34                          | 52.5           | 21 litres       |
| 2 Jan 2026  | FASH to FABW          | 179           | 1.6              | 73.5                 | 69.5                        | 4              | 76 litres       |
| 2 Jan 2026  | FABW to FABL          | 270           | 2.5              | 80                   | 86                          | -              | -               |

- 1.6.6 The actual quantity of fuel that was uplifted during the first sector (The Coves Airstrip to FASH) of the flight as well as the second sector (from FASH to The Coves Airstrip) was not recorded in the flight folio; the indicated fuel upliftment records were sourced by the investigator from the refuelling stations.

Civil Aviation Regulations Part 91.03.6 (1)

#### *Fuel Record*

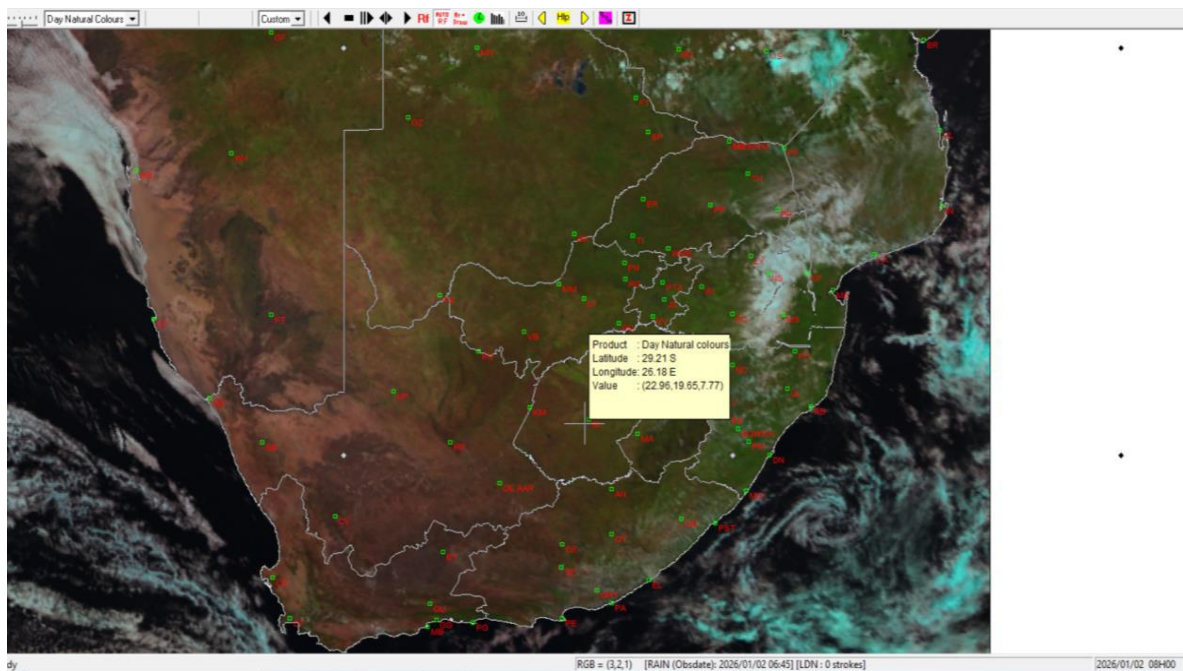
**91.03.6 (1)** *The owner of operator shall maintain fuel records to enable the Director to ascertain that, for each flight under his or her control, the requirements of Regulation 91.07.12 are complied with.*

*(2) The PIC of the aircraft shall enter the fuel and oil records referred to in sub-regulation (1) in the flight folio.*

## **1.7 Meteorological Information**

- 1.7.1. The weather information below was sourced from the South African Weather Service (SAWS), recorded at FABL around the time of the accident. The accident site was approximately 8nm from FABL.

|                |      |             |         |            |        |
|----------------|------|-------------|---------|------------|--------|
| Wind Direction | VRB  | Wind Speed  | 03kt    | Visibility | 9999   |
| Temperature    | 23°C | Cloud Cover | FEW     | Cloud Base | 2500ft |
| Dew Point      | 10°C | QNH         | 1017hPa |            |        |



**Figure 3:** Satellite image prior to the accident.

1.7.2. There were no weather warnings issued during or around the time of the flight. Therefore, there was no significant weather updates in the area of the accident site.

## **1.8. Aids to Navigation**

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator. There were no records indicating that the navigational equipment was unserviceable prior to the flight.

## **1.9. Communication**

1.9.1. The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight. The pilot was in communication with FABL ATC on the very high frequency (VHF) 120.8-Megahertz (MHz).

## 1.10. Aerodrome Information

1.10.1 The accident occurred at Dominee Kotze Street in Bloemfontein, approximately 8nm west of FABL.

## 1.11. Flight Recorders

1.11.1. The aircraft was neither equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by regulation to be fitted to the aircraft type.

## 1.12. Wreckage and Impact Information

1.12.1. The accident occurred in a residential plot approximately 8nm south-south-west of FABL. The accident site had trees. The aircraft impacted the trees first before it hit the ground. This caused extensive damage. The fuselage was crushed and torn apart with major sections displaced and deformed. The airframe exhibited severe compression, buckling and tearing which was consistent with a high-energy impact.



**Figure 4:** The accident site. (Source: Google Earth)

1.12.2. The wreckage was confined to a relatively small area which indicated little to no forward ground skidding after the initial impact. Three branches that snapped from the trees were found around the wreckage. Several fuselage panels and structural components were found folded inwards and in proximity to one another. Internal structure components were exposed, bent and fractured. The aircraft's skin panels were heavily crumpled and had separated from the primary structure in multiple areas. There was no evidence of in-flight breakup based on the concentrated nature of the wreckage distribution. The surrounding vegetation showed localised damage which was consistent with the wreckage distribution.



**Figure 5:** The wreckage after the accident.

1.12.3. The engine sustained severe damage after ground impact. The engine casing was crushed, deformed and fractured, and several external components were broken, displaced or partially separated from their mountings. The engine mount structure was bent and fractured, and the associated accessories, lines, exhaust and ancillary components were distorted, fragmented and displaced. The damage pattern was consistent with high-impact forces. Due to the extent of the impact damage, the engine could not be taken for further inspection as critical components were destroyed and/or unsuitable for a meaningful examination. Consequently, a comprehensive technical assessment of the engine's pre-impact condition and functionality could not be performed.



**Figure 6:** The damaged engine.



**Figure 7:** The propeller blades found approximately 3m from the engine.

### **1.13. Medical and Pathological Information**

- 1.13.1. The postmortem report was not available at the time of release of this accident report. Should the postmortem results, at the time of their release, have substantive impact that might be considered new evidence, the AIID will reopen this investigation.

### **1.14. Fire**

- 1.14.1. There was no pre- or post-impact fire.

### **1.15. Survival Aspects**

- 1.15.1. The accident was not survivable as the cockpit structure was destroyed.

### **1.16. Tests and Research**

- 1.16.1. The engine was not subjected to a teardown inspection due to the extent of damage sustained during the accident. The impact and post-impact damage resulted in significant structural deformation of the engine assembly, rendering the engine unsuitable to conduct a detailed examination.

### **1.17. Organisational and Management Information**

- 1.17.1. The flight was conducted under the provisions of Part 91 of the CAR 2011, as amended.
- 1.17.2. The aircraft was maintained by an aircraft maintenance organisation (AMO) which was issued an AMO Certificate by the Regulator on 28 March 2025 with an expiry date of 27 March 2027.

### **1.18. Additional Information**

- 1.18.1. None.

## **1.19. Useful or Effective Investigation Techniques**

1.19.1. None.

## **2. ANALYSIS**

### **2.1. General**

From the available evidence, the following analysis was made with respect to this accident. This shall not be read as apportioning blame or liability to any organisation or individual.

### **2.2. Analysis**

Man

2.2.1. The pilot had an Airline Transport Pilot Licence (ATPL) that was initially issued on 14 December 2007. The licence was revalidated on 17 December 2025 with an expiry date of 31 December 2026. The pilot was appropriately licensed and medically fit to undertake the flight. The pilot had a valid class 1 medical certificate, issued on 10 December 2025 and expiring on 31 December 2026.

Machine

2.2.2. This was a private flight conducted under Part 91 of the CAR 2011.

2.2.3. The aircraft had a valid Certificate of Registration (C of R) that was issued on 3 May 2018. The aircraft's Certificate of Airworthiness was issued on 17 June 2025 with an expiry date of 30 June 2026. Both the C of A and the C of R were valid at the time of the flight. The aircraft was maintained by an aircraft maintenance organisation with a valid certificate that was issued on 28 March 2025 with an expiry date of 27 March 2027.

2.2.4. The recent annual inspection was conducted on 28 May 2025 at 1 261.8. airframe hours; the accident occurred at 1 284 airframe hours. This indicated that the aircraft had accrued 18.1 hours since the last inspection. Therefore, the aircraft was within its maintenance cycle. The Certificate of Release to Service (CRS) was issued on 28 May 2025 and was valid at the time of the flight. No defects were recorded in the flight folio, which confirm that the aircraft was airworthy when it was dispatched for the flight.

2.2.5. All technical and maintenance-related evidence supported the conclusion that the aircraft was airworthy at the time of the flight, and no pre-existing mechanical faults contributed to the accident.

- 2.2.6. The fuel management revealed that on 27 December 2025, the pilot completed the outbound flight after adhering to the planned fuel stops to uplift fuel. The aircraft reached the planned destination safely. On 2 January 2026, the pilot planned the return flight with fuel stops at FABW and FABL. Before departing from FASH, he transferred 21L of fuel from the jerry can to the aircraft's tanks, bringing the fuel on-board to approximately 73.5L. After the FASH–FABW leg, about 4L remained in the tanks. At FABW, the pilot uplifted 76L which brought the total on-board to approximately 80L. The FABW–FABL leg required more than 86L based on the distance and fuel consumption calculations; therefore, the aircraft departed FABW with insufficient fuel and no reserve margin. About 8nm from FABL, the aircraft experienced fuel exhaustion and a complete loss of engine power. This was consistent with the calculated fuel shortfall and the reported unsuccessful attempts to restore power before impact.
- 2.2.7. After the loss of engine power, the aircraft lost lift and descended rapidly, impacting the treetops before reaching the ground. The aircraft sustained substantial damage which precluded further examination or testing of its systems during the investigation. The fuel analysis demonstrated that there was insufficient fuel for the intended flight, and hence, fuel exhaustion.
- 2.2.8. This accident was avoidable. The pilot elected to use a different flight plan for the return flight to FABW which was longer, despite his knowledge of the route and distances flown during the flight to FASH. In addition, the pilot bypassed an available refuelling stop at FAGA, which was used during the first sector to FASH. The decision contributed to the resultant fuel exhaustion of the aircraft.
- 2.2.9. The investigation found that the fuel upliftment for both the first sector (The Coves Airstrip to FASH) and the second sector (FASH to the intended The Coves Airstrip) were not recorded in the flight folio. Consequently, the investigation relied on refuelling station records to establish the fuel quantities uplifted during the outbound and return flight sectors. The absence of complete fuel entries in the flight folio limited the direct verification of the aircraft's fuel management. Moreover, the pilot did not comply with the fuel record requirements prescribed in the CAR Part 91.07.12.

#### Environment

- 2.2.10. The weather conditions at the time of the flight were clear and stable and had no bearing on the outcome of this accident.

### 3. CONCLUSION

#### 3.1. General

From the available evidence, the following findings, causes and contributing factors were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusion heading:

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in the accident sequence, but they are not always causal or indicate deficiencies.
- **Causes** — are actions, omissions, events, conditions, or a combination thereof, which led to this accident.
- **Contributing factors** — are actions, omissions, events, conditions or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident occurring, or would have mitigated the severity of the consequences of the accident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil, or criminal liability.

#### 3.2. Findings

##### Man

- 3.2.1. The pilot had a valid Airline Transport Pilot Licence (ATPL) and Class 1 medical certificate; he was fully qualified and medically fit to conduct the flight.

##### Machine

- 3.2.2. This was a private flight conducted under Part 91.
- 3.2.3. The aircraft was properly registered, had a valid Certificate of Airworthiness and was maintained in accordance with the approved requirements. No defects or mechanical failures were recorded, and the aircraft was airworthy at the time of the flight.
- 3.2.4. The aircraft was under refuelled at FABW, and thus, did not have enough fuel for the next leg to FABL; this is apart from fuel reserve allocation. As a result, the fuel ran out about 8 nautical miles (nm) from FABL, and the engine lost power.
- 3.2.5. The accident was avoidable. The pilot planned a longer route on his return flight and did not uplift sufficient fuel at FABW. An available refuelling stop at Gariep Dam Airfield (FAGA) was

not utilised. This resulted in inadequate fuel for the flight to FABW.

### Environment

3.2.6. Weather conditions were fine and stable at the time of the flight.

3.2.7. Following fuel exhaustion and a total engine power loss, the aircraft descended rapidly and struck treetops before it impacted the ground. The resultant damage prevented further system testing; however, fuel calculations confirmed insufficient fuel as the initiating factor, and no system malfunction was identified.

3.2.8. Fuel upliftment for the outbound and return sectors were not recorded in the flight folio, eliminating direct verification of the aircraft's fuel management; hence, a reliance by the investigators on refuelling station records. This was not consistent with the fuel record keeping as stated in the CAR Part 91.03.6 and CAR Part 91.07.12.

### **3.3. Probable Cause**

3.3.1. Loss of lift after loss of engine power due to fuel exhaustion. This resulted in an unsuccessful forced landing during which the aircraft impacted the treetops and, later, the ground.

### **3.4. Contributory Factor**

3.4.1. Poor flight planning and fuel mismanagement.

## **4. SAFETY RECOMMENDATIONS**

### **4.1. General**

The safety recommendations listed in this report are proposed according to paragraph 6.8 of Annex 13 to the Convention on International Civil Aviation and are based on the conclusions listed in heading 3 of this report. The AIID expects that all safety issues identified by the investigation are addressed by the receiving States and organisations.

### **4.2. Safety Recommendation/s**

4.2.1. None.

## **5. APPENDICES**

5.1. None.

**This report is issued by:**

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