LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10529										
Classification	Accident		**Date**	20 November 2024			**Time**	0820Z			
Type of Operation	Private (Part 91)										
Location											
Place of Departure	Kroonstad Aerodrome (FAKS), Free State Province			Place of Intended Landing			Kroonstad Aerodrome (FAKS), Free State Province				
Place of Occurrence	Left of Runway 07 at Kroonstad Aerodrome (FAKS)										
GPS Co-ordinates	Latitude	27°39'36.57" S		Longitude	027°18'56.66" E		Elevation	4 690 feet			
Aircraft Information											
Registration	ZS-OSU										
Make; Model; S/N	Cessna Aircraft Company; T188C (Serial number: T188-03876T)										
Damage to Aircraft	Substantial				Total Aircraft Hours		4 064.0				
Pilot-in-command											
Licence Type	Airline Transport Pilot Licence (ATPL)			Gender	Male		Age	47			
Licence Valid	Yes	Total Hours		6 402.9	Total Hours on Type		110.6				
Total Hours Past 30 Days	17.3			Total Hours on Type Past 90 Days			14.8				
People On-board	1 + 0	**Injuries**	0	**Fatalities**	0		**Other (on ground)**	0			

What Happened

On Thursday morning, 20 November 2024, a pilot on-board a Cessna T188C with registration ZS-OSU took off on a private flight from Kroonstad Aerodrome (FAKS) with the intention to land back at the same aerodrome. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

The pilot stated that the aircraft was recently fitted with a new engine, and it was required to fly for approximately 25 hours to complete the engine break-in process before it could be used for agricultural spraying. At the time of the accident, the aircraft had flown 19.9 hours since the newly overhauled Continental TSIO-520-T engine with serial number 515358 was installed. During the last maintenance inspection that was certified on 5 June 2024, the McCauley D3A34C402-C propeller with serial number 170530 was in operation for 820.9 hours since new.

The pilot stated that he opted to use Runway 07 for take-off due to the prevailing wind from the north. During the take-off roll as the tail lifted off the ground (tail dragger), the aircraft experienced a sudden gust of wind from the left. The pilot applied the right rudder, but it had no effect. The aircraft veered off to the left of the runway and careered for some distance over the grass before it came to a stop. The aircraft sustained substantial damage when the right main landing gear and wheel assembly

broke off (see Figure 4). As a result, the propeller and the right wing struck the ground. No person was injured.

The accident occurred during daylight at Global Positioning System (GPS) co-ordinates determined to be 27°39’36.57" South 027°18'56.66" East, at an elevation of 4 690 feet (ft).

Figure 1: The aircraft before the accident flight. (Source: Sky Sprayers)

Figure 2: Tyre markings on the runway indicate the point at which the aircraft veered off to the left. (Source Pilot)

Figure 3: The aircraft as it came to rest. (Source: Pilot)

Figure 4: The right main landing gear strut and wheel assembly that broke off. (Source: Pilot)

Meteorological Information

The weather information in the table below was obtained from the pilot questionnaire.

Wind Direction	360ºC	Wind Speed	5 knots	Visibility	9999m
Temperature	27ºC	Cloud Cover	CAVOK	Cloud Base	Clear
Dew Point	12ºC	QNH	1024hPa		

Crosswind Component (Source: https://e6bx.com/wind-components)

The weather data in the table above was used to determine the crosswind component. It does not include the gust of wind that the aircraft experienced during the take-off roll as it could not be measured.

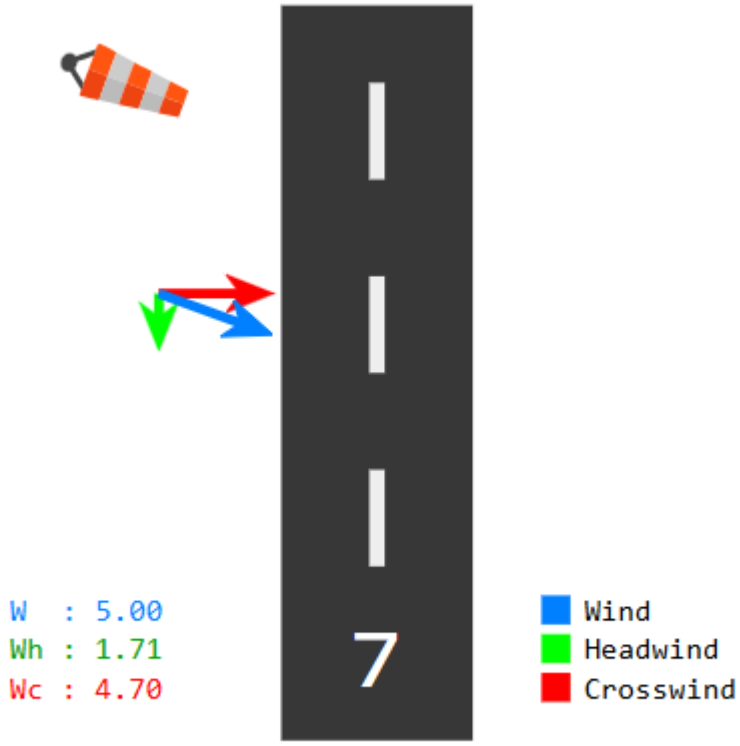

Figure: 5 Crosswind component calculations. (Source: https://e6bx.com/wind-components)

Findings

1. Personnel Information

1.1 The pilot had an Airline Transport Pilot Licence (ATPL) that was initially issued by the Regulator (SACAA) on 7 September 2009. The latest ATPL had an expiry date of 30 November 2024. The pilot had flown a total of 6 402.9 hours of which 110.6 hours were on the aircraft type.

1.2 The pilot was issued a Class 1 aviation medical certificate on 4 October 2024 with an expiry date of 31 October 2025. The pilot had a restriction to carry a pair of reading spectacles in the aircraft.

1.3 The pilot's conversion onto the Cessna T188C aircraft type was endorsed in his logbook on 22 November 2023.

2. Aircraft Information

2.1 The last maintenance inspection of the aircraft was certified on 5 June 2024 at 4 044.1 airframe hours. The aircraft had accrued 19.9 hours since the said inspection.

2.2 The aircraft's Certificate of Registration (C of R) was issued to the present owner on 21 October 2024.

2.3 The aircraft had a valid Certificate of Airworthiness (C of A) that was initially issued by the Regulator (SACAA) on 2 July 2024. The latest C of A had an expiry date of 1 July 2025.

2.4 The aircraft was issued a Certificate of Release to Service on 5 June 2024 with an expiry date of 4 June 2025 or at 4 144.1 airframe hours, whichever comes first.

2.5 This aircraft was involved in an accident in Mozambique on 11 March 2010. It was recovered and brought back to South Africa where it was repaired; it returned to service in 2012.

2.6 The newly overhauled engine that was installed in the aircraft was still within its 25-hour break-in period when the accident occurred.

3. Meteorological Information

3.1 According to the pilot, the wind was 360°/5 knots. He opted to use Runway 07 for take-off. Using the weather data obtained from the pilot, the crosswind component was calculated to be 4.7 knots before take-off.

4. Kroonstad Aerodrome (FAKS)

4.1 FAKS is a licensed aerodrome with three runways orientated 03/21, 07/25 and 12/30. The pilot opted to use Runway 07 for take-off which is 1 775m long and 14m wide with an asphalt surface. The other two runways have grass surfaces.

Probable Cause

The pilot lost directional control of the aircraft when it experienced a sudden gust of wind from the left; the aircraft veered off to the left of the runway. The pilot applied the right rudder to counteract the yaw, but the rudder was ineffective.

Contributing Factors

None.

Safety Action(s)

None.

Safety Message and/or Safety Recommendation/s
None.
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 inquiries 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 Co-ordinated 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.
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This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa