

PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10439



Figure 1: The RV4 aircraft type. (Source: Owner)

Description:

On 12 April 2024, a pilot and a passenger on-board the RV4 aircraft with registration ZU-AVM intended to fly from Tedderfield Aerodrome (FATA) in Gauteng province to Brakpan Aerodrome (FABB) in the same province. The flight was planned to be conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

According to the eyewitness, the pilot and the passenger landed at FATA in the morning of 12 April 2024; in the afternoon, the pair prepared to return to Brakpan Aerodrome which is their home base. After the pre-flight inspection, the pair took off from Runway 29 (RWY 29). During the climb at approximately 80 feet (ft) above ground level (AGL), the aircraft made a slight turn towards the right. Just before flying over Runway 11, the pilot executed a 180° turn to the left whereafter the aircraft lost height whilst in a turn. It later crashed next to the hangars on the left side of RWY 29.

The pilot sustained serious injuries to the legs and scratches to the face. The passenger was not injured; he vacated the aircraft without assistance. The aircraft was substantially damaged.

Occurrence Details

Reference Number : CA18/2/3/10439
Occurrence Category : Category 1
Type of Operation : Private (Part 94)
Name of Operator : Quick P H J
Aircraft Registration : ZU-AVM
Aircraft Make and Model : Vans RV4
Nationality : South African
Place : Tedderfield Aerodrome (FATA) near the hangars
Date and Time : 12 April 2024 at 1342Z
Injuries : 1+1
Damage : Substantial

Purpose of the Investigation

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.

Investigation Process

The Accident and Incident Investigations Division (AIID) was notified of the occurrence involving a Van's RV4 which occurred at Tedderfield Aerodrome, Gauteng province, on 12 April 2024 at 1342Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the International Civil Aviation Organisation (ICAO) STD Annex 13 definitions.

The AIID has appointed an investigator-in-charge and a second-in-charge investigator to conduct a full investigation. The investigators dispatched to the accident site. The notification was sent to the State of Registry, Operator, Design and Manufacturer in accordance with the CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and the ICAO Annex 13.

The information contained in this preliminary report is derived from the information gathered during the on-going investigation into the occurrence. Later, an interim or final report may contain altered information in case new evidence is found during the on-going investigation that requires changes to the information depicted in this report.

The AIID reports are made available to the public at:

<http://www.caa.co.za/Pages/Accidents%20and%20Incidents/Aircraft-accident-reports.aspx>

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
Accident — this investigated accident
Aircraft — the Van's RV4 involved in this accident
Investigation — the investigation into the circumstances of this accident
Pilot — the pilot involved in this accident
Report — this accident report
2. *Photos and figures used in this report were taken from various sources and may have been adjusted from the original for the sole purpose of improving the clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

Disclaimer

This report is produced without prejudice to the rights of the SACAA, which are reserved.

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AP	Approved Person
ATF	Authority to Fly
C of R	Certificate of Registration
CAR	Civil Aviation Regulations
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FDR	Flight Data Recorder
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
Kt	Knots
METAR	Meteorological Aerodrome Report
M	Metres
MHz	Megahertz
PIC	Pilot-in-command
QNH	Barometric pressure adjusted to sea level
SACAR	South African Civil Aviation Regulations
SAWS	South African Weather Service
UTC	Co-ordinated Universal Time
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Coordinated Time – Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1 History of Flight

- 1.1.1. On Friday afternoon, 12 April 2024, a pilot and a passenger on-board an RV-4 aircraft with registration ZU-AVM intended to conduct a private flight from Tedderfield Aerodrome (FATA) in Gauteng province to Brakpan Aerodrome (FABB) in the same province. The flight was to be conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.
- 1.1.2. According to the eyewitness, the pilot and the passenger landed at FATA in the morning of 12 April 2024. In the afternoon, the pair prepared to fly to FABB, which is the aircraft's home base. After the pre-flight inspection, the aircraft took off from RWY 29. During the climb at approximately 80 feet (ft) above ground level (AGL), the eyewitness observed the aircraft make a slight right-side turn and, thereafter, a 180° turn to the left. The aircraft lost height as it turned; it crashed next to the hangars on the left side of RWY 29. *A video recording of the accident flight from the close-circuit television (CCTV) camera at the aerodrome was secured after the accident for review.*
- 1.1.3. Both occupants of the aircraft survived the accident. The passenger vacated the aircraft without assistance. The pilot sustained serious injuries to the legs and scratches to the face. The aircraft fuselage was cut open during the pilot rescue operation as he was trapped inside the cockpit. The pilot was later taken to the hospital in an ambulance. The aircraft was substantially damaged.
- 1.1.4. The accident occurred during daylight after take-off at FATA at Global Positioning System (GPS) co-ordinates determined to be 26° 21' 7" S 027° 57' 54" E, at a field elevation of 5180 feet (ft).



Figure 2: The aircraft's take-off and flight path. (Source: Goole Maps)

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	-	-	-	-	-
Serious	1	-	-	1	-
Minor	-	-	-	-	-
None	-	-	1	1	-
Total	1	-	1	2	-

Note: Other means people on the ground.

- 1.2.1 Both occupants survived the accident; however, the pilot sustained serious injuries to the legs and scratches to the face. The passenger was not injured during the accident sequence.

1.3 Damage to Aircraft

- 1.3.1 The fuselage was cut open at the pilot's cockpit side to rescue the pilot as he was trapped inside.



Figure 3: The aircraft after the accident.

1.4 Other Damage

- 1.4.1 The hangar barrier was damaged after impact with the aircraft.

1.5 Personnel Information

1.5.1 Pilot-in-command

Nationality	South African	Gender	Male	Age	37
Licence Type	Commercial Pilot Licence				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Instrument, Instructor Grade 2; Test Pilot (Class 2); Multi-crew co-operation certificate; multi-engine aircraft				
Medical Expiry Date	31 January 2025				
Restrictions	None				
Previous Accidents	None				

Note: Previous accidents refer to past accidents the pilot was involved in, when relevant to this accident.

Flying Experience:

Total Hours	1 426.9
Total Past 24 Hours	0.5
Total Past 7 Days	1.4
Total Past 90 Days	69.0
Total on Type Past 90 Days	2.7
Total on Type	106.5

1.5.2 Approved Person

Nationality	South African	Gender	Male	Age	56
Licence Type	Approved Person Certificate				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Airframe and powerplant, RV-4, RV-7, RV-14				
APC Expiry Date	2 June 2024				
Restrictions	None				
Previous Accidents	None				

The approved person (AP) who signed the Certificate of Release to Service (CRS) after the last maintenance inspection was issued an AP Certificate by the Regulator (SACAA) on 1 June 2022 with an expiry date of 2 June 2024. The AP's maintenance specifications had the aircraft type endorsed on it.

1.6 Aircraft Information

The information below is in extract from the aircraft Pilot's Operating Handbook (POH)

- 1.6.1 *An RV-4 is an all-aluminium and alloy construction aircraft except for steel components comprising the engine mountings, landing gear struts, main landing gear mounts, elevator bell cranks, and other miscellaneous items. Fibreglass mouldings are used for the wing tips and tail surfaces as well as for the engine cowlings and wheel spats. The aircraft is conventionally configured with a non-laminar flow aerofoil, the effect of surface*

irregularities is relatively minor. The aircraft is powered by a Lycoming IO-320-B3B four-cylinder, direct drive, horizontally opposed engine rated at 160 horsepower (HP) at 2 700 revolutions per minute (rpm). The aircraft is a low-wing configuration with fixed tri-cycle landing gears.

Airframe:

Manufacturer/Model	Van's Aircraft/ RV-4	
Serial Number	2687	
Year of Manufacture	1996	
Total Airframe Hours (At Time of Accident)	604.1	
Last Annual Inspection (Date & Hours)	19 October 2023	592.4
Hours Since Last Inspection	11.7	
CRS Issue Date	19 October 2023	
ATF (Issue Date & Expiry Date)	10 October 2023	31 October 2024
C of R (Issue Date) (Present Owner)	24 August 2008	
Type of Fuel Used	100LL	
Operating Category	Part 94	
Previous Accidents	None	

Note: Previous accidents refer to past accidents the aircraft was involved in, when relevant to this accident.

Engine:

Manufacturer/Model	Lycoming IO 320-B3B
Serial Number	L-2006-39
Hours Since New	604.1
Hours Since Overhaul	Time Between Overhaul (TBO) not yet reached

Propeller:

Manufacturer/Model	HC-C2YL-1BF
Serial Number	F7663-4
Hours Since New	604.1
Hours Since Overhaul	TBO not yet reached

- 1.6.2 Maintenance records such as logbooks, annual inspection documents and the flight folio were reviewed. According to the records, the aircraft was maintained in accordance with the manufacturer's prescribed procedures. All the manufacturer's Service Bulletins (SB), mandatory Service Instructions (SI), and so forth, were adhered to. There were no defects noted in the logbooks on any of the aircraft's systems.
- 1.6.3 After the maintenance service, the aircraft was issued a CRS by the AP on 19 October 2023 at 592.4 airframe hours with an expiry date of 19 October 2024 or at 692.2 airframe hours, whichever comes first. The aircraft had an Authority to Fly (ATF) Certificate that was issued by the Regulator on 10 October 2023 with an expiry date of 31 October 2024. The Regulator issued the Certificate of Registration (C of R) to the current owner on 24 August 2008.

1.7 Meteorological Information

1.7.1 The weather information below was obtained from the Meteorological Aerodrome Report (METAR) that was issued by the South African Weather Service (SAWS), recorded at Vereeniging Airfield on 12 April 2024 at 1400Z. Vereeniging Airfield is located approximately 60 kilometres (km) from the accident site.

Wind Direction	300°	Wind Speed	04kt	Visibility	9999m
Temperature	20°C	Cloud Cover	Scattered	Cloud Base	8000 ft
Dew Point	09°C	QNH	1025hPa		

1.7.2 Fine weather conditions prevailed at the time of the flight.

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigational equipment as approved by the Regulator. There were no records indicating that the navigational equipment was unserviceable before the flight.

1.9 Communication

1.9.1 The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system before the flight.

1.10 Aerodrome Information

1.10.1 The accident occurred after take-off within the aerodrome parameters.

Aerodrome Location	Gauteng Province
Aerodrome Status	Licensed
Aerodrome GPS coordinates	26° 21' 7" South, 027° 57' 54" East
Aerodrome Elevation	5 180ft
Runway Headings	29/11
Dimensions of Runway Used	1 100m X 8m
Heading of Runway Used	29/11 and 03/21 1 000m run-off (grass)
Surface of Runway Used	Tar
Approach Facilities	None
Radio Frequency	125.8

1.11 Flight Recorders

1.11.1 The aircraft was neither equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by regulation to be fitted to the aircraft type.

1.12 Wreckage and Impact Information

1.12.1 The accident occurred in the aerodrome near the hangars on the left side of RWY 29. The wreckage was fairly localised within a radius of approximately 60 metres (m).



Figure 4: The aircraft before impact. (Source: Aerodrome video footage)

- The aircraft's initial impact was on a paved surface. The first impact was with the left-wing tip fairing as it was in a left-wing low and a slightly nose-down attitude. After impact, the aircraft tumbled forward which caused the propeller and the nose to impact the ground.



Figure 5: The aircraft as it impacted the ground with the left wing.
(Source: Aerodrome video footage)



Figure 6: The aircraft against the hangar barrier, facing the opposite direction from which it had approached. (Source: Aerodrome video footage)

- The aircraft's tail turned 180° which caused the aircraft to face the opposite direction of approach; it skidded on the ground before it came to rest against the hangar's extended barrier.



Figure 7: Wreckage impact marks and distribution.

- The impact marks on Figure 7 indicated that the aircraft initially impacted the paved area lightly with its left-wing tip which created folds due to the aircraft's weight. The aircraft tumbled forward, and as the nose got closer to the ground, the propeller impacted the ground three times, confirming that the engine was delivering a substantial amount of power at the time of impact.



Figure 8: The wreckage after the pilot was rescued.

1.12.2 The right-wing leading edge was damaged; however, it remained intact. The aircraft's wing tanks were intact, but the fuel transfer pipelines were severed during the accident sequence; this caused fuel to leak. The propeller blades had signs of impact damage as they were turning with rotational energy at the time of the accident. The cockpit section was cut during rescue of the pilot. Both wings were damaged; the left wing was extensively damaged as it had folds after the initial impact; both ailerons, flap and wing-tip fairing separated from the fuselage.

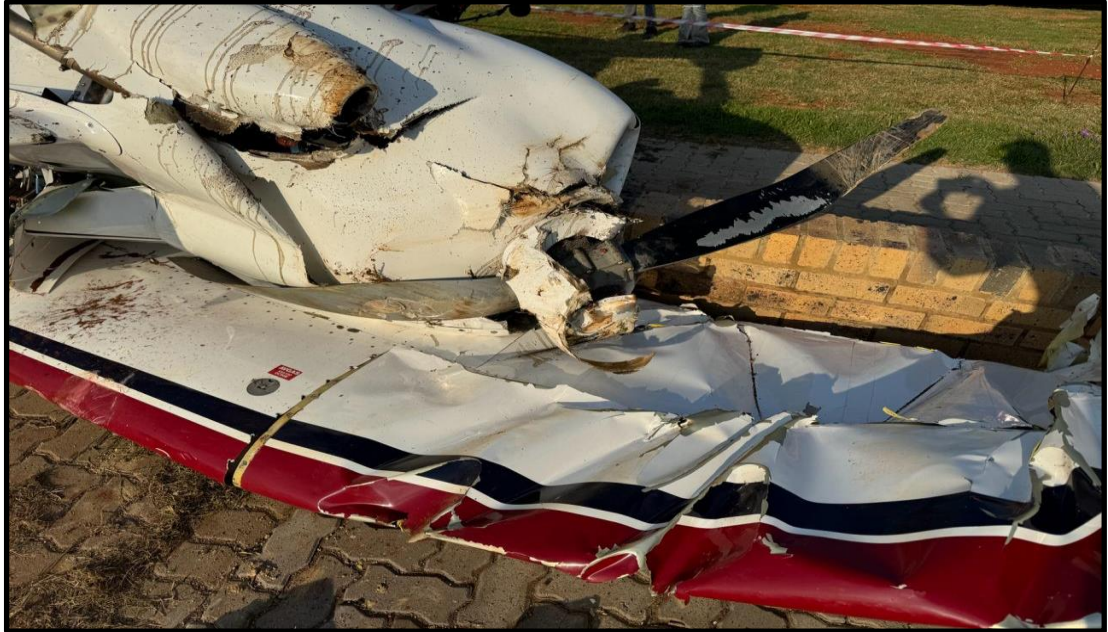


Figure 9: The damaged propeller and left wing.

1.12.3 The fuel tank pipelines on both wing feeds were severed. This caused fuel to leak out of the tanks. A small amount of fuel remained in the tanks the next morning when the investigating team arrived at the accident site.

1.13 **Medical and Pathological Information**

1.13.1 The pilot was transported to the hospital in an ambulance. He had sustained serious leg injuries and scratches to his face.

1.14 **Fire**

1.14.1 There was no pre- or post-impact fire during the accident sequence.

1.15 **Survival Aspects**

1.15.1 The accident was considered survivable. The cockpit did not sustain major damage that could have caused fatal injuries. However, the pilot's legroom was damaged, hence, he was trapped in the aircraft.

1.16 Tests and Research

1.16.1 To be discussed in the final report.

1.17 Organisational and Management Information

1.17.1 The aircraft was operated privately under the provisions of Part 94 of the Civil Aviation Regulations 2011 as amended.

1.17.2 The Approved Person (AP) who maintained the aircraft was rated and had the AP Certificate that was issued by the Regulator on 1 June 2022 with an expiry date of 2 June 2024.

1.17.3 The aircraft was maintained in accordance with the manufacturer's prescribed procedures and was issued an Authority to Fly (ATF) Certificate by the Regulator on 10 October 2023 with an expiry date of 31 October 2024.

1.18 Additional Information

1.18.1 To be discussed in the final report.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2 FINDINGS

2.1 General

From the available evidence, the following preliminary findings were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusions heading:

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.

2.2 Findings

2.2.1 The pilot had a Commercial Pilot Licence that was initially issued by the Regulator on 5 May 2008. The licence was reissued on 16 October 2023 with an expiry date of 30 November 2024. The pilot had ratings on a range of aircraft with experience in airline transport aircraft types such as Boeing 737-300/400/500.

- 2.2.2 The pilot had Instructor Grade 2 and Test Pilot Class 2 with night and instrument ratings.
- 2.2.3 The aircraft had an Authority to Fly (ATF) that was issued by the Regulator on 10 October 2023 with an expiry date of 31 October 2024. The aircraft had a Certificate of Registration (C of R) that was issued by the Regulator to the current owner on 24 August 2008.
- 2.2.4 The aircraft was issued a Certificate of Release to Service (CRS) by an AP on 19 October 2023 at 592.4 airframe hours with an expiry date of 19 October 2024 or at 692.2 airframe hours, whichever comes first.
- 2.2.5 The AP who signed off the aircraft after maintenance was issued an AP Certificate by the Regulator on 1 June 2022 with an expiry date of 2 June 2024.

3 ON-GOING INVESTIGATION

- 3.1 The AIID investigation is on-going, and the investigators will be investigating other aspects of this occurrence which may or may not have safety implications.

**This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa**