AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		**CA18/2/3/10439**	
Aircraft Registration	**ZU-AVM**	**Date of Accident**		12 April 2024		**Time of Accident**	1342Z
Type of Aircraft	Vans RV4			**Type of Operation**		Private (Part 94)	
Pilot-in-command Licence Type	Commercial Pilot Licence		**Age**	37		Licence Valid	Yes
Pilot-in-command Flying Experience	**Total Flying Hours**		1426.9			**Hours on Type**	106.5
Last Point of Departure	Tedderfield Aerodrome (FATA), Gauteng Province						
Next Point of Intended Landing	Brakpan Airfield (FABB), Gauteng Province						
Damage to Aircraft	Substantial						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
At Tedderfield Aerodrome (FATA) near a hangar							
Meteorological Information	Wind direction: 300º; Wind speed: 04kt; Visibility: 9999m; Temperature: 20ºC; Cloud cover: Scattered						
Number of People On-board	1+1	**Number of People Injured**	1	**Number of People Killed**	0	**Other (On Ground)**	0

Synopsis

On 12 April 2024, a pilot (flight instructor) and a passenger (with a Private Pilot Licence) on-board a RV4 aircraft with registration ZU-AVM were on a private flight from Tedderfield Aerodrome (FATA) to Brakpan Airfield (FABB), both located in Gauteng 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.

On the morning of 12 April 2024, the pilot and the passenger attended a pre-flight briefing at FATA with approximately 10 other pilots. The discussion focused on flight manoeuvres, including stall and spin recovery techniques. The passenger was later paired with a flight instructor (of whom he shared no history of flying) for practical flight exercises, which included slow rolls and recovery from unusual attitudes. Later, the flight instructor and the passenger taxied to Runway (RWY) 29 and commenced with the take-off. Shortly after being airborne, the flight instructor initiated a simulated engine failure and a right turn whilst climbing to approximately 400 feet (ft) above ground level (AGL). He then executed a steep left turn to demonstrate an air turnback manoeuvre to return to the opposite RWY 11 (in the event of an engine failure after take-off). As part of the simulation, the flight instructor reduced the throttle to idle (the passenger reported feeling the aircraft shudder at this stage). According to the passenger, he lost sight of the horizon during the manoeuvre. The closed-circuit television (CCTV) footage from one of the hangars at the aerodrome captured the aircraft during its initial climb and whilst making a right turn before it disappeared behind the hangars. Another CCTV camera recorded the aircraft as it reappeared from behind the hangars in a full left turn at low height before it impacted the ground near the hangars. The flight instructor sustained serious leg injuries, and the passenger was not injured. The aircraft was substantially damaged. Post-accident investigation revealed no mechanical anomalies with the airframe or engine. The flight instructor also confirmed there were no pre-existing technical issues with the aircraft. Findings indicated that the pilot delayed engine power recovery and inadvertently entered an accelerated stall during the steep turn and lost control of the aircraft which subsequently crashed.

Probable Cause/s and/or Contributory Factors

An air turnback manoeuvre was initiated at a low altitude during an engine failure simulation. This led to loss of control likely due to a stall from a steep bank and low airspeed.

1. Unapproved flight manoeuvre conducted by the pilot.

SRP Date	11 March 2025	Publication Date	11 March 2025

Occurrence Details

Reference Number	**:** CA18/2/3/10439
Occurrence Category	**:** Category 3
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)
Date and Time	**:** 12 April 2024 at 1342Z
Injuries	**:** Serious
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) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence 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. Notifications were sent to the State of Registry, Operator and Design in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The States did not appoint an accredited representative and/or advisor. Investigators were dispatched to the accident site for this occurrence.

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
   Accident — this investigation accident
   Aircraft — the Vans RV4 aircraft 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 different sources and may have been adjusted from the original for the sole purpose of improving 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

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Abbreviation	Description
º	Degrees
ºC	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
CCTV	Closed-circuit Television
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FAA	Federal Aviation Administration
FABB	Brakpan Airfield
FATA	Tedderfield Airfield
FDR	Flight Data Recorder
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal Pascal
Kt	Knots
METAR	Meteorological Aerodrome Report
MHz	Megahertz
MSB	Mandatory Service Bulletin
PIC	Pilot-in-command
PPL	Private Pilot Licence
QNH	Barometric pressure adjusted to sea level
RWY	Runway
SACAR	South African Civil Aviation Regulation
SAWS	South African Weather Service
SB	Service Bulletin
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 (flight instructor) and a passenger (with a Private Pilot Licence) on-board a RV4 aircraft with registration ZU-AVM were on a private flight from Tedderfield Aerodrome (FATA) to Brakpan Airfield (FABB), both located in Gauteng 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.

1.1.2. On the morning of 12 April 2024, the flight instructor and the passenger attended a gathering with approximately 10 other pilots, including instructors and PPL holders, at FATA. The group discussed flight manoeuvre techniques, stall prevention, spin recovery and upset recovery. After the briefing, the PPL pilots were paired with instructors for practical exercises. The passenger, a PPL holder, was paired with a flight instructor with whom he had no history of flying but was reassured by his regular flight instructor. The flight instructor briefed him on the flight plan, which included heading toward Vereeniging to practise slow rolls and recovery from unusual attitudes.

1.1.3. According to the passenger, after the pre-flight checks and briefing, they taxied to Runway (RWY) 29 for take-off. After take-off, the flight instructor stated, “simulated engine failure” and immediately initiated a right turn and climbed to approximately 400 feet (ft) above ground level (AGL). He then performed a steep left turn to set up for a simulated landing on the opposite RWY11, intending to demonstrate an air turnback manoeuvre following an engine failure simulation. To simulate an engine failure, the flight instructor closed the throttle and initiated a left turn. During this manoeuvre, the passenger reported that he felt the left-wing shudder, followed by brief recoveries. As the aircraft continued banking left, the passenger’s view was obstructed, and he felt disoriented. The flight instructor’s last clear communication was his initial statement of a simulated engine failure; soon after, the engine power was restored. However, the aircraft was in a left-wing low attitude and it impacted the ground.

1.1.4. Two of the closed-circuit television (CCTV) footage from the aerodrome captured the aircraft during the take-off and the final moments of the flight. The first CCTV footage showed the aircraft making a slight right turn before it disappeared beyond the hangars. A second camera recorded the aircraft executing a full left turn, with the left-wing low and at a low height; it showed the aircraft losing height before it crashed next to the hangars. The fuselage was damaged during the rescue operation as the flight instructor was trapped inside and had to be freed by bystanders. The flight instructor sustained serious leg injuries and scratches to

his face. The passenger was not injured; he exited the aircraft unassisted. The flight instructor was transported to the hospital by ambulance. The aircraft sustained substantial damage.

1.1.5. 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 1: Plotting of the aircraft's take-off and flight path. (Source: Goole Earth Map)

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 flight instructor sustained serious injuries to the legs and scratches to his face, whilst the passenger was not injured.

1.3 Damage to Aircraft

1.3.1 The aircraft was substantially damaged during the accident sequence. After the accident, the pilot's cockpit section was cut to rescue the flight instructor as he was trapped inside.

Figure 2: The aircraft after the accident.

1.4 Other Damage

1.4.1 The aircraft impacted a hangar barrier (wall) and, as a result, the wall was damaged.

1.5 Personnel Information

Flight Instructor

Nationality	South African	Gender	Male	Age	37
Licence Type	Commercial Pilot Licence				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Night, Instrument, Instructor Grade 2; Test Pilot (Class 2); Multi-Crew Co-operation Certificate				
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	1426.9
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

1.5.1 The flight instructor had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator on 5 May 2008. The CPL was reissued on 16 October 2023 with an expiry date of 30 November 2024. The flight instructor had a total of 4326.9 flight hours of which 1426.9 hours were on airplanes and 2900 hours were on helicopters.

1.5.2 **Approved Person**

The approved person (AP) who signed off the aircraft after maintenance had an Approved Person Certificate that was issued by the Regulator (SACAA) on 1 June 2022 with an expiry date of 2 June 2024. The aircraft type was endorsed on the AP's maintenance specifications for airframe and powerplant maintenance.

Nationality	South African	Gender	Male	Age	56
Licence Type	Approved Person Certificate				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Airframe and powerplant, RV4, RV7, RV14				
APC Expiry Date	2 June 2024				
Restrictions	None				
Previous Accidents	None				

1.6 Aircraft Information

The information below is an extract from the aircraft's Pilot Operating Handbook:

The RV-4 is primarily constructed from aluminium alloy with steel components used for the engine mount, landing gear struts, main gear mounts, and various control linkages. It features a tandem seating arrangement with the pilot in the front seat. Fibreglass is used for the wingtips, tail surfaces, engine cowlings, and wheel spats. This low-wing aircraft has a

conventional, non-laminar flow aerofoil, making it less sensitive to surface irregularities. It is powered by a 160 HP Lycoming IO-320 B#B, a four-cylinder, direct-drive, horizontally opposed engine, operating at 2700 revolutions per minute (RPM). The landing gear is fixed in a tricycle configuration.

Airframe:

Manufacturer/Model	Van's Aircraft/RV4	
Serial Number	2687	
Year of Manufacture	1996	
Total Airframe Hours (At Time of Accident)	604.1	
Last 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	Avgas 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	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

1.6.1 A review of the aircraft maintenance records was conducted which included logbooks, annual inspection, service and flight folio. According to the evidence gathered, the aircraft was maintained following the manufacturer's prescribed procedures. All manufacturer's released Service Bulletins (SB), mandatory Service Instructions (SI) and so forth were adhered to during maintenance. There were no defects noted in the logbooks on any of the aircraft systems.

1.6.2 After maintenance, the AP issued a Certificate of Release to Service (CRS) on 19 October 2023 at 592.4 hours with an expiry date of 19 October 2024 or at 692.2 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 aircraft had a Certificate of Registration (C of R) that was issued by the Regulator on 24 August 2008. The C of R was issued to the aircraft owner.

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 1330Z. 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's perimeters.

Aerodrome Name	Tedderfield Aerodrome (FATA)
Aerodrome Location	Gauteng Province
Aerodrome Status	Licensed
Aerodrome GPS coordinates	26° 21' 7" South, 027° 57' 54" East
Aerodrome Elevation	5180ft
Runway Headings	29/11
Dimensions of Runway Used	1100m X 8m
Heading of Runway Used	29/11 and 03/21 1000m
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 at the aerodrome near the hangars on the left side of RWY11. The wreckage was fairly localised with a radius of approximately 60 metres (m).

Figure 3: A snapshot of the first CCTV footage showing the aircraft's take-off.
(Source: Aerodrome manager)

- Figure 3 shows the take-off sequence of the aircraft as it appeared on the first CCTV age. The aircraft climbed and made a right turn before it disappeared from the view.

- Figure 4 shows the second CCTV footage depicting the aircraft as it appeared whilst in a steep left turn and with the left-wing low. The aircraft appeared to be losing height rapidly.

Figure 4: The snapshot of the aircraft as it appears on the second CCTV making a steep left turn.

Figure 5: The snapshot of the aircraft before impact. (Source: Aerodrome manager)

- The aircraft initially impacted a paved surface with its left-wing tip (outer part) as it was in a left-wing low and a slightly nose-down attitude. After impact, the aircraft

tumbled forward which caused the nose section to lower towards the ground; hence, the propeller and the nose impacted the ground.

Figure 6: The aircraft as it impacts the ground with its left wing (snapshot footage). (Source: Aerodrome manager)

Figure 7: The aircraft came to a stop against the hangar barrier (wall), facing the opposite direction of approach (snapshot footage). (Source: Aerodrome manager)

- After the tumble, the aircraft's tail swivelled forward which caused the aircraft to face the opposite direction of approach; it skidded on the ground before it rested against the hangar's barrier (wall).

Figure 8: Wreckage distribution and impact marks.

- The impact marks (Figure 8) show that the aircraft initially contacted the paved area lightly with its left-wing tip and it wrinkled due to the aircraft's weight as it continued to move forward. The aircraft then tumbled which caused the nose to lower towards the ground, whereafter the propeller impacted the ground three times. This trail of propeller marks showed that the aircraft's engine was running (had power) at the time of impact.

1.12.2 The right wing sustained damage to the leading edge, but it remained fairly intact. The wing tanks were intact; however, the fuel transfer pipelines were severed during the accident sequence which led to fuel leak. The propeller blade 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 flight instructor. Both wings sustained substantial damage; extensive damage on the left wing was due to wrinkling. Both ailerons, flap and the wing-tip fairing separated during the accident sequence.

Figure 9: The wreckage after the flight instructor was rescued.

Figure 10: Damage on the propeller and left wing.

1.12.3 The fuel tank pipelines feed on both wings were severed which caused fuel to leak from the tanks. The next morning after the accident when the investigating team arrived at the site, they could smell fuel around the area of the leakage.

1.13 Medical and Pathological Information

1.13.1 None.

1.14 Fire

1.14.1 There was no evidence of a pre- or post-impact fire.

1.15 Survival Aspects

1.15.1 The accident was considered survivable as only the lower front section of the cockpit was damaged.

1.16 Tests and Research

1.16.1 No tests were conducted on any of the aircraft and engine systems.

1.16.2 The flight instructor reported that there was nothing wrong with the aircraft, and he intended to simulate an engine failure and an air turnback on to the opposite runway. There was evidence of propeller ground marks that showed that the engine was turning with sufficient power. Moreover, the passenger (who is also a pilot) attested that before impact, he heard the sound of the engine power increase during the manoeuvre.

The information below is an extract from the Airplane Flying Handbook (FAA-H-8083-3C Chapter 5)

An aircraft can stall during a steep turn without engine power due to increased load factors and the resulting rise in stall speed. In a coordinated, level 60° banked turn, the load factor reaches 2G, causing the aircraft to stall at a speed approximately 41% higher than its normal stall speed. This means that in such a turn, the pilot must increase the angle of attack to maintain lift, bringing the aircraft closer to its critical angle of attack where a stall occurs.

Without engine power, maintaining airspeed becomes more challenging, especially during steep turns. The increased load factor necessitates a higher airspeed to avoid stalling. If the pilot fails to maintain this higher airspeed, the aircraft can exceed its critical angle of attack, leading to a stall. Therefore, during engine-out scenarios, it's crucial for pilots to be aware of

the increased stall speeds associated with higher bank angles and to manage their airspeed accordingly to prevent unintentional stalls.

1.16.3 The flight instructor stated that he was attempting to execute what was perceived as the "impossible turn-back" on to the opposite runway (of take-off) during an engine failure simulation.

An extract from the Federal Aviation Administration FAA-P-8740-44. AFS-920 (2017)

An "impossible turnback" refers to a manoeuvre where a pilot attempts to turn back to the runway immediately after take-off in the event of an engine failure, usually at low altitude. This is considered highly dangerous because the aircraft typically does not have enough altitude, airspeed, or engine power to safely complete the turn and recover. Attempting to turn back in this scenario often results in a stall or loss of control, leading to a crash. The critical reason pilots should avoid this manoeuvre is that there is insufficient time and altitude to safely manoeuvre back to the runway. At low altitudes, the aircraft will not have the necessary height to recover from a stall if one occurs. As a general rule, it's recommended that pilots climb to a safe altitude before attempting any turns or manoeuvres. The FAA (Federal Aviation Administration) and other aviation safety organizations strongly advise against attempting a turnback below 1,000 feet AGL, as it leaves no margin for recovery in the event of a stall.

Other References:

- *FAA, "Aircraft Accident Investigation and Prevention" FAA Safety Team, 2021*
- *AOPA, "Engine Failure After Take-off" AOPA Air Safety Institute*
- *NTSB, "General Aviation Safety"*

The key takeaway is that safety and survival in engine failure situations after take-off depend on staying straight ahead, gaining altitude, and assessing options for a safe landing.

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 as a Non-type Certificated Aircraft (NTCA).

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

1.18 Additional Information

1.18.1 None.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1. General

From the available evidence, the following analysis was made with respect to this accident. This shall not be read as apportioning blame or liability to any organisation or individual.

2.2. Analysis

2.2.1 The flight instructor had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator on 5 May 2008. The flight instructor's CPL was reissued on 16 October 2023 with an expiry date of 30 November 2024.

2.2.2 The flight instructor's Class 1 aviation medical certificate was issued on 18 January 2024 with an expiry date of 31 January 2025.

2.2.3 The flight instructor had a Grade 2 flight instructor rating.

2.2.4 The flight instructor initially briefed the passenger on a planned practise area but instead attempted a high-risk manoeuvre at a low altitude immediately after take-off. He deviated from the planned flight and initiated an unplanned manoeuvre, which led to loss of control and the subsequent crash. This reflects poor decision-making with no proper risk assessment.

2.2.5 The aircraft was issued an Authority-to-fly Certificate (ATF) 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 on 24 August 2008 to the present owner.

2.2.6 The aircraft's Certificate of Release to Service (CRS) was issued by the approved person (AP) on 19 October 2023 at 592.4 hours with an expiry date of 19 October 2024 or at 692.2 hours, whichever comes first.

2.2.7 The AP who signed off the aircraft after maintenance had an Approved Person Certificate that was issued by the Regulator on 1 June 2022 with an expiry date of 2 June 2024.

2.2.8 The flight instructor attempted an air turnback manoeuvre at 400 ft AGL, a height deemed too low for recovery, proving it to be impossible. The excessive left turn in a left-wing low and low airspeed led to a stall, which caused the flight instructor to lose control of the aircraft. The air turnback manoeuvre is widely recognised as dangerous at low heights and has been classified as such by the FAA. Despite the safety guidelines warning against such manoeuvres at a low altitude, the instructor proceeded to do so, underestimating the risks.

2.2.9 There were no reported defects in the aircraft or engine systems at the time of the flight that could have contributed to the accident.

3. CONCLUSION

3.1. General

From the available evidence, the following findings, causes and contributing factors 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 conclusion 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.
- **Causes —** are actions, omissions, events, conditions, or a combination thereof, which led to this accident.
- **Contributing factors —** are actions, omissions, events, conditions or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident occurring, or would have mitigated the severity of the consequences of the accident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil, or criminal liability.

3.2. Findings

3.2.1. The pilot had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator on 5 May 2008. The flight instructor's CPL was reissued on 16 October 2023 with an expiry date of 30 November 2024.

3.2.2. The flight instructor's Class 1 aviation medical certificate was issued on 18 January 2024 with an expiry date of 31 January 2025.

3.2.3. The flight instructor was rated as a Grade 2 instructor and a Class 2 test pilot, with night and instrument ratings.

3.2.4. The flight instructor's decision was inappropriate as he initially briefed the passenger about the planned practise area but instead attempted a high-risk manoeuvre immediately after take-off.

3.2.5. 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 aircraft had a Certificate of Registration (C of R) that was issued by the Regulator on 24 August 2008 to the present owner.

3.2.6. The aircraft was issued a Certificate of Release to Service (CRS) by an Approved Person (AP) on 19 October 2023 at 592.4 hours with an expiry date of 19 October 2024 or at 692.2 hours, whichever comes first.

3.2.7. The AP who signed off the aircraft after the maintenance was issued an Approved Person Certificate by the Regulator on 1 June 2022 with an expiry date of 2 June 2024.

3.2.8. The flight instructor attempted an air turnback manoeuvre at 400 ft AGL, a height deemed too low for recovery, proving it to be impossible.

3.2.9. The aircraft inadvertently entered an accelerated stall during the steep turn with no engine power, this led to loss of control of the aircraft and the subsequent impact.

3.2.10. There were no reported defects in the aircraft or engine systems at the time of the flight that could have contributed to the accident.

3.3. Probable Cause/s

3.3.1. An air turnback manoeuvre was initiated at a low altitude during an engine failure simulation. This led to loss of control likely due to a stall from a steep bank and low airspeed.

3.4. Contributory Factor/s

3.4.1. Unapproved flight manoeuvre conducted by the pilot.

4. SAFETY RECOMMENDATIONS

4.1. General

The safety recommendations listed in this report are proposed according to paragraph 6.8 of Annex 13 to the Convention on International Civil Aviation and are based on the conclusions listed in heading 3 of this report. The AIID expects that all safety issues identified by the investigation are addressed by the receiving States and organisations.

4.2. Safety Recommendation/s

4.2.1. None.

5. APPENDICES

5.1. None.

This report is issued by:

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