

PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10606



Figure 1: The file picture of ZS-FTS aircraft. (Source: <https://www.jetphotos.com/photo/11035588>)

Description:

On Friday, 10 October 2025, a pilot and a passenger on-board a Piper PA28-140 Cherokee aircraft with registration ZS-FTS took off on a private flight (hour building) from Rustenburg Airport (FARG) in North West province to home-base Lanseria International Airport (FALA) in Gauteng province. The flight was conducted under visual meteorological conditions by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011, as amended.

The approved training organisation (ATO) representative stated that the pilot and the passenger each had a Private Pilot Licence (PPL). A fuel invoice page serial number 61771 showed that 94.62 litres (L) of Avgas (aviation gasoline) LL100 was uplifted at FARG fuel bay. Later, the aircraft took off and routed to FAPN where the pilot performed a touch-and-go landing on Runway 23 (RWY 23). An eyewitness stated that shortly after take-off at FAPN, the aircraft executed a 180-degree turn to the right. Another eyewitness, who was outside a building at the Predators World wildlife sanctuary, stated that she saw the aircraft as it approached at approximately 500 feet (ft) above ground level (AGL). Seconds later, the engine spluttered before it stopped. Thereafter, the aircraft impacted a tree and burst into flames approximately 1.6 kilometres south of FAPN. The aircraft was destroyed by post-impact fuel-fed fire. The occupants sustained serious burn injuries; they were transported by ambulance to Medicare Hospital in Rustenburg for medical treatment. The pilot succumbed to his injuries a day after the accident; the passenger still remains in the Intensive Care Unit (ICU) at the hospital.

Occurrence Details

Reference Number	: CA18/2/3/10606
Occurrence Category	: Category 1 (Accident)
Type of Operation	: Private (Part 91)
Name of Operator	: Vulcan Aviation
Aircraft Registration	: ZS-FTS
Aircraft Make and Model	: Piper PA-28-140 Cherokee
Nationality	: Indian
Place	: Border of Predator World wildlife sanctuary near FAPN, North West province
Date and Time	: 10 October 2025 at 1015Z
Injuries	: Pilot – fatally injured; passenger- serious burn injuries
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 involving a Piper PA28-140 Cherokee aircraft with registration ZS-FTS which occurred on the border of Predator World wildlife sanctuary near FAPN, North West province, on 10 October 2025 at 1015Z. 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.

The AIID has appointed an investigator-in-charge (IIC) to conduct an on-site investigation. 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 States did not appoint an accredited representative and/or advisor. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and the International Civil Aviation Organisation Annex 13.

The information contained in this preliminary report is derived from the information gathered during the on-going investigation into the occurrence. Later, an interim or final report may contain altered information in case new evidence is found during the on-going investigation that requires changes to the information depicted in this report.

The AIID reports are made available to the public at:

<https://www.caa.co.za/industry-information/accidents-and-incidents/>

Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:*
 - Accident — this investigated accident*
 - Aircraft — the Piper PA28-140 Cherokee involved in this accident*
 - Investigation — the investigation into the circumstances of this accident*
 - Pilot — the pilot involved in this accident*
 - Report — this accident report*

2. *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.

Table of Contents

Occurrence Details	2
Purpose of the Investigation	2
Investigation Process.....	2
Disclaimer	3
Contents Page	4
Abbreviations	5
1. FACTUAL INFORMATION	6
1.1. History of Flight	6
1.2. Injuries to Persons	8
1.3. Damage to Aircraft	8
1.4. Other Damage	8
1.5. Personnel Information.....	9
1.6. Aircraft Information	10
1.7. Meteorological Information	12
1.8. Aids to Navigation	14
1.9. Communication	14
1.10. Aerodrome Information	15
1.11. Flight Recorders	15
1.12. Wreckage and Impact Information.....	15
1.13. Medical and Pathological Information.....	17
1.14. Fire	18
1.15. Survival Aspects	18
1.16. Tests and Research.....	18
1.17. Organisational and Management Information	18
1.18. Additional Information	19
1.19. Useful or Effective Investigation Techniques.....	20
2. FINDINGS	20
3. ON-GOING INVESTIGATION	23
4. SAFETY RECOMMENDATION/S	23
5. APPENDICES.....	23

Abbreviation	Description
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
ATO	Approved Training Organisation
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
FALA	Lanseria International Airport
FAPN	Pilanesberg International Airport
FARG	Rustenburg Airport
FAVV	Vereeniging Airfield
FI	Flight Instructor
Ft	Feet
GPS	Global Positioning System
Hrs	Hours
hPa	Hectopascal
IAW	In Accordance With
ICAO	International Civil Aviation Organisation
ICU	Intensive Care Unit
Kt	Knots
M	Metres
METAR	Meteorological Aerodrome Report
MPI	Mandatory Periodic Inspection
POH	Pilot's Operating Handbook
PPL	Private Pilot Licence
QNH	Altitude Above Mean Sea Level
RWY	Runway
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
SB	Service Bulletin
SID	Supplementary Inspection Documents
SL	Service Letter
SP	Student Pilot
TSI	Technical Service Instructions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

- 1.1.1. On Friday morning, 10 October 2025, a pilot and a passenger on-board a Piper PA-28-140 Cherokee aircraft with registration ZS-FTS departed on a cross-country hour-building flight from Lanseria International Airport (FALA) in Gauteng province with the intention to return to the same airport. The flight was conducted under visual meteorological conditions (VMC) by day in accordance with (IAW) the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011, as amended.
- 1.1.2. According to the aircraft owner, the pilot had hired the aircraft to accumulate hours towards the issuance of his Commercial Pilot Licence (CPL). The planned route was from FALA to Vereeniging Airfield (FAVV); thereafter, to Rustenburg Airfield (FARG) to refuel, Pilanesberg International Airport (FAPN) to perform a touch-and-go landing, and back to FALA for a full-stop landing.
- 1.1.3. The aircraft departed from FALA at approximately 0626Z; it landed at FARG for refuelling at approximately 1015Z. The fuel invoice page serial number 61771 showed that 94.62 litres (L) of Aviation Gasoline (Avgas) LL100 was uplifted at FARG, bringing the total to 189L (full capacity). According to the refueller at FARG, there were no reported issues with the fuel batch, and several other aircraft had refuelled from the same supply without incident. Pilots who had refuelled from the same batch also reported no abnormalities with their aircraft. After refuelling, the ZS-FTS aircraft departed from FARG and routed to FAPN where the pilot performed a touch-and-go landing on Runway 23 (RWY 23). After departing RWY 23, the aircraft lost height and crashed on a private farm approximately 1.6 kilometres south of Pilanesberg International Airport (FAPN) known as Predator World wildlife sanctuary; it impacted a tree and burst into flames.
- 1.1.4. Farm rangers at Predator World wildlife sanctuary arrived at the scene shortly after impact; they assisted in removing the occupants from the burning aircraft. The Emergency Medical Services (EMS), including the local fire department, were notified by the security supervisor who became aware of the accident upon seeing a plume of smoke. The fire department personnel responded swiftly to the accident site and extinguished the fire. The pilot and the passenger sustained serious burn injuries; they were transported by ambulance to Medicare Hospital in Rustenburg for medical treatment. The pilot succumbed to his injuries a day after the accident; the passenger remains in the intensive care unit (ICU) at the hospital.

- 1.1.5. An eyewitness at FAPN stated that during the touch-and-go landing, the aircraft's engine made a loud, unusual noise during the climb-out phase, and the aircraft appeared to struggle to gain height. The eyewitness observed the aircraft as it turned right at 180 degrees towards the Predator World wildlife sanctuary; it appeared unstable as it moved from side-to-side during approach. Approximately 15 minutes later, the eyewitness saw smoke and realised that the aircraft had crashed.
- 1.1.6. Another eyewitness positioned approximately 218 degrees south-westerly at Predator World wildlife (GPS co-ordinates 25°21'13" S 27°9'46" E) reported seeing the aircraft as it approached approximately 500 feet (ft) above ground level (AGL) and noticed that the engine was emitting a "strange" noise (spluttering). The eyewitness stated that the aircraft appeared unstable and it was not flying straight and level; shortly thereafter, she heard the sound of impact and saw a fire erupting.
- 1.1.7. The accident occurred on the border of the Predator World wildlife sanctuary approximately 1.6km south of FAPN at Global Positioning System (GPS) co-ordinates: 25°21'19.55" S 27° 9'48.54" E, at an elevation of 3 412ft.

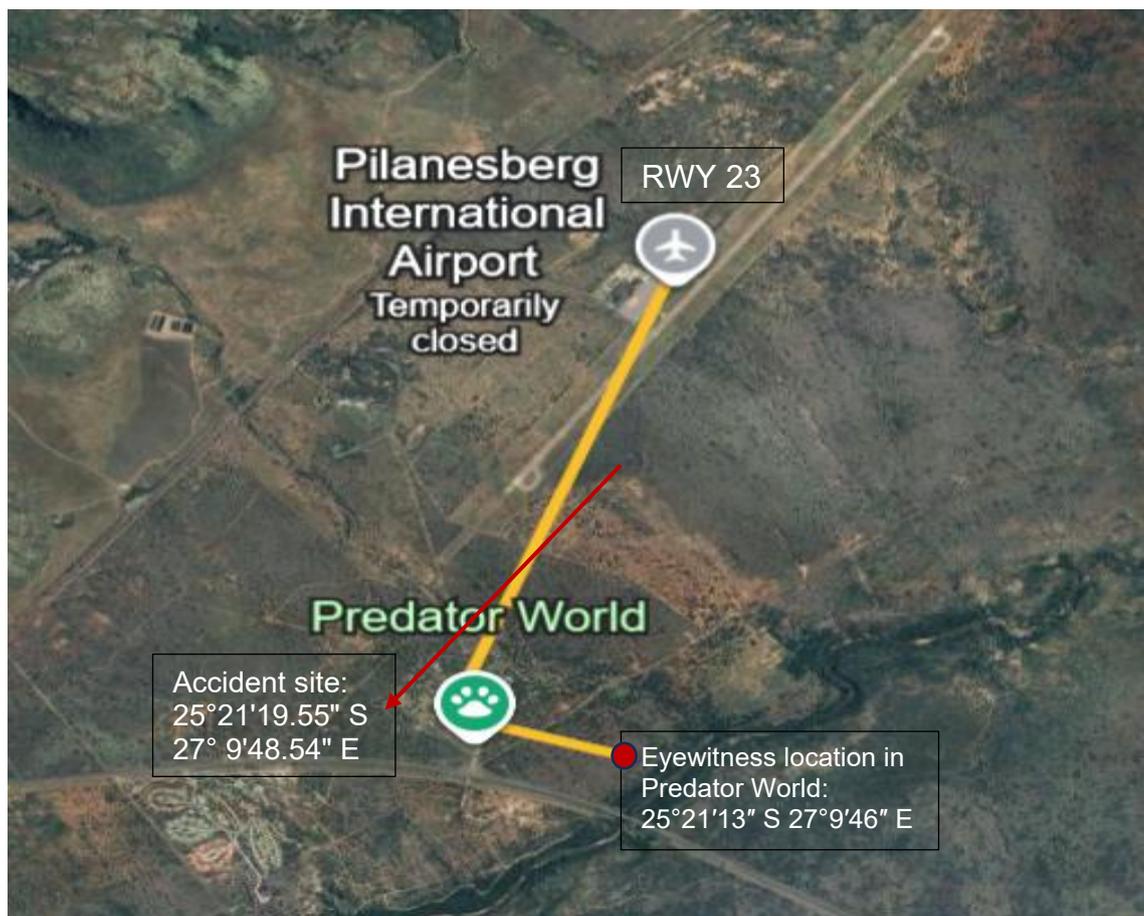


Figure 2: An aerial view of FAPN, the eyewitness location at Predator World wildlife sanctuary, and the accident site. (Source: Google Earth)

1.2. Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	1	-	-	1	-
Serious	-	-	1	1	-
Minor	-	-	-	-	-
None	-	-	-	-	-
Total	1	-	1	2	-

Note: Other means people on the ground.

1.2.1. The pilot succumbed to burn injuries a day after the accident; the passenger sustained serious burn injuries.

1.3. Damage to Aircraft

1.3.1. The aircraft was destroyed by post-impact fire.



Figure 3: The wreckage at the accident site.

1.4. Other Damage

1.4.1. Several trees and surrounding vegetation with an approximate radius of 5 metres (m) were destroyed by the post-impact fire at Predator World wildlife sanctuary.

1.5. Personnel Information

Pilot

Nationality	Indian	Gender	Male	Age	20
Licence Type	Private Pilot Licence (PPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	30 November 2029				
Restrictions	None				
Previous Accidents	None				

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

Flying Experience:

Total Hours	118.3
Total Past 24 Hours	0
Total Past 7 Days	18.5
Total Past 90 Days	77.9
Total on Type Past 90 Days	77.9
Total on Type	118.3

- 1.5.1. According to available information, the pilot was initially issued a Private Pilot Licence (PPL) by the Regulator (SACAA) on 14 August 2025 with an expiry date of 31 July 2026. The pilot had a Class 2 medical certificate that was issued on 28 November 2024 with an expiry date of 30 November 2029. The aircraft type was endorsed on his licence.
- 1.5.2. The hours reflected in the table (above) were obtained from the pilot logbook and the approved training organisation (ATO) signed authorisation sheets/book; the ATO owned the aircraft. The last entry in the pilot logbook was dated 28 July 2025. The hours that were not recorded in the logbook were obtained from the ATO's authorisation sheets/book entry dated from 10 August to 8 October 2025. The pilot had accumulated a total of 118.3 hours of which all were on the aircraft type.
- 1.5.3. A review of the pilot's training records indicated that he completed his first solo consolidation flight on 15 April 2025 on the same aircraft type, a Piper PA-28-140 Cherokee. After the flight, the flight instructor's (FI's) remarks were that the flight was well-executed with a good landing. During subsequent dual checks, the pilot was consistently graded "3" (meets standards).
- 1.5.4. The pilot underwent an initial skills test on 21 July 2025, conducted on the same aircraft type. His performance was assessed as satisfactory, and he was subsequently approved to apply for the issuance of his PPL.

1.5.5. The pilot was in the process of building flight hours towards the attainment of a Commercial Pilot Licence (CPL). He had commenced both the theoretical training and practical flight exercises related to CPL, including training for differences, familiarisation and class rating on multi-engines single-pilot aeroplanes. These training activities were assessed by the FI who assessed the pilot's performance to be satisfactory.

1.5.6. The pilot had a Level 5 language proficiency in accordance with (IAW) the ICAO standards. The language proficiency of the pilot was issued on 6 June 2025 with an expiry date of 6 June 2031.

1.6. Aircraft Information

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

The Piper PA-28-140 Cherokee is a four-seat, single-engine, low-wing light aircraft with fixed tricycle landing gear, widely used for flight training and private flying. Built for simplicity and reliability, it features an all-metal airframe and a 150 hp Lycoming O-320-E2A engine driving a fixed-pitch two-blade propeller. The aircraft typically has a maximum take-off weight of about 2150 lbs, a useful load of around 800–900 lbs, and cruises at roughly 110–115 knots (kts) with a range of about 450 nautical miles. Its rate of climb averages around 630 ft/min, and the service ceiling is approximately 11000 ft. With a stall speed near 45 kts and take-off and landing distances under 2000 ft, the PA-28-140 offers stable, forgiving handling characteristics, making it ideal for student pilots and general aviation operations.

Airframe:

Manufacturer/Model	Piper Aircraft Company	
Serial Number	28-25152	
Year of Manufacture	1976	
Total Airframe Hours (At Time of Accident)	1 982.12	
Last Inspection (Date & Hours)	18 September 2025	1 911.71
Hours Since Last Inspection	70.41	
CRS Issue Date	15 August 2025	
C of A (Issue Date & Expiry Date)	14 April 2022	13 April 2026
C of R (Issue Date) (Present Owner)	06 July 2023	
Type of Fuel Used	Avgas 100LL	
Operating Category	Private (Part 91)	
Previous Accidents	On 17 September 2021 during landing on Runway 07 at FALA, the aircraft's nose gear strut broke off due to a hard landing.	

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

Engine:

Manufacturer/Model	Lycoming / O-320-E2A
Serial Number	L-20966-E2A
Part Number	O-320-E2A
Hours Since New	8 271.11
Hours Since Overhaul	70.41

Propeller:

Manufacturer/Model	Sensenich / 74DM6
Serial Number	K31555
Part Number	74DM6-0-58
Hours Since New	1 982.12
Hours Since Overhaul	632.8

- 1.6.2. The weight and balance documentation along with the aircraft's flight folio were destroyed by the post-impact fuel-fed fire that erupted.

Figure 4: Refuelling record at FARG.

- 1.6.3. The aircraft maintenance organisation (AMO) which maintained the aircraft had an AMO Certificate that was issued by the Regulator (SACAA) on 11 July 2025 with an expiry date of 31 July 2026.
- 1.6.4. The last 50-hour maintenance inspection that was performed on the aircraft was certified on 18 September 2025 at 1 962.6 total airframe hours. The inspection was conducted IAW the Piper PA-28-140 Maintenance Manual (MM); all the required checks were completed as per the prescribed inspection checklist. The aircraft was deemed serviceable upon completion of the inspection. Although the 50-hour inspection was signed off in the aircraft's flight folio, the corresponding entry was not recorded in the aircraft's logbook. A copy of the 50-hour inspection entry that was signed off in the aircraft's flight folio was attached to the inspection work pack.

Total carried forward to airframe flying hours				
Date	No.	Defects	Rec. Date	Rectification action
18/09/25	1	SD Hr Due	18/09/25	50hr MPI carried out in accordance with the requirements of the manufacturer and the SACAA. See J/c.

Figure 5: A copy of the 50-hour inspection was attached to the inspection work pack.
(Source: AMO)

1.6.5. A review of the aircraft's maintenance documentation was conducted which included records for the airframe, engine, propeller, flight folio and mandatory periodic inspections (MPI). Preliminary findings indicated that the aircraft was maintained IAW the manufacturer's prescribed maintenance procedures. All applicable Service Letters (SL), Service Bulletins (SB), Technical Service Instructions (TSI) and Supplementary Inspection Documents (SID) were complied with during maintenance activities. These procedures were conducted by the approved AMO and the aircraft owner to ensure continued airworthiness of the aircraft.

1.7. Meteorological Information

1.7.1. The weather information below was obtained from the Meteorological Aerodrome Report (METAR) that was issued by the South African Weather Service (SAWS), recorded at FAPN on 10 October 2025 at 1015Z. The accident site is approximately 1.6 kilometres from FAPN.

Wind Direction	340°	Wind Speed	6kt	Visibility	9999m
Temperature	30°C	Cloud Cover	N/A	Cloud Base	N/A
Dew Point	12°C	QNH	1020hPa		

1.7.2. Based on the weather information above, the density altitude was calculated to be 6 944 ft, and the pressure altitude was 4 128 ft. This indicated that the air was less dense than at sea level; therefore, the density altitude was considered high.

Results

Alt: 4312 ft | OAT: 30 °C | Dew Pt: 12 °C | QNH: 1020 hPa | RH: 33.05 %.

Pressure Altitude

ft



Density Altitude

ft



Air Density: 0.995 kg/m³.

Absolute Air Pressure: 870.97 hPa.

Figure 6: Density altitude calculation.

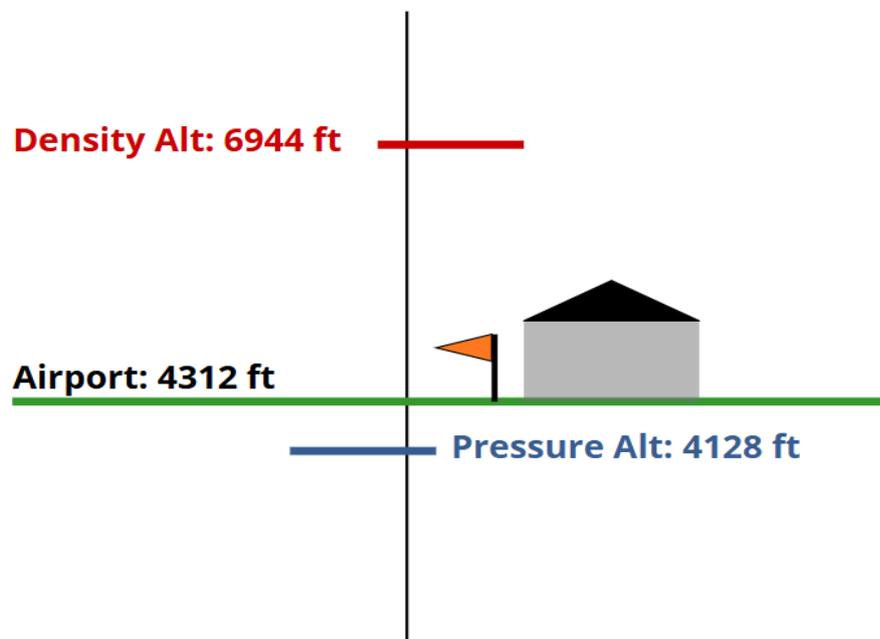


Figure 7: A diagrammatic representation of the density altitude results.

- 1.7.3. The calculated dew point depression suggested that the weather conditions at the time of the flight were favourable for the formation of moderate icing.

Air Temperature Units

Dew Point Temperature

Relative Humidity: 33.05 %

Figure 8: Carburettor icing probability calculation.

Moderate Risk
 Temperature: 30.0 °C | Dew point: 12.0 °C | RH: 33.05 % | Dew Point Depression: 18.0 °C

Serious icing at descent power settings.

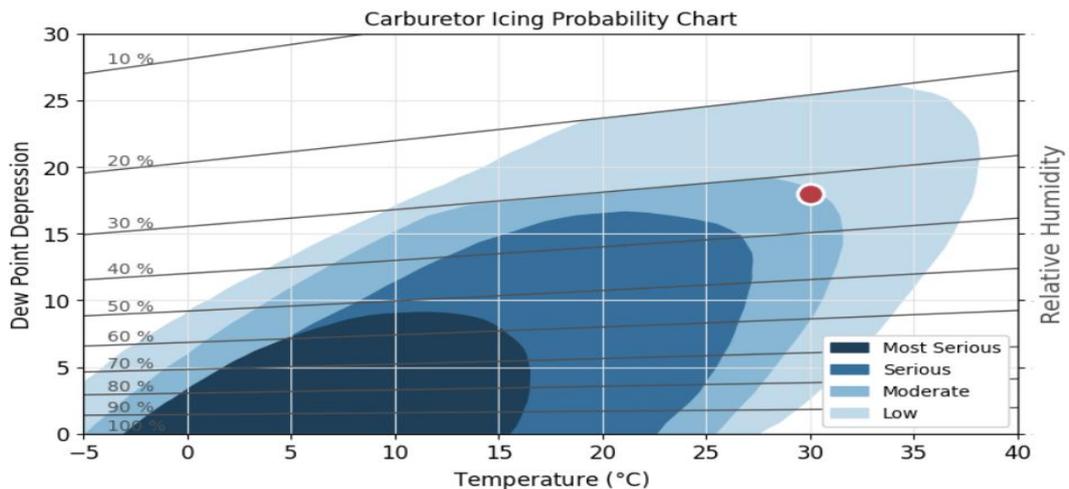


Figure 9: The Carburettor icing-probability chart.

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.

1.10. Aerodrome Information

1.10.1. FAPN is approximately 1.6 kilometres from the accident site.

Aerodrome Name	Pilanesberg International Airport (FAPN)
Aerodrome Location	North West Province
Aerodrome Status	Licensed
Aerodrome GPS coordinates	25°20.13' South, 27°10.30' East
Aerodrome Elevation	3 412 feet
Runway Headings	05/23
Dimensions of Runway Used	9 022 x 98 feet / 2 750 x 30 metres
Heading of Runway Used	RWY 23 (233°)
Surface of Runway Used	Asphalt
Approach Facilities	None
Radio Frequency	None

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 first point of impact was a tree located south-westerly at GPS co-ordinates 25°21'6"S 27°9'38"E and at an elevation of 3 412 ft. After the initial impact with the tree, the aircraft continued forward and struck two smaller trees whilst in a left-wing low attitude (*the trees were approximately 4 metres from the final position of the main wreckage*). The aircraft subsequently impacted a larger tree; this caused the left wing to wrap-around the trunk and, as a result, the bark of the tree was stripped from the point of contact. The right wing remained largely intact; however, the left wing was destroyed by the post-impact fire that ensued.



Figure 10: The wreckage after the fire was extinguished.



Figure 11: The right wing and the left wing wrapped around the tree trunk (red and yellow arrows).

1.12.2. The aircraft came to rest in an inverted position, consistent with having flipped over as a result of centrifugal forces during the impact sequence. The fuselage and cockpit were extensively burnt. The cockpit area was severely damaged and was completely consumed by the post-impact fire. All flight and engine instruments, avionics and switch

panels were either destroyed or detached from their respective mounting positions. Due to the extent of the damage, needle witness marks on instrument faces could not be reliably identified, and the positions of the power lever, mixture control and fuel selector could not be determined. The circuit breaker panel was destroyed with most breakers found in a fractured or molten state. The nose wheel assembly was located approximately 1.5m from the main wreckage whilst the aircraft's fire extinguisher was discovered lodged in a nearby tree, approximately 2.5m away. There was no evidence of an in-flight structural breakup; all major components of the aircraft were accounted for within the main wreckage site.

1.12.3. Examination of the engine revealed significant thermal and fire damage. The propeller blades displayed minimal deformation and no evidence of rotational scoring or chordwise scratches, indicative that the engine was not producing power at the time of impact. The extent and nature of the damage of the aircraft were consistent with a low-energy impact, followed by an intense post-impact fire. The aircraft was destroyed by fire, which consumed the majority of the fuselage, cockpit and left-wing structure.



Figure 12: The engine and propeller blades exhibited minimal deformation.

1.13. Medical and Pathological Information

1.13.1. To be discussed in the final report.

1.14. **Fire**

1.14.1. A post-impact fuel-fed fire erupted and consumed the aircraft. The fire was contained within an approximate 10m diameter surrounding the main wreckage. The Predator World wildlife sanctuary game rangers and the FAPN Fire and Rescue Department responded promptly to the scene, taking immediate action to extinguish the fire, mitigate secondary risks and assist in the rescue of the aircraft occupants. Their co-ordinated efforts successfully prevented the fire from spreading to the surrounding vegetation in the game reserve.

1.15. **Survival Aspects**

1.15.1. The pilot and the passenger were found alive at the accident site; they were taken to the hospital. The post-impact fire, however, reduced the possibility of survivability as the aircraft's cockpit and cabin areas were rapidly engulfed by fire following impact. The pilot's burn wounds were assessed as superficial epidermal in nature although extensive and consistent with thermal exposure from the post-impact fire rather than flame inhalation. Rescue and firefighting responses were facilitated by the accident's proximity to an accessible game reserve road network, enabling relatively prompt medical assistance. There was no indication of seatbelt failure or restraint system malfunction, suggesting that the occupants had remained secured during impact. Although the initial impact force sequence was low, the resultant post-impact fire made this accident not survivable.

1.16. **Tests and Research**

1.16.1. To be discussed in the final report.

1.17. **Organisational and Management Information**

1.17.1. This was a private flight (hire-and-fly) conducted under the provisions of Part 91 of the CAR 2011, as amended.

1.17.2. The training school which owned the aircraft had a valid ATO Certificate that was issued by the Regulator on 15 February 2022 with an expiry date of 28 February 2027.

1.17.3. The most recent audit of the training school (ATO) was conducted on 26 September 2025. This was an ad hoc audit, and the investigation is on-going as two Level 2 (*a response containing a corrective action plan shall be submitted to the Director within 7*

days) and one Level 3 findings (*a response containing a corrective action plan shall be submitted to the Director within 14 days*) were issued to the ATO.

1.17.4. The pilot was trained and assessed by the FI at various stages of his training. The FI had a valid licence and the required instructor ratings to conduct training.

1.18. **Additional Information**

1.18.1. Density Altitude

According to the ICAO, density altitude is the pressure altitude corrected for non-standard temperature variations. This is the altitude in a standard atmosphere where the air density is the same as the actual air density at the location. Density altitude is a critical measure for pilots to calculate an aircraft's performance.

How Density Altitude Affects Aircraft Performance

A higher density altitude, or less dense air, negatively impacts an aircraft's performance in several ways including:

- Reduced engine power - the engine takes in less oxygen, resulting in less power output.
- Less lift - the wings generate less lift as there are fewer air molecules flowing through them.
- Decreased propeller efficiency - the propeller is less efficient in thinner air.

High density altitude results in:

- Longer take-off and landing distances.
- A slower rate of climb.
- Reduced overall aircraft performance.

1.18.2. Carburettor Icing

According to the ICAO (Annex 3 and Document 9760), carburettor icing during descent can significantly affect an aircraft's performance by restricting or blocking airflow to the engine due to ice forming inside the carburettor. This occurs because of the cooling effect caused by fuel vaporisation and pressure drop within the carburettor, especially when engine power is reduced during descent. The result can be a gradual or sudden loss of engine power, rough running or even engine failure if not promptly addressed. This poses a serious risk during the approach and landing phases where altitude and

time to recover are limited. During severe cases of carburettor icing, the throttle valve can become stuck due to ice build-up.

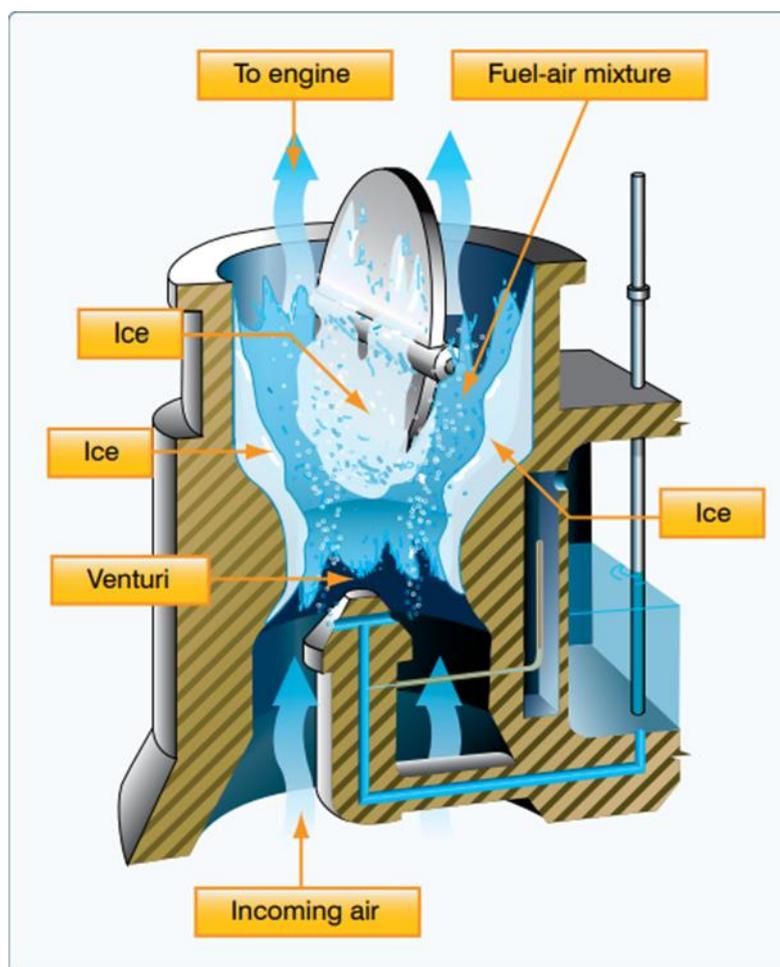


Figure 13: Typical carburettor ice build-up.

1.19. Useful or Effective Investigation Techniques

1.19.1. None.

2. FINDINGS

2.1. General

From the available evidence, the following preliminary findings 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 conclusions heading:

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.

2.2. Findings

Pilot

- 2.2.1. The pilot had a valid Private Pilot Licence (PPL) that was issued on 14 August 2025 with an expiry date of 31 July 2026.
- 2.2.2. The pilot's flight hours were verified using his logbook and ATO-signed authorisation sheets. The last logbook entry was dated 28 July 2025 with additional hours obtained from the authorisation sheets from 10 August to 8 October 2025.
- 2.2.3. The pilot had flown a total of 118.3 hours all of which were on the aircraft type.
- 2.2.4. The aircraft type was endorsed on his licence and logbook.
- 2.2.5. Records showed that the pilot completed his first solo consolidation flight on a Piper PA-28-140 Cherokee on 15 April 2025. He performed well with good landings and was consistently graded "3" (meets standards) during his subsequent dual checks.
- 2.2.6. The pilot's initial skills test was conducted on 21 July 2025 on a Piper PA-28-140 Cherokee. His performance was rated satisfactory, which led to the approval for his PPL issuance.
- 2.2.7. The pilot was medically fit; he was issued a Class 2 aviation medical certificate on 28 November 2024 with an expiry date of 30 November 2029.
- 2.2.8. The pilot had the ICAO Level 5 language proficiency that was issued on 6 June 2025 and valid until 6 June 2031.

Aircraft

- 2.2.9. The last 50-hour inspection conducted on the aircraft before the accident flight was certified on 18 September 2025 at 1 911.71 airframe hours. The aircraft had accrued 70.41 hours since the last inspection; however, the inspection entry was not documented in the aircraft logbooks.

- 2.2.10. The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued on 14 April 2022. The C of A had an expiry date of 13 April 2026.
- 2.2.11. The Certificate of Release to Service (CRS) was issued on 18 September 2025 with an expiry date of 15 August 2026 or at 2 011.71 hours, whichever comes first.
- 2.2.12. The Certificate of Registration (C of R) was issued to the present owner on 6 July 2023.
- 2.2.13. The weight and balance documentation and flight folio were destroyed in the post-impact fire; therefore, verification of these records could not be conducted.
- 2.2.14. The aircraft, with a total fuel capacity of 50 US gallons, was refuelled with 94.62 litres of Avgas at FARG at 1013Z. No irregularities were reported with the fuel batch; moreover, other aircraft that refuelled from the same supply did not experience any challenges.

Environment

- 2.2.15. The temperature, dew point and pressure values were within normal ranges with no indication of instability or convective activity.
- 2.2.16. The calculated density altitude indicated that the air was slightly less dense.
- 2.2.17. The dew point depression indicated that the weather conditions at the time were favourable for moderate icing formation.

Approved Training Organisation

- 2.2.18. The ATO was issued the ATO Certificate on 15 February 2022 with an expiry date of 28 February 2027.
- 2.2.19. The ATO had an approved training programme.
- 2.2.20. An ad hoc audit was conducted on the training school on 26 September 2025, resulting in two Level 2 and one Level 3 findings; the investigation is still on-going.
- 2.2.21. The pilot received training and assessments from a qualified instructor with a valid licence and appropriate instructor ratings.

2.2.22. The AMO had the AMO Certificate that was issued by the Regulator on 11 July 2025 with an expiry date of 31 July 2026.

3. ON-GOING INVESTIGATION

3.1. The AIID investigation is on-going, and the investigator will investigate other aspects of this accident which may or may not have safety implications.

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**