

**LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL**

<b>Reference Number</b>	CA18/2/3/10542						
<b>Classification</b>	Accident	<b>Date</b>	08 January 2025		<b>Time</b>	0545Z	
<b>Type of Operation</b>	Private (Part 94)						
<b>Location</b>							
Place of Departure	Cape St Francis (FACF), Eastern Cape Province		Place of Intended Landing		Rustenburg Aerodrome (FARG), North West Province		
Place of Occurrence	On Runway 28 at Cape St Francis Aerodrome (FACF), Eastern Cape Province						
GPS Co-ordinates	Latitude	34°11'.26"S	Longitude	24°49'.91"E	Elevation	134 ft	
<b>Aircraft Information</b>							
Registration	ZU-IXU						
Make; Model; S/N	Jabiru J430 (Serial Number: 0006)						
Damage to Aircraft	Substantial			Total Aircraft Hours	105		
<b>Pilot-in-command</b>							
Licence Type	Private Pilot Licence (PPL) Aeroplane		Gender	Male		Age	56
Licence Valid	Yes	Total Hours	166.5		Total Hours on Type	99.0	
Total Hours 30 Days	9.4		Total Flying on Type Past 90 Days	14.2			
<b>People On-board</b>	1+2	<b>Injuries</b>	0	<b>Fatalities</b>	0	<b>Other (on ground)</b>	0
<b>What Happened</b>							
<p>On Wednesday, 8 January 2025, a pilot and two passengers on-board a Jabiru J430 aircraft with registration ZU-IXU were on a private flight from Cape St Francis Aerodrome (FACF) in Eastern Cape province to Rustenburg Aerodrome (FARG) in North West province. The pilot had planned to stop at New Tempe Aerodrome (FATP) in Free State province to refuel before proceeding to FARG. The flight was scheduled to take 5 hours inclusive of take-offs and landings via FATP (FACF to FATP – 3 hours; and FATP to FARG 2 hours). The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot stated that before departure, he had a short safety briefing with the passengers. Shortly after, he conducted a pre-flight inspection of the aircraft, and no abnormalities were found. The flight folio had no outstanding defects or deferred items. The pilot opted to take-off in a westerly direction due to the surface wind that was blowing west at 17 knots (kt) at the time. He taxied the aircraft to the threshold of the grass-covered Runway 28 which is 1200 metres (m) in length where he performed the pre-departure checks.</p>							

The pilot stated that during the take-off roll, the aircraft accelerated down the runway at an indicated airspeed (IAS) of approximately 50 kts; however, he lost directional control of the aircraft, and it veered off to the left. He then tried to correct the direction by engaging the right rudder pedal, but this action was not sufficient to redirect the aircraft back onto the centre of the runway. Consequently, the aircraft exited the runway and careered onto the grass area. During this sequence, the nose gear strut collapsed, and the propeller struck the ground. The aircraft sustained substantial damage to the propeller, nose wheel and the right under carriage. None of the occupants was injured.



**Figure 1:** Aerial view of FACF. (Source: Google Earth)



**Figure 2:** The final resting position of the aircraft after the accident. (Source: Pilot)



**Figure 3:** The yellow arrow shows the direction of take-off. (Source: Pilot)



*Torque reaction involves Newton's Third Law of Physics— for every action, there is an equal and opposite reaction. As applied to the aircraft, this means that as the internal engine parts and propeller are revolving in one direction, an equal force is trying to rotate the aircraft in the opposite direction. When the aircraft is airborne, this force is acting around the longitudinal axis, tending to make the aircraft roll. To compensate for roll tendency, some of the older aircraft are rigged in a manner to create more lift on the wing that is being forced downward. The more modern aircraft are designed with the engine offset to counteract this effect of torque.*

*Generally, the compensating factors are permanently set so that they compensate for this force at cruising speed, since most of the aircraft's operating time is at that speed. However, aileron trim tabs permit further adjustment for other speeds. When the aircraft's wheels are on the ground during the take-off roll, an additional turning moment around the vertical axis is induced by torque reaction. As the left side of the aircraft is being forced down by torque reaction, more weight is being placed on the left main landing gear. This results in more ground friction, or drag, on the left tire than on the right, causing a further turning moment to the left. The magnitude of this moment is dependent on many variables. Some of these variables are:*

- 1. Size and horsepower of engine*
- 2. Size of propeller and the rpm*
- 3. Size of the aircraft*
- 4. Condition of the ground surface*

*This yawing moment on the take-off roll is corrected by the pilot's proper use of the rudder or rudder trim.*

## **Findings**

### **1. Personnel Information**

1.1 The pilot had a Private Pilot Licence (PPL) that was initially issued on 11 April 2023. The licence was reissued on 2 March 2024 with an expiry date of 28 February 2026.

1.2 The pilot had a Class 2 medical certificate that was initially issued on 30 April 2024 with an expiry date of 30 April 2025 with no restrictions.

### **2. Aircraft Information**

2.1 The 100-hour inspection of the aircraft was completed on 12 December 2024.

2.2 The aircraft had a valid Authority-to-fly (ATF) Certificate that was issued by the Regulator (SACAA) on 5 May 2023. The ATF Certificate was renewed on 21 May 2024 with an expiry date of 4 May 2025. The aircraft was airworthy when it was dispatched for the flight.

2.3 The aircraft Certificate of Registration (C of R) was issued to the present owner on 15 February 2023.

2.4 The aircraft Certificate of Release to Service (C of S) had an expiry date of 6 May 2025 or at 175.4 hours of flight time.

2.5 The weight and balance calculation of the aircraft at the time of the flight was within its limit.

### 3. Conclusion

3.1 The pilot lost directional control of the aircraft during the take-off roll due to failure to compensate for the engine torque effect. The pilot's action was not sufficient to stop the aircraft from veering off the runway.

#### **Probable Cause(s)**

Loss of directional control of the aircraft during the take-off roll which resulted in the aircraft veering off to the left and exiting the runway.

#### **Contributing Factor(s)**

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 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.*

*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.*

#### **Disclaimer**

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**This report is issued by:**

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