SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Accident and Incident Investigations Division** Form Number: CA 12-57

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10561										
Classification	Accident			**Date**	10 March 2025			**Time**	0905Z		
Type of Operation	Agricultural Operations (Part 137)										
Location											
Place of Departure	Private Farm near Ventersdorp, North West Province			Place of Intended Landing				Private Farm near Ventersdorp, North West Province			
Place of Occurrence	On a private farm, 8 kilometres (km) north-east of Ventersdorp, North West province										
GPS Co-ordinates	Latitude	26° 13' 08.3" S		Longitude	026° 56' 25.0" E			Elevation	4972 ft		
Aircraft Information											
Registration	ZS-MOZ										
Make; Model; S/N	Air-Tractor; AT-502B (Serial Number: 502-0212)										
Damage to Aircraft	Substantial			Total Aircraft Hours	8817.6						
Pilot-in-command											
Licence Type	Commercial Pilot Licence (CPL)			Gender	Male			Age	64		
Licence Valid	Yes	Total Hours		11 318.25	Total Hours on Type				1033.25		
Total Hours 30 Days	26			Total Flying on Type Past 90 Days	78.40						
People On-board	1+0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0				

What Happened

On Monday morning, 10 March 2025 at 0905Z, a pilot on-board an Air Tractor AT-502B aircraft with registration ZS-MOZ was engaged in a crop-spraying operation (aerial application) at a private farm near Ventersdorp in North West province when the accident occurred. 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.

According to the pilot, he took off from a private farm near Ventersdorp to another private farm situated 8 kilometres (km) north-east of Ventersdorp to conduct a crop-spraying operation; his ground crew was stationed in the designated landing zone near the same maize field to be sprayed. This was the pilot's first operation on the farm; the farm owner was a new client. The pilot stated that he familiarised himself with the area on the same morning (10 March 2025) using a ground vehicle and escorted by the farm's foreman who showed him all the fields to be sprayed as well as highlighted obstacles in the area, including electrical powerlines. After he had familiarised himself with the area, he conducted a pre-flight inspection of the aircraft and found no anomalies. The aircraft had approximately 500 US gallons of insecticide in the hopper. At approximately 0850Z, the aircraft took off and headed to the maize field that needed spraying; he completed three uneventful spray runs. As he positioned the aircraft for the fourth chemical application run, the aircraft impacted the high-voltage powerlines on his flight path. The powerlines snapped and entangled the aircraft which landed hard on the field. Third-party damage was caused to the maize crops. The aircraft sustained substantial damage. The pilot was not injured; he vacated the aircraft unassisted.

During the interview, the pilot stated that he was aware of the location of the powerlines; however, his vision was compromised by the shadow of the cloud at the time, and the aircraft impacted the powerlines.

Good weather conditions prevailed at the time of the flight, with scattered low clouds in the area.

Figure 1: The aircraft as it came to rest after the accident. (Source: Pilot)

Figure 2: A damaged pole that secured the powerlines after the accident. (Source: Pilot)

The weather conditions supplied by the pilot through the pilot questionnaire were as follows – wind direction: calm; windspeed: calm; visibility: ceiling and visibility OK (CAVOK); air temperature: 24°C; cloud cover: 3/8; cloud base: ±7500ft.

Crop-spraying Operation

The crop-spraying operations are associated with the risks of low-level flying that require pilots to maintain constant situational awareness of obstacles in the area of operation.

Findings

Man

1. The pilot had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator (SACAA) on 21 February 1983. The licence was re-issued on 17 January 2025 with an expiry date of 31 January 2026. The pilot's Class 1 aviation medical certificate was issued on 6 January 2025 with an expiry date of 31 July 2025.

2. The pilot had a total of 11 316.25 flying hours, including 1 033.25 hours that were accumulated on the aircraft type. The aircraft type was endorsed on the pilot's logbook; he also had an agricultural pilot rating for the operation. The pilot had undergone a proficiency check after which a Proficiency Certificate was issued on 1 March 2025 with an expiry date of 31 September 2025.

Machine

3. The aircraft had a valid Certificate of Airworthiness that was issued by the Regulator on 5 October 2024 with an expiry date of 31 October 2025. The Certificate of Registration (C of R) was issued to the current owner on 18 June 2019.

4. The latest annual inspection of the aircraft was conducted and certified on 2 February 2025 at 8 760.20 hours after which a Certificate of Release to Service (CRS) was issued with an expiry date of 2 February 2026 or at 8 860.20 hours, whichever comes first. The aircraft had a total of 8 817.6 hours at the time of the flight. It had accumulated a total of 57.4 hours since the annual inspection.

5. The aircraft maintenance organisation (AMO) which conducted the mandatory periodic inspection (service) of the aircraft had an AMO Certificate that was issued on 22 March 2024 with an expiry date of 2 April 2025. The aircraft type was endorsed on the AMO's operational specifications.

6. The operator had an Air Operating Certificate (AOC) that was issued by the Regulator on 5 December 2024 with an expiry date of 31 December 2025. The aircraft type was endorsed on their operational specifications under Part 135/137 operations of the CAR 2011 as amended.

7. The aircraft was serviced and operated following the approved Regulatory framework and compliance. There were no existing defects on any of the aircraft's systems that could have contributed to this accident.

Environment

8. Clear weather conditions prevailed at the time of the flight. The low cloud-cover reduced visibility and casted a shadow over the powerlines which made it difficult for the pilot to identify obstacles well in advance. The accident may have been avoided had the powerlines been properly marked with high-visibility indicators.

9. The pilot was engaged in a crop-spraying operation in the area for the first time, he conducted a ground survey of the site before commencing with the crop-spraying operation. Therefore, he was aware of the high-tension powerlines. However, during repositioning of the aircraft for a fourth spray run, he lost situational awareness due to the low cloud which casted a shadow on the powerlines; the aircraft impacted the powerlines and lost forward momentum, thus, the subsequent hard landing on the maize field.

Probable Cause(s)

The pilot failed to maintain adequate visual separation from the known obstacle during a low-level crop-spraying operation; the aircraft struck the wires before it impacted the ground.

Contributing Factor(s)

1. Cloud shadow reduced visibility which caused the pilot to lose situational awareness; this led to the wire strike and the subsequent hard landing.
2. The pilot lacked prior flight operation experience in the area, which led to high operational risk.

Safety Action(s)

None.

Safety Message

To reduce the risk of obstacle-related accidents during crop-spraying operations, hazards such as powerlines should be physically marked with high-visibility devices. Site familiarisation should include aerial reconnaissance where safe, supported by detailed obstacle briefings with diagrams, GPS data and photos. The use of GPS-based guidance systems is recommended to enhance situational awareness. Pilots should receive training for visually deceptive conditions, and operators should conduct standard risk assessments for new sites. Pre-flight crew briefings, including obstacle walkarounds with local ground personnel, are essential for safe operations.

About this Report

The decision to conduct a limited investigation is based on factors including whether the cause is known and the evidence supporting the cause is clear, the level of safety benefit likely to be obtained from an investigation, and that will determine the scope of an investigation. For this occurrence, a limited investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this limited report. The report has been compiled using information supplied in the initial notification, as well as from follow-up desktop enquiries to bring awareness

of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar occurrence.

All times given in this report are Coordinated Universal Time (UTC) and will be denoted by (Z). South African Standard Time is UTC plus 2 hours.

Purpose

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011 and ICAO Annex 13, this report was compiled in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents and not to apportion blame or liability.

Disclaimer

This report is issued by:

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