

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10547						
Classification	Accident	Date	19 January 2025		Time	1515Z	
Type of Operation	Agricultural Operations (Part 137)						
Location							
Place of Departure	Mokopane Airfield (FAQR), Limpopo Province			Place of Intended Landing	Mokopane Airfield (FAQR), Limpopo Province		
Place of Occurrence	Mokopane Airfield (FAQR) Runway 36, Limpopo Province						
GPS Co-ordinates	Latitude	24°14'02.63" S	Longitude	028°57'55.53" E	Elevation	3 481 ft	
Aircraft Information							
Registration	ZS-KDX						
Make; Model; S/N	Cessna A188B Ag Truck (Serial Number: 188-03068T)						
Damage to Aircraft	Substantial			Total Aircraft Hours	7473.4		
Pilot-in-command							
Licence Type	Commercial Pilot Licence (CPL)		Gender	Male		Age	53
Licence Valid	Yes	Total Hours	4 828.5		Total Hours on Type	1738.2	
Total Hours 30 Days	20.1		Total Flying on Type Past 90 Days	20.1			
People On-board	1 + 0	Injuries	0	Fatalities	0	Other (on ground)	0
What Happened							
<p>On Saturday, 19 January 2025, a pilot on-board a Cessna A188B Ag Truck aircraft with registration ZS-KDX departed from Mokopane Airfield (FAQR) in Limpopo province to conduct a crop-spraying operation with the intention of making a full-stop landing at the same take-off 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.</p> <p>According to the flight folio record of 19 January 2025, the pilot initially conducted two crop-spraying flights. The duration of the first flight was 30 minutes, followed by a 4.9-hour flight of crop-spraying operation. The pilot landed the aircraft at 1500Z. He then conducted a pre-flight inspection of the aircraft as per normal, as well as loaded 600 litres (l) of crop-spraying chemical in the aircraft hopper. He also uplifted 100 litres (l) of Aviation Gasoline (AVGAS) in the aircraft's fuel tanks.</p> <p>The pilot reported that a 5-knot (kts) north-easterly wind was blowing at approximately 1515Z during the take-off run on Runway 36 at FAQR. He also stated that approximately 575 metres (m) from the runway threshold, a gust of wind from the left lifted the left wing which caused the aircraft to veer off to the right of the runway. As a result, the propeller and the right wing of the aircraft struck the ground.</p>							

As a result, the propeller blades were bent. The aircraft ground-looped in a clockwise direction and came to rest on the right side of the runway. The pilot was not injured.

The aircraft sustained substantial damage which included a rippled and bent left wing, bent propeller blades, and the separation of the empennage and tail from the fuselage.

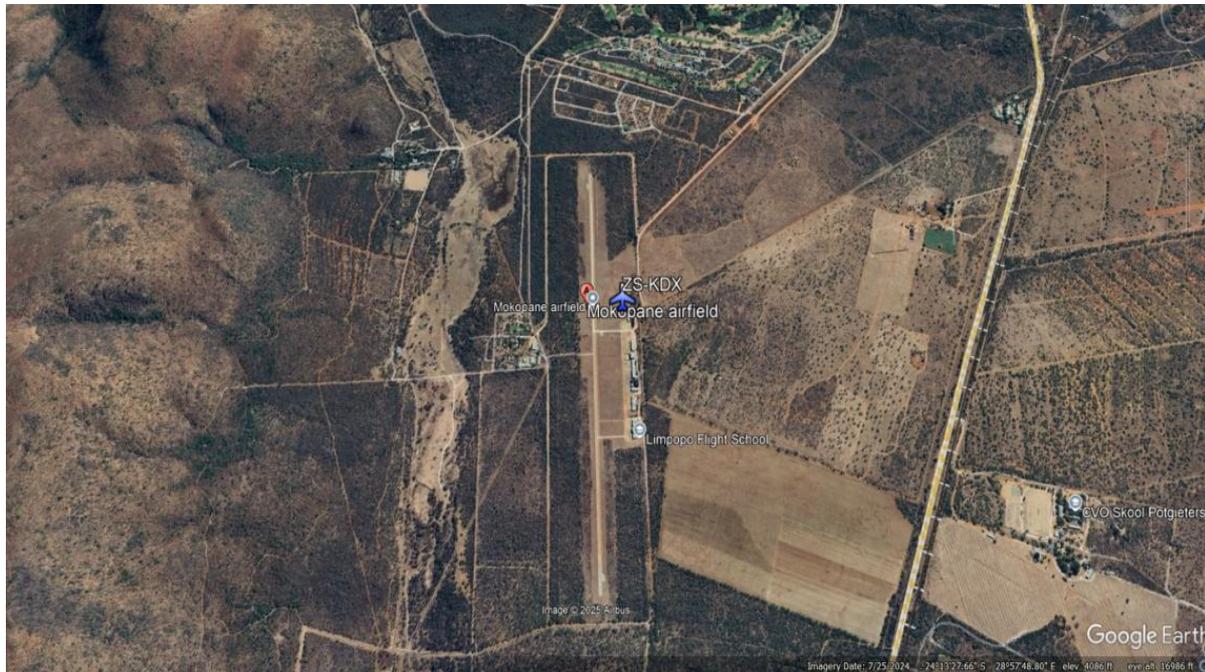


Figure 1: An overview of the accident site. (Source: Google Earth)



Figure 2: The damaged aircraft after the accident. (Source: Pilot)



Figure 3: The bent propeller blades. (Source: Pilot)

Meteorological Information

Wind Direction	NE	Wind Speed	5 Kts	Visibility	10 Km
Temperature	25°C	Cloud Cover	FEW	Cloud Base	Unknown
Dew Point	15°C	QNH	877.2 hPa		

The aircraft's crosswind component limitation is 15 kts. The calculated crosswind component on the day was 3.5 kts. The crosswind was not deemed significant to affect the aircraft's stability during take-off at the time of the accident.

Post-accident Investigation

The FAQR is surrounded by a mountainous terrain. The image below shows the aircraft's position at the airfield during take-off in relation to the terrain.



Figure 4: The terrain and the airfield's runway with the aircraft taking off. (Source: Operator Safety Officer)

The pilot reported that during take-off, a sudden change in wind direction and speed caused him to lose control of the aircraft. The weather condition could have been a result of mountain waves.

Mountain Waves (Source: <https://skybrary.aero/articles/mountain-waves>)

Mountain Waves are defined as oscillations to the lee side (downwind) of high ground resulting from the disturbance in the horizontal air flow caused by the high ground. Mountain Waves are associated with severe turbulence, strong vertical currents, and icing. Loss of Control can also occur near to the ground prior to landing or after take-off with a risk of terrain contact or a hard landing if crew corrective response to a downdraft is not prompt.

Findings

1. Personnel Information

- 1.1 The pilot had a Commercial Pilot Licence (CPL) that was initially issued on 21 April 1993. The CPL was renewed on 28 August 2024 with an expiry date of 31 July 2025. The pilot was properly licensed and qualified to undertake the flight.

1.2 The pilot had a Class 1 aviation medical certificate that was issued on 23 August 2024 with an expiry date of 31 August 2025 with no restrictions.

2. Aircraft Information

2.1 The last mandatory periodic inspection (MPI) of the aircraft was conducted and certified on 23 August 2024 at 429.2 airframe hours. The aircraft had accrued 60.6 hours since the MPI.

2.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued on 30 May 2019. The latest C of A had an expiry date of 31 May 2025. The aircraft's Certificate of Registration (C of R) was issued to the present owner on 3 May 2019.

2.3 The aircraft was issued a Certificate of Release to Service (CRS) on 23 August 2024 at 429.2 airframe hours with an expiry date of 22 August 2025 or at 529.2 airframe hours, whichever occurs first. The aircraft was properly certified and serviceable prior to the flight.

2.4 The aircraft was maintained by an aircraft maintenance organisation (AMO) with an AMO Certificate that was issued by the Regulator (SACAA) on 31 August 2024 with an expiry date of 31 August 2025.

2.5 The operator was issued an Air Operating Certificate (AOC) by the Regulator on 29 February 2024 with an expiry date of 28 February 2025.

3. Environment

3.1 Mokopane Airfield (FAQR) is surrounded by a mountainous terrain.

3.2 It is likely that during take-off, the aircraft was affected by mountain waves which led to the pilot losing control of the aircraft.

Probable Cause(s)

Loss of directional control during take-off.

Contributing Factor(s)

Mountain waves.

Safety Action(s)

The operator at this airfield should issue a safety notice to ensure all pilots are aware of the dangers associated with mountain waves at the airfield.

Safety Message and/or Safety Recommendation/s

None.

<p>About this Report</p> <p><i>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 desk top 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.</i></p> <p><i>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.</i></p>
<p>Purpose</p> <p><i>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.</i></p>
<p>Disclaimer</p> <p><i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i></p>

This report is issued by:

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