

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10281					
Classification	Accident	Date	29 March 2023	Time	0840Z	
Type of Operation	Non-Type Certified Aircraft (Part 94)					
Location						
Place of Departure	Gariep Dam Aerodrome (FAHV), Northern Cape Province		Place of Intended Landing	Potchefstroom Aerodrome (FAPS), North West Province		
Place of Occurrence	Runway 03 at FAPS, North West Province					
GPS Co-ordinates	Latitude	26°40'22.13" S	Longitude	027°04'54.07" E	Elevation	4 477 ft
Aircraft Information						
Registration	ZU-WDN					
Make; Model; S/N	Van's Aircraft, RV-8 (Serial Number: 83088)					
Damage to Aircraft	Substantial		Total Airframe Hours	51.5		
Pilot-in-command						
Licence Type	Airline Transport Pilot Licence (ATPL)		Gender	Male	Age	40
Licence Valid	Yes	Total Hours on Type	23.0	Total Flying Hours	10 984.0	
Total Hours 90 Days	94.0		Total Hours on Type Past 90 Days		15.0	
People On-board	1 + 1	Injuries	0	Fatalities	0	Other (on ground) 0
What Happened						
<p>On Tuesday, 28 March 2023, a pilot and a passenger on-board a Van's RV-8 aircraft with registration ZU-WDN took off from Stellenbosch Aerodrome (FASH) in the Western Cape province to Gariep Dam Aerodrome (FAHV) in the Northern Cape province.</p> <p>On Wednesday morning, 29 March 2023 at 0705Z, the pair took off on a private flight from FAHV to Potchefstroom Aerodrome (FAPS) in the North West province. 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's intention was to deliver the aircraft to the aircraft maintenance organisation (AMO) at FAPS as it was due for an annual maintenance inspection. This was the first annual inspection on the aircraft since its construction from a kit. The reason the pilot opted to have the maintenance carried out at this specific AMO was because they had assisted him in building the aircraft. The proving flight phase of the aircraft, which included a total flight time of 41.5 hours, was flown over a period of approximately three months by the pilot who resides in Potchefstroom.</p>						

The flight from FAHV to FAPS was uneventful. As the pilot approached for landing, he assessed the wind which was blowing from the north-west (330°) at 12 knots gusting 15 knots. He then opted to land on Runway 03. The pilot stated that after touchdown during ground roll, the aircraft encountered a crosswind from the left which caused it to veer off to the right. He tried to maintain directional control, but the aircraft departed the runway surface approximately 500m from the threshold of Runway 03 and ground looped before it came to rest in the direction of landing. No person was injured during the accident. The aircraft sustained substantial damage.

The accident occurred during daylight on the right side of Runway 03 at FAPS at Global Positioning System (GPS) co-ordinates determined to be 26°40'22.13" South 027°04'54.07" East, at an elevation of 4 477 feet (ft).



Figure 1: The yellow pin indicates the position of the accident site. (Source: Google Earth)



Figure 2: The aircraft as it came to rest on the right side of Runway 03. (Source: AMO)

The left main gear collapsed and, as a result, substantial structural damage was caused to the fuselage and the left wing.



Figure 3: The damage caused to the left main gear.

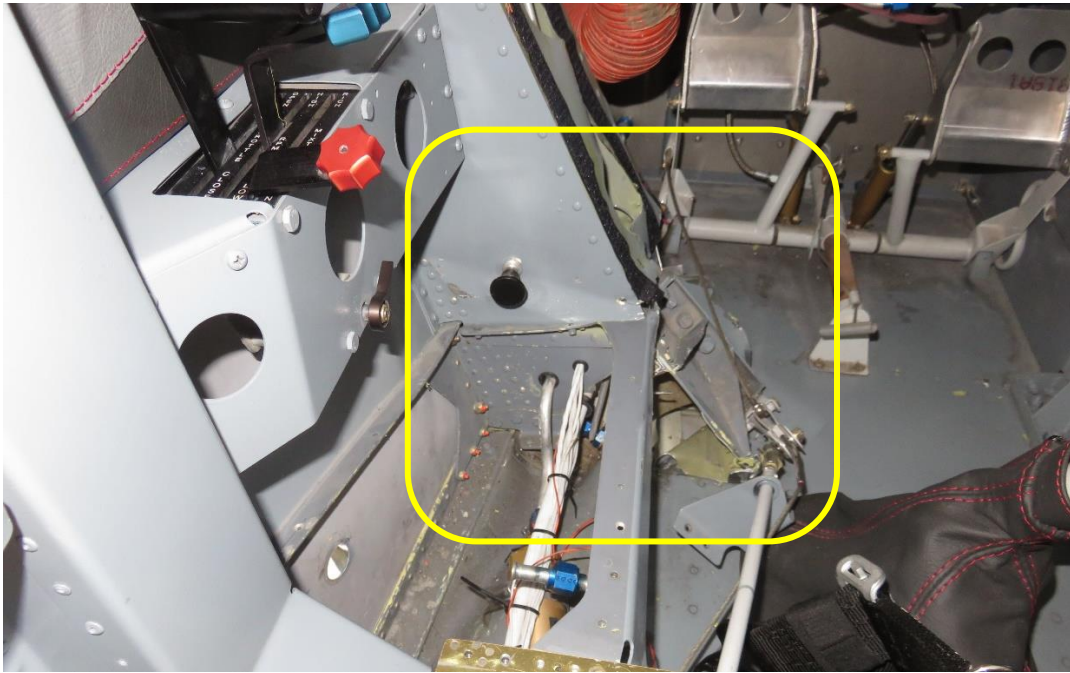


Figure 4: Structural deformation on the fuselage caused by the left main gear strut.



Figure 5: The tail wheel broke off during landing.



Figure 6: The left main tyre markings on the runway after the aircraft veered off.

Findings

1. Personnel Information

- 1.1 The pilot was initially issued an Airline Transport Pilot Licence (ATPL) on 24 March 2009. The last renewal of the pilot's licence was on 2 May 2022, and was valid until 30 June 2023. The pilot had flown a total of 10 984.0 hours of which 23.0 hours were on the aircraft type.
- 1.2 The pilot had a Class 1 aviation medical certificate that was issued on 4 May 2022 with an expiry date of 31 May 2023.
- 1.3 The pilot was properly licensed and medically fit to conduct the flight in accordance with the existing regulations. The aircraft type was endorsed on his licence.
- 1.4 From the aircraft flight folio, it was noted that the pilot had flown a total of 10.0 hours using the ZU-WDN over the period 2 October 2022 until the accident flight on 29 March 2023. The table below gives a breakdown of the information contained in the aircraft flight folio.

Date	From	To	Duration of the flight
2 October 2022	Potchefstroom	Stellenbosch	3.4
7 November 2022	Stellenbosch	Stellenbosch	1.2
16 February 2022	Stellenbosch	Stellenbosch	2.0
28 March 2023	Stellenbosch	Gariep Dam	2.2
29 March 2023	Gariep Dam	Potchefstroom	1.2
		Total	10.0

1.5 The pilot is employed by an airline as a training captain on the Airbus A320 aircraft.

2. Aircraft Information

2.1 The last maintenance inspection that was carried out on the aircraft prior to the accident flight was certified on 5 April 2022 at 41.5 airframe hours by an aircraft maintenance organisation (AMO). Since the inspection, a further 10.1 hours were flown on this aircraft.

2.2 The aircraft had a valid Authority to Fly (ATF) that was issued on 29 June 2022 with an expiry date of 28 June 2023. The aircraft was airworthy when it dispatched for the flight.

2.3 The aircraft Certificate of Registration (C of R) was issued on 14 May 2019.

2.4 The aircraft was issued a Certificate of Release to Service (CRS) on 5 April 2022 with an expiry date of 4 April 2023 or at 141.5 airframe hours, whichever occurs first.

2.5 In addition to the external damage of the aircraft, it was noted that the left wing aft main spar was bent, which would require the wing to be replaced.

3. Meteorological Information

3.1 The weather information in the table below was obtained from the pilot questionnaire (form CA 12-03).

Wind Direction	330°	Wind Speed	12 to 15 kt	Visibility	9999 m
Temperature	25°C	Cloud Cover	Nil	Cloud Base	CAVOK
Dew Point	Unknown	QNH	1019hPa		

3.2 The South African Weather Service (SAWS) issued the Meteorological Aerodrome Report (METAR) for FAPS on 29 March 2023 at 0800Z and 0900Z. This information was obtained from the automatic weather station at FAPS.

FAPS 290800Z AUTO 03003KT /// // ///// 23/15 Q1021=

Wind Direction	030°	Wind Speed	3 kt	Visibility	9999 m
Temperature	23°C	Cloud Cover	Nil	Cloud Base	CAVOK
Dew Point	15°C	QNH	1021hPa		

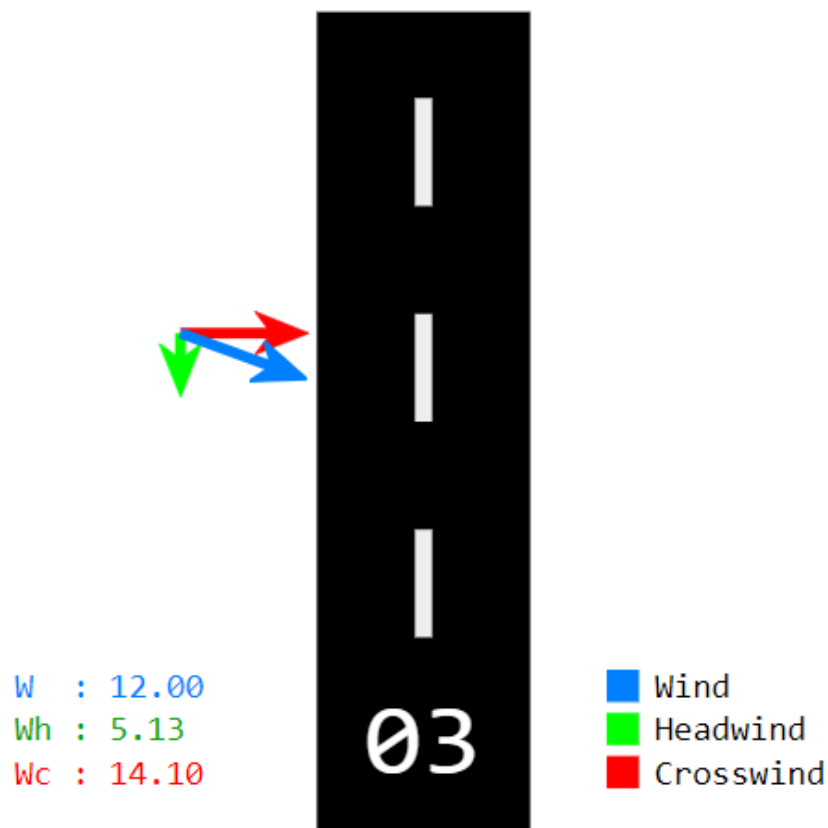
FAPS 290900Z AUTO 32004KT /// // ///// 26/14 Q1020=

Wind Direction	320°	Wind Speed	4 kt	Visibility	9999 m
Temperature	26°C	Cloud Cover	Nil	Cloud Base	CAVOK
Dew Point	14°C	QNH	1020hPa		

3.3 It was noted that the wind direction changed by 70° between the 0800Z and 0900Z METARs which is from a north-easterly direction to a north-westerly direction.

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

The pilot opted to land on Runway 03. According to the pilot, the wind was 330° at 12 knots gusting 15 knots with a substantial crosswind component of 14 knots.



4. Aerodrome

4.1 Potchefstroom Aerodrome (FAPS) is licensed with a single asphalt surface runway orientated 03/21. The runway is 1 470m long and 30m wide. There are a number of hangars on the left side of the runway when landing on Runway 03, with a few hangars on the right side of the runway. The elevation of the hangars on the right is slightly lower as the terrain slopes downwards to the right. There are several windsocks positioned at different locations at the aerodrome, as well as several hoisted flags (during daytime) at the South African Police Air Wing, which is also based at the aerodrome.

4.2 According to the 'local' pilots who are familiar with FAPS, the area between the two sets of hangars usually funnels the wind when blowing from the north-westerly to the south-westerly direction. The hangar to the right in Figure 7 belongs to the SAPS Air Wing. The aircraft veered off the runway, approximately 30m past the taxiway (Figure 6). On the day of the accident, the wind was blowing from the north-west direction.



Figure 7: The area on the runway where pilots usually encounter a crosswind from the left.

Probable Cause

The pilot overcompensated during landing by applying opposite rudder when he encountered a crosswind from the left, which caused the aircraft to veer off the runway to the right before it ground looped.

Contributing Factors

- (i) The wind was from the north-west (330°) when the pilot landed on Runway 03, which resulted in a crosswind component of approximately 14 knots.
- (ii) The pilot was not familiar with the aerodrome/environment.
- (iii) The pilot had limited flying hours on a conventional (stick and rudder) aircraft in the preceding few months prior to the accident flight.

Safety Action

None.

Safety Recommendation/Message

None.

About this Report

The decision regarding whether to investigate and the scope of an investigation are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited scope, fact gathering investigation was conducted to compile this limited report

and allow for greater industry awareness of potential safety issues as well as possible safety action/s that the industry might want to consider in preventing a reoccurrence.

*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.

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