AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

			Reference:	CA18/2/3/10623			
Aircraft Registration	ZS-LUG	**Date of Accident**	12 December 2025	**Time of Accident**	0500Z		
Type of Aircraft	Piper PA-36-285 Pawnee Brave		**Type of Operation**	Aerial works (Part 137)			
Pilot-in-command Licence Type	Commercial Pilot Licence (CPL)		**Age**	29	Licence Valid	Yes	
Pilot-in-command Flying Experience		**Total Flying Hours**	1008.4	**Hours on Type**	398		
Last Point of Departure	Kroonstad Airfield (FAKS), Free State Province						
Next Point of Intended Landing	Kroonstad Airfield (FAKS), Free State Province						
Damage to Aircraft	Destroyed						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
At Eden Farm, approximately 5.11 nautical miles (nm) north-east of FAKS at GPS co-ordinates determined as South 27º38'30" East 27º24'23"							
Meteorological Information	Wind direction: 110°C; Wind speed: 16 knots; Temperature: 21°C; Visibility: 5 kilometres						
Number of People On-board	1 + 0	**Number of People Injured**	1	**Number of People Killed**	0	**Other (On Ground)**	0

Synopsis

On Friday morning, 12 December 2025, a pilot on-board a Piper PA-36-285 Pawnee Brave aircraft registered ZS-LUG was conducting a crop-spraying demonstration flight from Kroonstad Airfield (FAKS) in Free State province with the intention to land at the same airfield.

The pilot reported that a pre-flight inspection of the aircraft was conducted with no anomalies identified. The aircraft had a total of 42 US Gallons of Jet A1 fuel in the tanks, and 70 litres (L) of water in the hopper tank. The aircraft took off from FAKS and routed to Eden Farm where the spray demonstration needed to be performed, approximately 5.11 nautical miles (nm) south-west of FAKS. Upon reaching the farm, the pilot conducted the 40-litre per hectare crop-spraying demonstration and, later, climbed to approximately 100 feet (ft) above ground level (AGL). Once stable at 100ft AGL, the pilot diverted his attention from maintaining control of the aircraft to adjusting the spray boom controls for the 50-litre per hectare setting. Whilst adjusting the spray boom setting, he felt his weight pressing against the seat harness straps, and when he looked up, the aircraft was facing nose down and close to the ground. He then pulled back the control column to raise the nose and recover, but without success. The aircraft struck the ground with the left-wing first. Consequently, the left wing broke, and the aircraft skidded across the field for approximately 102 metres (m) before it rested. The aircraft was destroyed during the accident sequence, and the pilot was seriously injured. The signatures on the propeller blades were consistent with the engine delivering power at the time of the accident.

The investigation determined that the accident was due to loss of situational awareness which resulted in loss of control of the aircraft whilst it was operated at low level.

Probable Cause/s:			
Fixation on the spray boom controls whilst operating the aircraft at low level led to loss of situational awareness. Consequently, the aircraft entered an uncontrolled descent, rendering ground impact inevitable.			
SRP Date	14 April 2026	Publication Date	15 April 2026

Occurrence Details

Reference Number	**:** CA18/2/3/10623
Occurrence Category	**:** Accident (Category 2)
Type of Operation	**:** Aerial works (Part 137)
Name of Operator	**:** Western Line Layers
Aircraft Registration	**:** ZS-LUG
Aircraft Make and Model	**:** Piper PA-36-285 Pawnee Brave
Nationality	**:** South Africa
Place	**:** At Eden Farm, approximately 5.11 nautical miles (nm) north-east of Kroonstad Airfield (FAKS)
Date and Time	**:** 12 December 2025 at 0500Z
Injuries	**:** Serious
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 PA-36-285 Pawnee Brave aircraft which occurred at Eden farm on 12 December 2025 at 0500Z, approximately 5.11 nautical miles (nm) north-east of Kroonstad Airfield. 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, and 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. Investigators were dispatched to the accident site.

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
   Accident — this investigated accident
   Aircraft— the Piper PA-36-285 Pawnee Brave 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

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
AGL	Above Ground Level
AMSL	Above Mean Sea Level
ARCC	Aeronautical Rescue Co-ordination Centre
CAR	Civil Aviation Regulations
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FAKS	Kroonstad Airfield
FDR	Flight Data Recorder
Ft	Feet
Gal/h	Gallons per Hour
GPS	Global Positioning System
hPa	Hectopascal
IFR	Instrument Flight Rules
inHg	Inches Mercury
Kt	Knots
L	Litres
M	Metres
METAR	Meteorological Aerodrome Report
MHz	Megahertz
MPI	Mandatory Periodic Inspection
NM	Nautical Mile
QNH	Barometric Pressure Adjusted to Mean Sea Level
RWY	Runway
SACAA	South African Civil Aviation Authority
SACAR	South African Civil Aviation Regulations
SAWS	South African Weather Service
SHP	Shaft Horsepower
TBA	To Be Announced
UTC	Co-ordinated Universal Time
VMC	Visual Metrological Conditions
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, 12 December 2025, a pilot on-board a Piper PA-36-285 Pawnee Brave aircraft registered ZS-LUG was conducting a crop-spraying demonstration flight from Kroonstad Airfield (FAKS) in Free State province with the intention to return to the same airfield. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 137 of the Civil Aviation Regulations (CAR) 2011, as amended.

1.1.2 According to available information, a farmer expressed interest in purchasing the aircraft and requested that a demonstration flight be conducted to see how the aircraft performs during a crop-spraying operation and if it was a viable option for his requirements. The aircraft had a total of 42 US Gallons of Jet A1 fuel in the tanks, and 70 litres (L) of water in the 1 000-litre capacity hopper tank during the pre-flight inspection. The aircraft took off from FAKS Runway 7 and climbed to 5 500 feet (ft). It then routed to Eden Farm approximately 5.11 nautical miles (nm) north-east of FAKS, cruising at a speed of 112 knots (kts). Upon reaching the farm, the pilot demonstrated the crop-spraying operation whilst the potential buyer watched.

1.1.3 Whilst busy with the 40-litre per hectare calibration spray demonstration, the pilot decided that he also wanted to do a 50-litre per hectare calibration spray demonstration and would adjust the calibration settings after completing his last spray run of 40-litre per hectare. After completing the 40-litre per hectare spray run, the pilot climbed to approximately 100 feet (ft) above ground level (AGL). He then focused his attention away from flying the aircraft and looked down towards his left to focus on the spray boom adjustment controls on the left side of the cockpit. Whilst he was looking down to adjust the spray calibration settings, he felt his weight pressing against the safety harness straps and, when he looked up through the windshield, the aircraft was in a steep nose-down attitude and close to the ground. He then pulled back the control column to raise the nose to recover the aircraft, but without success. The aircraft struck the ground with the left-wing first. Consequently. The left wing broke and the aircraft skidded across the field for approximately 102 metres (m) before it rested. The aircraft was destroyed during the accident sequence, and the pilot was seriously injured.

1.1.4 The accident occurred during the day at Global Positioning System (GPS) co-ordinates determined to be South 27º38'30" East 27º24'23", at approximately 4 841 ft above mean sea level (AMSL).

Figure 1: An aerial view of the accident site (yellow pin). (Source: Google Earth)

1.2 Injuries to Persons

1.2.1 The pilot was seriously injured during the accident sequence.

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

Note: Other means people on the ground.

1.3 Damage to the Aircraft

1.3.1 The aircraft was substantially damaged during the accident sequence.

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	29
Licence Type	Commercial Pilot Licence (CPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Agricultural pilot and night rating				
Medical Expiry Date	31 March 2026				
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	1 008.4
Total Past 24 Hours	0.6
Total past 7 days	0.6
Total Past 90 Days	34.9
Total on Type Past 90 Days	34.9
Total on Type	398

1.5.1 The hours captured on the table above were submitted by the pilot via the pilot questionnaire form and verified against the physical pilot's logbook.

1.5.2 The pilot had the Commercial Pilot Licence (CPL) that was renewed by the Regulator (SACAA) on 9 July 2025 with an expiry date of 31 July 2026. The aircraft type was endorsed in his licence. The pilot had a Class 1 aviation medical certificate that was issued on 11 March 2025 with an expiry date of 31 March 2026.

1.5.3 The pilot had an agricultural rating which was initially issued on 24 August 2023. The pilot also had a Pest Control Operator Certificate which was issued by the South African Department of Agriculture. He was approved to conduct aerial applications. The Pest Control Operator Certificate was issued on 4 June 2025 with an expiry date of 30 June 2026.

1.6 Aircraft Information

1.6.1 Piper PA-36-285 Pawnee Brave Aircraft Description (Source: Pilot's Operating Handbook [POH])

The Piper PA-36-375 Pawnee Brave is a single-seat, full cantilever semi monocoque low-wing, tail wheel type, special purpose agricultural aircraft equipped with a 1 000L chemical hopper behind the engine fire wall with optional sprayer and spreader. The primary structure is made of welded steel tubing truss type fuselage frame with structural redundancy characteristics and progressive collapse and load absorption during a crash scenario. The multiple panel design allows a full disassembly of the structure for inspection or cleaning. The aircraft is powered with a Pratt & Whitney PT6A-20A free turbine turboprop engine producing 550 shaft horsepower (shp) with serial number PCE-24059, driving a Hartzell propeller.

Airframe:

Manufacturer/Model	Piper Aircraft/PA36-285 Pawnee Brave	
Serial Number	36-7660005	
Year of Manufacture	1973	
Total Airframe Hours (At Time of Accident)	6 558.2	
Last Inspection (Date & Hours)	20 September 2025	6 546.9
Hours Since Last Inspection	11.3	
CRS Issue Date	20 September 2025	
C of A (Issue Date & Expiry Date)	14 October 2025	31 October 2026
C of R (Issue Date) (Present Owner)	7 March 2025	
Type of Fuel Used	Jet A1	
Operating Category	Aerial works (Part 137)	
Previous Accidents	The aircraft was involved in an accident on 1 January 2025. The investigation determined that the right main landing gear separated from the fuselage during the landing roll, causing it to ground-loop to the right of the runway.	

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

Engine:

Manufacturer/Model	Pratt & Whitney / PT6A-20A
Serial Number	PCE-24059
Part Number	PT6A-20A
Hours Since New	8 666.9
Hours Since Overhaul	1678.4 (Time between Overhaul (TBO) interval is 3 600 hours / TBO not reached.

Propeller:

Manufacturer/Model	Hartzell / HC-B37N-3B
Serial Number	BUA22463
Part Number	HC-B37N-3B
Hours Since New	Unknown
Hours Since Overhaul	11.3

1.6.2 Examination of the aircraft maintenance documentation indicated that the last 100-hour mandatory periodic inspection (MPI) of the aircraft was certified on 20 September 2025 at 6 546.9 total airframe hours.

1.6.3 The aircraft was maintained by an approved aircraft maintenance organisation (AMO) with an AMO Certificate that was issued by the Regulator on 30 September 2025 with an expiry date of 30 September 2026.

1.6.4 The aircraft had the Certificate of Airworthiness (C of A) that was reissued on 14 October 2025 with an expiry date of 31 October 2026.

1.7 Meteorological Information

1.7.1 The pilot provided the following weather information on the pilot questionnaire.

Wind Direction	110°	Wind Speed	16kt	Visibility	5 km
Temperature	21°C	Dew Point	Unknown	QNH	Unknown

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 The accident occurred at Eden Farm situated approximately 5.11 nm north-east of FAKS.

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 aircraft impacted the ground with the left-wing which broke off and the aircraft slid on its belly for approximately 102m before it rested on the field.

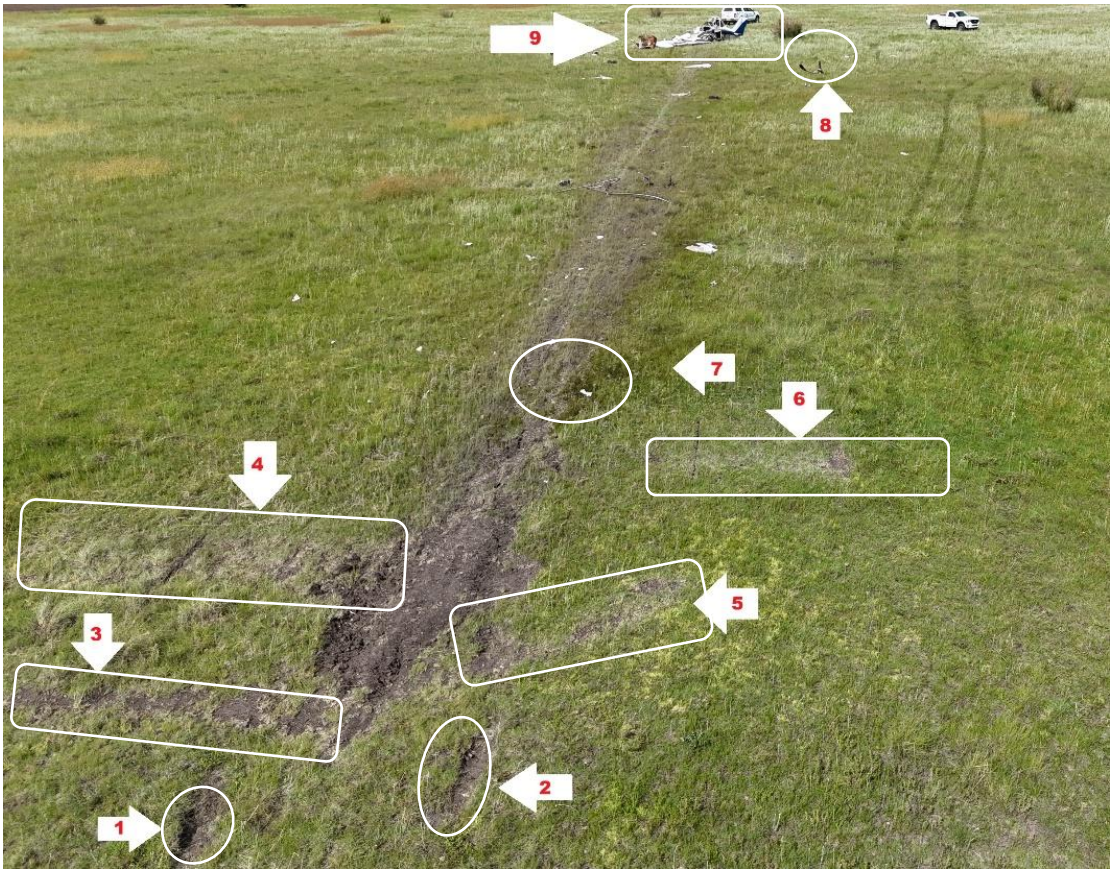

Figure 3: Ground scars made by ZS-LUG during the accident.

Item	Description
1.	Initial impact ground scar from the left main wheel
2.	Impact ground scar from the right main wheel
3.	Initial impact ground scar from the left wing
4.	Second impact ground scar from left wing
5.	Initial impact ground scar from the right wing
6.	Second impact ground scar from the right wing
7.	Significant spill of engine oil
8.	Location of propeller
9.	Where the aircraft, engine and hopper came to rest

1.13 Medical and Pathological Information

1.13.1 None.

1.14 Fire

1.14.1 There was no evidence of a pre- or post-impact fire.

1.15 Survival Aspects

1.15.1 The accident was considered survivable as there was minimal impact damage to the cockpit area, and the pilot had made use of the aircraft's safety harness.

1.16 Tests and Research

1.16.1 The propeller separated from the crankshaft flange, and the blades indicated that the engine was producing a substantial amount of power at the time of the accident.

Figure 4: The propeller at the accident site.

1.16.2 Examination of the aircraft did not identify any mechanical defects. However, the aircraft was significantly disrupted and, therefore, functionality of the flight controls could not be fully assessed.

1.17 Organisational and Management Information

1.17.1 This was a non-commercial flight conducted under the provisions of Part 137 of the CAR 2011, as amended.

1.17.2 The AMO that conducted the last mandatory periodic inspection (MPI) of the aircraft had an AMO Certificate that was issued by the Regulator on 30 September 2025 with an expiry date of 30 September 2026.

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

Pilot

2.2.1 The pilot had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator (SACAA) on 7 June 2022. The licence was reissued on 9 July 2025 with an expiry date of 31 July 2026. The aircraft type was endorsed in his licence. The pilot had accumulated 1 008.4 total flying hours of which 398 hours were on the aircraft type.

2.2.2 The pilot had a Class 1 aviation medical certificate that was issued on 11 March 2025 with an expiry date of 31 March 2026. The pilot had no restrictions listed in his medical certificate.

Aircraft

2.2.3 The aircraft's technical documentation indicated that the last 100-hour MPI was certified on 20 September 2025 at 6546.9 total airframe hours. At the time of the accident, the aircraft had accrued 11.3 hours since the last maintenance inspection.

2.2.4 A post-accident examination of the airframe and engine revealed no evidence of any pre-impact mechanical malfunctions or failure that would have precluded normal operation. The signatures on the propeller blades were consistent with the engine delivering power at the time of the accident. The investigation determined that the accident was due to loss of situational awareness that resulted in loss of control of the aircraft whilst it was operated at low level.

2.2.5 Weather

Fine weather conditions prevailed at the time of the flight; the weather conditions had no bearing in 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 this 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

Personnel

3.2.1 The pilot had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator (SACAA) on 7 June 2022. The licence was reissued on 9 July 2025 with an expiry date of 31 July 2026. The aircraft type was endorsed in his licence. The pilot had accumulated 1 008.4 total flying hours of which 398 hours were on the aircraft type.

3.2.2 The pilot had a Class 1 aviation medical certificate that was issued on 11 March 2025 with an expiry date of 31 March 2026. The pilot had no restrictions listed in his medical certificate.

Aircraft

3.2.3 The flight was conducted under the provisions of Part 137 of the CAR 2011, as amended.

3.2.4 The aircraft had a valid Certificate of Airworthiness (C of A) that was reissued on 14 October 2025 with an expiry date of 31 October 2026. The Certificate of Registration (C of R) was issued to the current owners on 7 March 2025.

3.2.5 The aircraft was maintained by a SACAA-approved aircraft maintenance organisation (AMO) which was issued an AMO Certificate on 3 March 2025 with an expiry date of 30 September 2026.

3.2.6 Examination of the provided maintenance records indicated that the last 100-hour mandatory periodic inspection (MPI) of the aircraft was certified on 20 September 2025 at 6 546.9 total airframe hours. At the time of the accident, the aircraft had accrued 11.3 hours since the last maintenance inspection.

3.2.7 A post-accident examination of the airframe and engine revealed no evidence of any pre-impact mechanical malfunctions or failures that would have precluded normal operation. The signatures on the propeller blades were consistent with the engine delivering power at the time of the accident. The investigation determined that the accident was due to loss of situational awareness that resulted in loss of control of the aircraft whilst it was operated at low level.

Weather

3.2.8 Fine weather conditions prevailed at the time of the flight; the weather conditions had no bearing in this accident.

3.3 Probable Cause/s

3.3.1 Fixation on the spray boom controls whilst operating the aircraft at low level resulted in loss of situational awareness. Consequently, the aircraft entered an uncontrolled descent, rendering ground impact inevitable.

3.4 Contributing Factors

3.4.1 Poor airmanship.

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