

**PRELIMINARY ACCIDENT REPORT**

**Accident and Incident Investigations Division**

Accident  
- Preliminary Report -  
AIID Ref No: CA18/2/3/10375



**Figure 1:** The ZS-JTW aircraft. (Source: [https://www.sa-transport.co.za/aircraft/piper/piper\\_pa-25\\_zs-jtw\\_ra.JPG](https://www.sa-transport.co.za/aircraft/piper/piper_pa-25_zs-jtw_ra.JPG) - Robert Adams)

Description:

On Wednesday, 11 October 2023, a pilot on-board a Piper Pawnee PA-25-260 aircraft with registration ZS-JTW took off on a solo consolidation crop-spraying training flight from Runway 07 at Kroonstad Airfield (FAKS) in the Free State province. The instructor, who was on the ground, stated that the aircraft was beyond his line of sight when the pilot initiated a base turn. A few seconds later, he saw smoke and he immediately got into his vehicle and drove towards the area in which the smoke was originating. Upon arrival, he found the aircraft crashed and on fire. The pilot was fatally injured, and the aircraft was destroyed.

## Occurrence Details

**Reference Number** : CA18/2/3/10375  
**Occurrence Category** : Category 1  
**Type of Operation** : Private (Part 141)  
**Name of Operator** : Fantini  
**Aircraft Registration** : ZS-JTW  
**Aircraft Make and Model** : Piper Pawnee, PA-25-260  
**Nationality** : South African  
**Registration Marks** : ZS-JTW  
**Place** : Kroonstad Airfield (FAKS)  
**Date and Time** : 11 October 2023 at 0420Z  
**Injuries** : 1+0  
**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) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence involving a Piper Pawnee PA-25-260 aircraft which occurred at Kroonstad Airfield, Free State province, on 11 October 2023 at 0420Z. 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 to conduct an off-site investigation. Notifications were sent to the State of Registry, Operator, Design and Manufacturer in accordance with CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and ICAO 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:*

<http://www.caa.co.za/Pages/Accidents%20and%20Incidents/Aircraft-accident-reports.aspx>

*Notes:*

- Whenever the following words are mentioned in this report, they shall mean the following:*  
*Accident — this investigated accident*  
*Aircraft — the Piper Pawnee 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 SACAA, which are reserved.*

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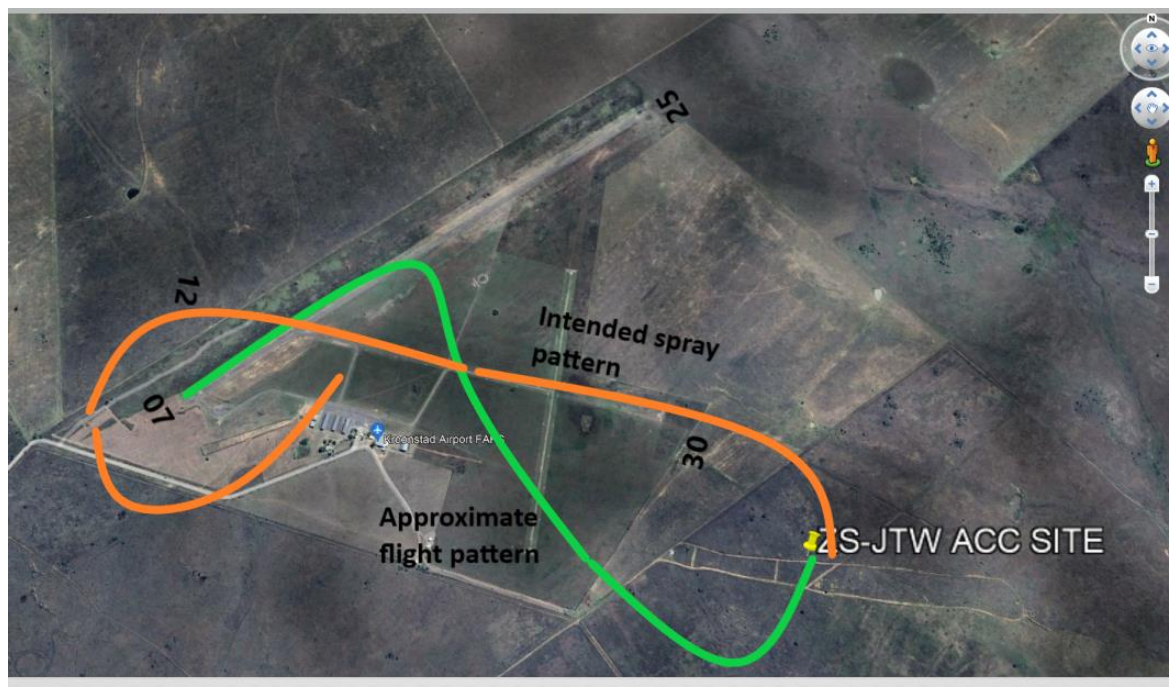
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<b>Abbreviation</b>	<b>Description</b>
°	Degrees
°C	Degrees Celsius
ACCID	Accident
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
CAVOK	Cloud and Visibility Ok
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
FAKS	Kroonstad Airfield
FDR	Flight Data Recorder
Ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
kt	Knots
m	Metres
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
VMC	Visual Meteorological Conditions
QNH	Altitude Above Mean Sea Level
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

## 1. FACTUAL INFORMATION

### 1.1. History of Flight

- 1.1.1 On Wednesday, 11 October 2023 at 0420Z, a pilot on-board a Piper Pawnee PA-25-260 aircraft with registration ZS-JTW was engaged in a solo consolidation crop-spraying training flight when the accident occurred. The pilot took off from Runway (RWY) 07 at Kroonstad Airfield (FAKS) in the Free State province. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.
- 1.1.2 According to the instructor who normally observes training flights from the ground, the pilot completed her pre-flight and run-up checks before she joined the runway. He stated that the hooper was carrying 200 litres (l) of water for the crop-spraying practise. The aircraft took off from RWY 07, and it climbed to 300 feet (ft) above ground level (AGL) and turned right to join the right base to line up for RWY 30. The intention was to inspect the runway orientated 12/30 before she could practise the spray runs. *Normally this type of operation is executed 2 metres (m) (6.5616 ft) above ground level.* The instructor stated that when the aircraft was on base leg, he had no visual of it. He then saw smoke coming from behind the trees near the base leg. Thereafter, he got into his vehicle and drove towards the area in which the smoke was originating. Upon reaching the site, he found the aircraft crashed and on fire. He immediately alerted the fire services and the South African Police Service (SAPS). The pilot was fatally injured.
- 1.1.3 The accident occurred during daytime near FAKS at Global Positioning System (GPS) co-ordinates determined to be 27°40'15.66" South 027°19'30" East, at a field elevation of 4 582 feet (ft).



**Figure 2:** The view of the accident site. The green line shows the approximate flight plan, and the orange line shows the intended spray pattern. (Source: Google Earth)



## 1.2 Injuries to Persons

1.2.1 The pilot succumbed to her injuries.

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	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 on impact with the ground and by post-impact fire.



**Figure 3:** The wreckage post-accident. (Source: Operator)

## 1.4 Other Damage

1.4.1 None.

## 1.5 Personnel Information

Nationality	South African	Gender	Female	Age	22
Licence Type	Commercial Pilot Licence (CPL) Aeroplane				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Instrument				
Medical Expiry Date	30 September 2024				
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	286.6
Total Past 24 Hours	5
Total Past 7 Days	5
Total Past 90 Days	14.8
Total on Type Past 90 Days	14.8
Total on Type	20.1

- 1.5.1 The pilot was initially issued a Commercial Pilot Licence (CPL) by the Regulator (SACAA) on 6 October 2022. Her Class 1 medical certificate was issued on 14 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on her licence.

## 1.6 Aircraft Information

- 1.6.1 The following information is an extract from the Pilot's Operating Handbook (POH):  
*The PA-25-260 is powered by a Lycoming O-540-G1A5 rated at 260 HP at 2700 RPM. Each engine has a compression ratio of 8.50:1 and requires 100/130 minimum octane aviation grade fuel. Exhaust gases are carried through a single muffler system constructed of heavy gauge stainless steel and directed over-board at the right of the cowl. The muffler shroud provides a source at the right of the cowl. The muffler shroud provides a source of heat for the cabin interior, whilst carburettor heat is furnished by a separate shroud located on the right exhaust stack. The carburettor air filter is of dry pleated-paper type which features very efficient filtering action with negligible separate shroud located on the right exhaust stack. The carburettor air filter is of the dry pleated-paper type which features very efficient filtering action with negligible restriction to carburettor inlet flow. The standard propeller on the PA-25-260 is either a Hartzell HC-C2YK-1/8477-0 or a McCauley B2D34C16/84HF-0 constant speed propeller. The fuselage frame is constructed of steel tubes, welded to form a rigid structure. Highly stressed members are made of 4130 chrome-moly steel, others are of 1025 steel.*



**Airframe:**

Manufacturer/Model	Piper Aircraft Corporation / Piper Pawnee	
Serial Number	25-7556020	
Year of Manufacture	19 January 1976	
Total Airframe Hours (At Time of Accident)	4495.2	
Last Inspection (Date & Hours)	1 August 2023	4452.58
Hours Since Last Inspection	42.62	
CRS Issue Date	19 May 2023	
C of A (Issue Date & Expiry Date)	20 September 2020	30 September 2024
C of R (Issue Date) (Present Owner)	10 April 2022	
Type of Fuel Used	AVGAS	
Operating Category	Standard Normal Category	
Previous Accidents	No	

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

**Engine:**

Manufacturer/Model	Lycoming / O-540-B2C5
Serial Number	L-5543-40
Part Number	0-540-B2C5
Hours Since New	N/A
Hours Since Overhaul	774.11

**Propeller:**

Manufacturer/Model	McCauley.1A200/FA8452
Serial Number	QA025
Part Number	1A200
Hours Since New	4297.77
Hours Since Overhaul	142.18

- 1.6.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was issued by the Regulator on 20 September 2020 with an expiry date of 30 September 2024.
- 1.6.3 The latest annual inspection maintenance conducted on the aircraft was on 1 August 2023. The aircraft maintenance organisation (AMO) that conducted the maintenance issued the Certificate of Release to Service (CRS) on 19 May 2023 at 4452.58 airframe hours with an expiry date of 18 May 2024 or at 4552.58 airframe hours, whichever comes first.
- 1.6.4 The AMO had an AMO Certificate that was issued by the Regulator on 14 September 2023 with an expiry date of 30 September 2024.

- 1.6.5 Post-accident, the oil cooler was found damaged; the carburettor bowl was found in good condition; the mixture lever was set to lean; and the throttle was at full power. Both magnetos were operational. The starter motor moved freely when examined, and all the spark plugs were in good condition.

## 1.7 Meteorological Information

- 1.7.1 The weather information below was obtained from the South African Weather Service (SAWS).

Wind Direction	020°	Wind Speed	5kt	Visibility	CAVOK
Temperature	19°C	Cloud Cover	None	Cloud Base	None
Dew Point	12°C	QNH	1021		

## 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 near FAKS at the following GPS co-ordinates: 27°40'15.66" South 027° 19'29.30" East, at a field elevation of 4 582ft.

Aerodrome Location	Free State Province
Aerodrome Status	Unlicensed
Aerodrome Co-ordinates	27°40'15.66" South 027° 19'29.30" East
Aerodrome Altitude	4582 ft
Runway Headings	07/25, 12/30,03/21
Runway Dimensions	1775m x 14m,1200m x 30m, 900m x 30m
Runway Used	07
Runway Surface	07/25 Tar & Grass
Approach Facilities	Nil
Radio Frequency	122.4 MHz

## 1.11 Flight Recorders

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

## 1.12 Wreckage and Impact Information

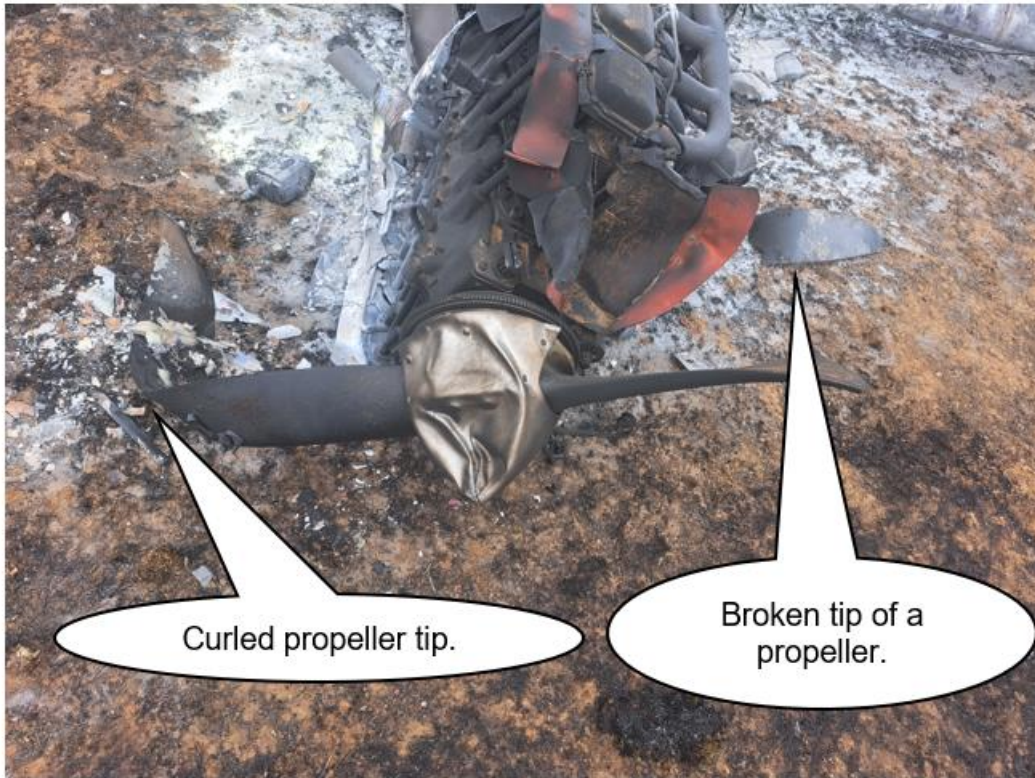
1.12.1 The investigation determined that during the base turn, the aircraft was flown low in a northerly direction. The main landing gear impacted an embankment (hump) on the edge of a gravel road that ran from the east to the west and bounced over the road. It then impacted the ground again about 10 metres after the first bounce and skidded approximately 5m before it came to a stop next to a tree; the aircraft faced west when it stopped. A post-impact fire erupted and consumed the aircraft. The pilot succumbed to her injuries.



**Figure 4:** The left and the right landing gears at the accident site.

1.12.2 When the aircraft impacted the ground, both the left and the right undercarriages broke off, as well as the spraying system. One of the propeller blades was found curled and still attached to the fuselage. The second propeller blade's tip was severed. The engine sustained minor damage towards the rear section as a result of the fire, including the two magnetos. The main fuel tank behind the engine had ruptured and the instrument panel was completely burnt. The auxiliary tanks on both wing tips were not damaged and were empty. The wiring of the control columns was relatively intact. Continuity test was conducted on-site, and all the wires moved freely.





**Figure 5:** The damaged engine and propellers.



**Figure 6:** The broken spray system.

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

1.13.1 To be discussed in the final report.

### **1.14 Fire**

1.14.1 There was a post-impact fire which destroyed the aircraft.

### **1.15 Survival Aspects**

1.15.1 The accident was considered not survivable as the post-impact fire ensued after the impact. The pilot was unable to evacuate the aircraft.

### **1.16 Tests and Research**

1.16.1 To be discussed in the final report.

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

1.17.1 The flight was conducted in accordance with the provisions of Part 141 of the CAR 2011 as amended.

1.17.2 The AMO that conducted maintenance on the aircraft had an AMO certificate that was issued by the Regulator on 14 September 2023 with an expiry date of 30 September 2024.

### **1.18 Additional Information**

1.18.1 To be discussed in the final report.

### **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

2.2.1 The pilot was issued a Commercial Pilot Licence (CPL) by the Regulator on 6 October 2022 with an expiry date of 31 October 2024.

2.2.2 The pilot had a Class 1 medical certificate that was issued on 14 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on the pilot's licence.

2.2.3 The aircraft was issued the Certificate of Registration (C of R) on 10 April 2022.

2.2.4 The aircraft had a valid Certificate of Airworthiness (C of A) on 20 September 2020 with an expiry date of 30 September 2024.

2.2.5 The Approved Training Organisation (ATO) (training school) had the Agricultural, Forestry and Fishery Certificate of Registration that was issued on 15 August 2023 with an expiry date of 30 July 2026.

2.2.6 The training school had a valid ATO Certificate that was issued on 9 March 2021 with an expiry date of 31 August 2026.

2.2.7 The operator had a valid Air Operating Certificate (AOC) that was issued on 30 September 2022 with an expiry date of 30 September 2023.

2.2.8 The latest annual inspection maintenance on the aircraft was conducted on 1 August 2023. The AMO that conducted the inspection had issued the aircraft's CRS on 19 May 2023 at 4452.58 airframe hours with an expiry date of 18 May 2024 or at 4552.58 airframe hours, whichever comes first.

2.2.9 The AMO had an AMO Certificate that was issued by the Regulator on 14 September 2023 with an expiry date of 30 September 2024.

2.2.10 The flight was conducted in accordance with the provisions of Part 141 of the CAR 2011 as amended.

### **3 ON-GOING INVESTIGATION**

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

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