AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

			Reference:		**CA18/2/3/10393**	
Aircraft Registration	ZU-XCO	**Date of Accident**	26 November 2023		**Time of Accident**	0545Z
Type of Aircraft	Bat Hawk		**Type of Operation**		Private (Part 94)	
Pilot-in-command Licence Type	Private Pilot Licence (PPL)		**Age**	57	Licence Valid	Yes
Pilot-in-command Flying Experience		**Total Flying Hours**		106.9	**Hours on Type**	100.7
Last Point of Departure	Aviator's Paradise Airfield (FAAP), North West Province					
Next Point of Intended Landing	Grasslands Airfield, Centurion, Gauteng Province					
Damage to Aircraft	Destroyed					
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
Grasslands Airfield at GPS position: 25° 49' 38.0" South 028°05' 43" East; elevation at 4 530 feet						
Meteorological Information	Surface wind: 020°/ 8 kt; temperature: 25°C; dew point: 16°C; CAVOK					

Number of People On-board	1 + 1	**Number of People Injured**	0	**Number of People Killed**	2	**Other (On Ground)**	0

Synopsis

On Sunday morning, 26 November 2023, a pilot and a passenger on-board a Bat Hawk aircraft with registration ZU-XCO took off on a private flight from Aviator's Paradise Airfield (FAAP) in the North West province to Grasslands Airfield in Gauteng province. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

According to the eyewitness who was positioned at the airfield's hangars, the aircraft approached from the north-west and made a steep left turn whilst flying at approximately 100 feet (ft) above ground level (AGL). It seemed as if the pilot intended to position the aircraft for landing on Runway (RWY) 14 in a south-east heading. During the left steep turn, the aircraft nosed down and impacted the ground nose first, followed by the left wing. Both occupants were fatally injured; the aircraft was destroyed during the accident sequence.

The accident occurred at 0545Z, at Grasslands Airfield at Global Positioning System (GPS) co-ordinates determined to be 25°49'38.0" South 028°05'43" East, at 4 530 feet (ft) above mean sea level (AMSL).

Probable Cause/s and/or Contributory Factors

The pilot lost control of the aircraft during a low-level steep turn which led to a stall and the subsequent crash.

- Disregard of the standard unmanned airfield joining procedure.

SRP Date	10 December 2024	Publication Date	18 December 2024

Occurrence Details

Reference Number	**:** CA18/2/3/10393
Occurrence Category	**:** Category 1
Type of Operation	**:** Private (Part 94) NTCA
Name of Operator	**:** Plane ADS (PTY) LTD
Aircraft Registration	**:** ZU-XCO
Aircraft Make and Model	**:** Micro Aviation SA; Bat Hawk R
Nationality	**:** South African
Place	**:** Grasslands Airfield, Centurion, Gauteng Province
Date and Time	**:** 26 November 2023 at 0545Z
Injuries	**:** Fatal
Damage	**:** Destroyed

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 an occurrence on 26 November 2023 at 0545Z. 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. Notification was sent to the State of Registry, Operator, Design and/Manufacturer 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 investigated accident
   Aircraft — the Bat Hawk R 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
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
ATF	Authority-to-Fly Certificate
CAR	Civil Aviation Regulations
CAVOK	Cloud and Visibility Ok
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
DA	Density Altitude
EMS	Emergency Medical Service
FAAP	Aviator’s Paradise Airfield
FAIR	Pretoria Irene Aerodrome
FDR	Flight Data Recorder
ft	Feet
hPa	Hectopascal
kt	Knots
m	Metres
METAR	Meteorological Aerodrome Report
NTCA	Non-type Certified Aircraft
PIC	Pilot-in-Command
POH	Pilot’s Operating Handbook
PPL	Private Pilot Licence
QNH	Barometric Pressure Adjusted to Sea Level
RWY	Runway
SACAA	South African Civil Aviation Authority

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Sunday morning, 26 November 2023, a Bat Hawk aircraft with registration ZU-XCO was involved in an accident at Grasslands Airfield in Centurion, Gauteng province. The private 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. The eyewitness, a qualified flight instructor on the same aircraft and a friend to the pilot, stated that they (him and the pilot) had planned a formation flight from Grasslands Airfield to Rustenburg in the North West province where a breakfast meeting would be held. The aircraft initially departed with the pilot and the passenger on-board from Aviator's Paradise Airfield (FAAP) near Brits, North West province, to Grasslands Airfield. The eyewitness heard the aircraft as it flew over the hangars at Grasslands Airfield. At the time, the eyewitness's vehicle was parked near the hangars. Thereafter, the eyewitness got out of the vehicle and made his way towards the runway side barriers. The eyewitness stated that the aircraft approached from the north-west, executed a steep left turn at approximately 100 feet (ft) above ground level (AGL), seemingly positioning for landing on Runway (RWY) 14 in a south-east heading.

1.1.3. The eyewitness reported that during the steep left turn with the left wing low, the aircraft nose-dived and impacted the ground nose-first, followed by the left wing. It then bounced and skidded for a short distance before it stopped. The aircraft faced the opposite direction of its approach in its final resting position. After witnessing the accident, the eyewitness and another person from the local flying club who was in his hangar rushed to the accident site. As the engine was still running, they decided to disconnect the spark plug leads and the battery terminals to shut down the engine. The occupants were trapped inside the wreckage.

1.1.4. All relevant emergency parties were contacted, including the Emergency Medical Services (EMS) who declared the occupants fatally injured after assessing them. The aircraft was destroyed during the accident sequence.

1.1.5. The accident occurred during daylight at Grasslands Airfield at Global Positioning System (GPS) co-ordinates determined to be 25°49'38.0" South 028°05'43" East, at 4 530 feet (ft) above mean sea level (AMSL).

Figure 1: The accident site and route taken by the aircraft (red line). (Source: Google Earth)

1.2. Injuries to Persons

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

Note: Other means people on the ground.

1.2.1. The two occupants were fatally injured during the accident sequence.

1.3. Damage to Aircraft

1.3.1. The aircraft was destroyed during the accident.

Figure 2: The aircraft's resting position post-accident.

1.4. Other Damage

1.4.1. None.

1.5. Personnel Information

Nationality	South African	Gender	Male	Age	57
Licence Type	Private Pilot Licence (PPL)				
Licence Valid	Yes	Type Endorsed	No		
Ratings	None				
Medical Expiry Date	31 March 2024				
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	106.9
Total Past 24 Hours	0.4

Total Past 7 Days	1.7
Total Past 90 Days	8.8
Total on Type Past 90 Days	8.8
Total on Type	100.7

1.5.1. The pilot had a Private Pilot Licence (PPL) that was initially issued by the Regulator (SACAA) on 6 July 2023 with an expiry date of 30 June 2024. The pilot also had a Class 2 aviation medical certificate that was issued on 11 March 2023 with an expiry date of 31 March 2024 with no restrictions. The C172 aircraft type was endorsed on the pilot's licence, however, he did not have the Bat Hawk X341 endorsement. The pilot had a total of 106.9 flying hours of which 100.7 were accumulated on Bat Hawk X341 aircraft type.

1.5.2. A review of the pilot's logbook showed that he initially received a Recreational Student Pilot Licence (SPL) on 11 March 2022 with validity until 10 March 2023; the Recreational SPL had the Bat Hawk X341 endorsed on it for training. The pilot's training began on 12 March 2022. He was authorised for the first solo flight on 18 November 2022 and for the solo cross-country flight on 30 November 2022.

1.5.3. The pilot was granted a Student Pilot Licence (SPL) on 16 June 2022 with validity until 15 May 2024. He then applied for the Private Pilot Licence (PPL) on 7 May 2023 in accordance with Part 61 of the CAR. A Cessna C172 was endorsed on this licence. The pilot's training towards his PPL was conducted on a Jabiru J400 during which he logged 6.2 hours. Of the 6.2 hours, 2.8 hours were on dual check flight for type rating and 3.4 hours were on navigational check flight. The logbook detailed the following endorsements:

- 21 March 2023: Signed off for solo (Part 61) SPL on Bat Hawk X341.
- 15 June 2023: Signed off for training on J400.
- 17 June 2023: Signed off for initial navigational flight test on J400.
- 18 June 2023: Signed off for flight test towards PPL.

1.5.4. The pilot's PPL application was submitted with the J400 listed as the aircraft type used for training and was issued on 6 July 2023 with validity until 30 June 2024. However, when the licence was issued, the C172 was the only aircraft endorsed on his PPL. There was no record of the pilot undergoing training in a C172 aircraft, and there was no record about him inquiring about the exclusion of the Bat Hawk X341 and Jabiru J400 on which he was trained.

1.6. Aircraft Information

1.6.1 The following information is an extract from the Pilot's Operating Handbook (POH)

The Bat Hawk R is a high-wing monoplane with the crew of two seating side-by-side in an under-slung tubular framed structure surrounded by a glass fibre composite fairing. Crew members are protected from the weather by a large wrap-around windshield. The propeller and the engine are mounted in a tractor position above and in front of the crew. The empennage is conventional in location and layout. The undercarriage is a tricycle arrangement with a steerable nose wheel.

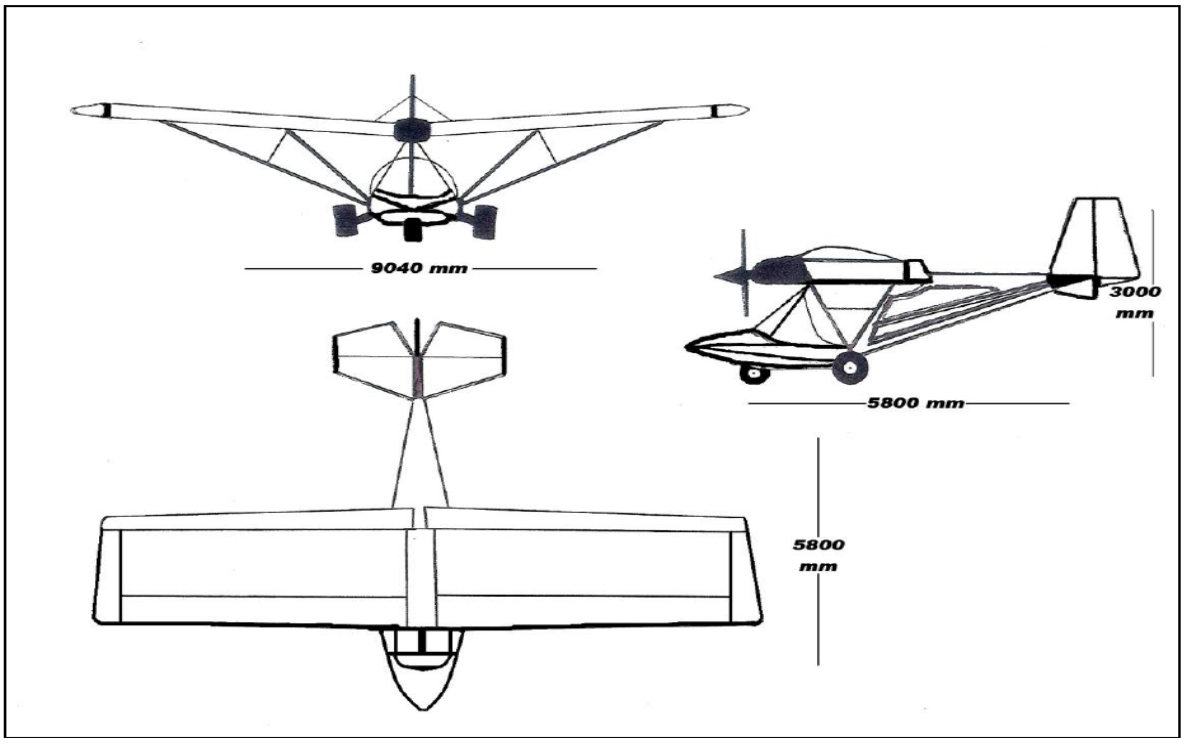

Figure 3: The three-dimensional view diagram of the aircraft type.

Figure 4: A similar aircraft type. (Source: http://www.pilotspost.com/arn0001692)

Airframe:

Manufacturer/Model	Micro Aviation SA / Bat Hawk R X341	
Serial Number	0107	
Year of Manufacture	2022	
Total Airframe Hours (At Time of Accident)	Approximately145	
Last Inspection (Date & Hours)	7 October 2023	143.3
Hours Since Last Inspection	1.7	
CRS Issue Date	7 October 2023	
ATF (Issue Date & Expiry Date)	22 November 2023	10 October 2024
C of R (Issue Date) (Present Owner)	15 September 2022	
Type of Fuel Used	Avgas/Mogas 95 Octane	
Operating Category	General Aviation (NTCA) Part 94	
Previous Accidents	None	

Note: The aircraft's logbook was not completed for any other flight following the annual maintenance inspection.

Engine:

Manufacturer/Model	Rotax 914 UL
Serial Number	4419925
Part Number	N/A
Hours Since New	275
Hours Since Overhaul	TBO not yet reached

Propeller:

Manufacturer/Model	MTV Propeller / MTV-21-A/170-125
Serial Number	190092
Part Number	N/A
Hours Since New	198.5
Hours Since Overhaul	TBO not yet reached

1.6.2 The aircraft had a valid Authority-to-Fly (ATF) Certificate that was issued by the Regulator on 17 April 2019 with an expiry date of 30 April 2024. The latest annual inspection maintenance conducted on the aircraft was on 2 April 2023. The approved person (AP) who conducted maintenance had issued the aircraft's Certificate of Release to Service (CRS) on 2 April 2023 at 198.5 airframe hours with an expiry date of 30 April 2024 or at 300 airframe hours, whichever comes first.

1.6.3 The AP had an Approved Person Certificate that was issued by the Regulator on 26 May 2022 with an expiry date of 25 May 2024.

1.7. Meteorological Information

1.7.1. The weather information below was obtained from the Meteorological Aerodrome Report that was issued by the South African Weather Service (SAWS), recorded at Pretoria Irene Aerodrome weather station (FAIR) on 26 November 2023 at 0600Z. FAIR is located 7 nautical miles (nm) from the accident site. There was no weather station available at Grasslands Airfield.

Wind Direction	020°	Wind Speed	08 kt	Visibility	9999 m
Temperature	25°C	Cloud Cover	CAVOK	Cloud Base	CAVOK
Dew Point	16°C	QNH	1026 hPa		

1.7.2. Although the field elevation at Grasslands Airfield was 4560 ft, the effective density altitude at the time of the accident was 6532 ft AMSL.

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 prior to 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 prior to the flight.

1.10. Aerodrome Information

1.10.1 The accident occurred at Grasslands Airfield.

Aerodrome Name	Grasslands Airfield
Aerodrome Location	Centurion, Gauteng Province
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	25° 49' 42.80" South / 028° 05' 34.16" East
Aerodrome Elevation	4560 ft
Runway Headings	14/32
Dimensions of Runway Used	850 X14 metres
Heading of Runway Used	14
Surface of Runway Used	gravel
Approach Facilities	None

1.11. Flight Recorders

1.11.1. The aircraft was not 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 on an open area in Grasslands Airfield, approximately 500 metres (m) from the runway. The wreckage was localised within a radius of approximately 20m.

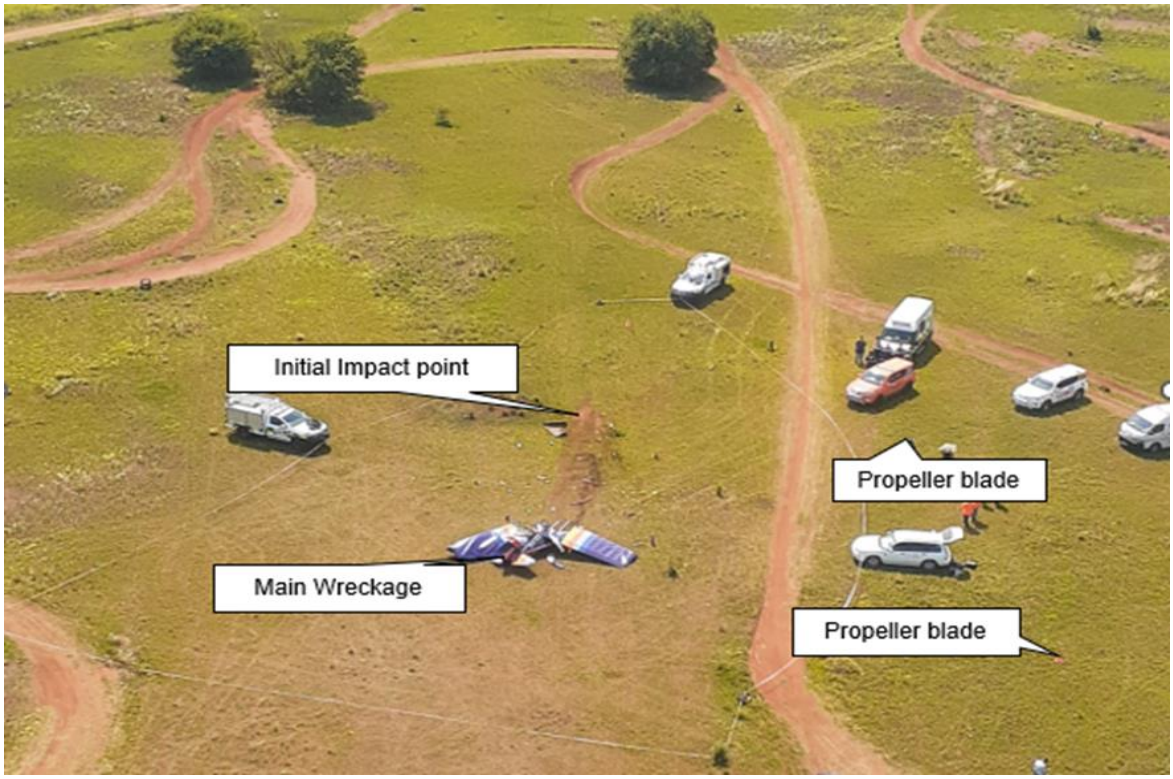

Figure 5: The accident site. (Source: SAPS Air-Wing)

1.12.2. The wreckage was found 10m from the point of impact. After impact, the aircraft skidded in the opposite direction of approach, scrapping the ground in its path. The nose section and the windshield fragments were found near the impact point. The structural integrity of the cockpit area was compromised.

Figure 6: Damage to the left-wing tip.

1.12.3. The aircraft's left-wing tip portion of the leading edge towards the inner part was bent, indicative of impact forces mostly on the left side. The left side of the nose section and the cockpit sustained extensive damage. The right wing was still intact with not much visible damage.

Figure 7: The right wing was found intact.

1.12.4. The fuel tank behind the seats was damaged which caused fuel to spill to the ground. There was no visible damage to the engine; the eyewitnesses found it running. They disconnected the spark plug cables and the battery to shut it down. The propeller blades were located to the front and right side of the wreckage. There was no post-impact fire.

1.13. Medical and Pathological Information

1.13.1. The post-mortem and blood toxicology reports were still outstanding at the time of completion of this report; therefore, the cause of death has not yet been determined. Should the results have any bearing to the circumstances which led to this accident, the information would be treated as new evidence which will necessitate the reopening of this investigation.

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 pilot and the passenger had made use of the aircraft's safety harnesses; however, the accident was considered not survivable due to the impact forces that compromised the structural integrity of the cockpit area.

1.16. Tests and Research

1.16.1. None of the aircraft components were taken for testing.

1.17. Organisational and Management Information

1.17.1. The aircraft was operated in private capacity under the provisions of Part 94 of the CAR 2011 as amended.

1.17.2. The aircraft's ownership was a partnership. The aircraft was issued a Certificate of Registry by the Regulator on 15 September 2022.

1.17.3. The aircraft was issued a Certificate of Release to Service (CRS) on 7 October 2023 at 143.3 airframe hours with an expiry date of 7 October 2024 or at 243 airframe hours, whichever comes first.

1.17.4. The AP who conducted maintenance of the aircraft had a valid Approved Person Certificate that was issued by the Regulator on 7 February 2023 with an expiry date of 6 February 2025.

1.18. Additional Information

1.18.1. Aircraft Flying Handbook (Source: FAA-8083-3a)

Chapter 9: Aircraft Performance Manoeuvres: Steep Turns.

The steep turn manoeuvre consists of a turn in either direction, using a bank angle between 45 to 60°. This will cause an overbanking tendency during which maximum turning performance is attained and relatively high load factors are imposed. Because of the high load factors imposed, these turns should be performed at an airspeed that does not exceed the airplane's design manoeuvring speed (VA). The principles of an ordinary steep turn apply, but as a practice manoeuvre, the steep turns should be continued until 360° or 720° of turn have been completed. (See Figure 7 below).

An airplane's maximum turning performance is its fastest rate of turn and its shortest radius of turn, which change with both airspeed and angle of bank. Each airplane's turning performance is limited by the amount of power its engine is developing, its limit load factor (structural strength), and its aerodynamic characteristics. The limiting load factor determines the maximum bank, which can be maintained without stalling or exceeding the airplane's structural limitations. In most small planes, the maximum bank has been found to be

approximately 50° to 60°. The pilot should realize the tremendous additional load that is imposed on an airplane as the bank is increased beyond 45°. During a coordinated turn with a 70° bank, a load factor of approximately 3 Gs is placed on the airplane's structure. Most general aviation type airplanes are stressed for approximately 3.8 Gs. Regardless of the airspeed or the type of airplanes involved, a given angle of bank in a turn, during which altitude is maintained, will always produce the same load factor. Pilots must be aware that an additional load factor increases the stalling speed at a significant rate—stalling speed increases with the square root of the load factor. For example, a light plane that stalls at 60 knots in level flight will stall at nearly 85 knots in a 60° bank. The pilot's understanding and observance of this fact is an indispensable safety precaution for the performance of all manoeuvres requiring turns.

Before starting the steep turn, the pilot should ensure that the area is clear of other air traffic since the rate of turn will be quite rapid. After establishing the manufacturer's recommended entry speed or the design manoeuvring speed, the airplane should be smoothly rolled into a selected bank angle between 45 to 60°. As the turn is being established, back-elevator pressure should be smoothly increased to increase the angle of attack. This provides the additional wing lift required to compensate for the increasing load factor. After the selected bank angle has been reached, the pilot will find that considerable force is required on the elevator control to hold the airplane in level flight—to maintain altitude. Because of this increase in the force applied to the elevators, the load factor increases rapidly as the bank is increased. Additional back-elevator pressure increases the angle of attack, which results in an increase in drag. Consequently, power must be added to maintain the entry altitude and airspeed Eventually, as the bank approaches the airplane's maximum angle, the maximum performance or structural limit is being reached. If this limit is exceeded, the airplane will be subjected to excessive structural loads, and will lose altitude, or stall. The limit load factor must not be exceeded, to prevent structural damage. During the turn, the pilot should not stare at any one object. To maintain altitude, as well as orientation, requires an awareness of the relative position of the nose, the horizon, the wings, and the amount of bank. The pilot who references the aircraft's turn by watching only the nose will have difficulty holding altitude constant; on the other hand, the pilot who watches the nose, the horizon, and the wings can usually hold altitude within a few feet. If the altitude begins to increase, or decrease, relaxing or increasing the back-elevator pressure will be required as appropriate. This may also require a power adjustment to maintain the selected airspeed. A small increase or decrease of 1 to 3° of bank angle may be used to control small altitude deviations. All bank angle changes should be done with coordinated use of aileron and rudder.

The rollout from the turn should be timed so that the wings reach level flight when the airplane is exactly on the heading from which the manoeuvre was started. While the recovery is being

made, back-elevator pressure is gradually released and power reduced, as necessary, to maintain the altitude and airspeed.

***Common errors in the performance of steep turns are**:*

- *Failure to adequately clear the area.*
- *Excessive pitch change during entry or recovery.*
- *Attempts to start recovery prematurely.*
- *Failure to stop the turn on a precise heading.*
- *Excessive rudder during recovery, resulting in skidding.*
- *Inadequate power management.*
- *Inadequate airspeed control.*
- *Poor coordination.*
- *Gaining altitude in right turns and/or losing altitude in left turns.*
- *Failure to maintain constant bank angle.*
- *Disorientation.*
- *Attempting to perform the manoeuvre by instrument reference rather than visual reference.*
- *Failure to scan for other traffic during the manoeuvre.*

1.18.2 The pilot did not follow the standard unmanned circuit joining procedures as he did not fly over the airfield 2000 ft AGL before joining the circuit at 1000 ft AGL. The aircraft was not established at circuit height.

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 pilot's licensing process revealed a significant oversight. An aircraft with which he had no experience was endorsed on his licence, whilst the two aircraft types on which he was

proficient were excluded (not listed) on his licence. Furthermore, the pilot continued to operate an unendorsed aircraft without seeking clarification on the licence validity as well as ensuring that the correct aircraft type was endorsed on it.

2.2.2. The aircraft was relatively new with 143.3 airframe hours and with no mechanical or operational discrepancies. It logged 1.7 hours of flight time following its annual inspection and had a valid ATF Certificate. The aircraft was also serviced by an AP who had valid documentation. The aircraft's engine was still running after the accident and was shut down by the eyewitnesses to mitigate the risk of post-accident fire. All damage was attributed to the accident.

2.2.3. The pilot did not join the circuit in accordance with the unmanned airfield joining procedure which was to establish at the circuit height of 1000 ft AGL. Instead, the pilot conducted a steep turn with the left wing extremely low, an indication of a potential loss of control during the manoeuvre. The aircraft flying handbook emphasises that steep turns should maintain a bank angle between 45° and 60° to avoid excessive load factors. A bank angle significantly greater than 60° (implied by the extreme "left-wing low" description) would lead to overbanking and an increase in load factors beyond the aircraft's design limits.

2.2.4. The aircraft nose-dived to the left and impacted the ground due to the pilot's failure to maintain a controlled flight, and potentially due to exceeding the aircraft's performance or stalling limits. Failure to maintain altitude during the turn could indicate inadequate back-elevator pressure or power management, which would lead to a stall.

2.2.5. A high-density altitude and low-altitude operation were likely to have severely affected the aircraft's performance. In these conditions, the stall speed increases with less margin for error during manoeuvres such as steep turns.

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's personnel licensing process revealed a significant non-compliance as the aircraft type with which he had no experience was endorsed on his licence, whilst two aircraft types on which he was proficient were excluded.

3.2.2 The pilot continued to operate an unendorsed aircraft without seeking clarification on the validity of his licence as well as ensuring that the correct aircraft type was endorsed on his licence.

3.2.3 The aircraft had a valid ATF Certificate that was issued by the Regulator on 22 November 2023 with an expiry date of 10 October 2024. The aircraft's Certificate of Registration (C of R) was issued to the current owner on 15 September 2022.

3.2.4 The latest annual inspection maintenance of the aircraft was conducted on 2 April 2023. The AP who conducted the inspection had issued the aircraft's CRS on 2 April 2023 at 198.5 airframe hours with an expiry date of 30 April 2024 or at 300 airframe hours, whichever comes first.

3.2.5 The AP who conducted maintenance of the aircraft had a valid Approved Person Certificate that was issued by the Regulator on 7 February 2023 with an expiry date of 6 February 2025.

3.2.6 The flight was conducted in accordance with the provisions of Part 94 of the CAR 2011 as amended.

3.2.7 The pilot did not join the circuit in accordance with the unmanned airfield joining procedure, which was to establish at the circuit height of 1000 ft AGL.

3.2.8 The pilot conducted a steep turn with the left wing extremely low, an indication of a potential loss of control during the manoeuvre. The aircraft handbook emphasises that in steep turns, a bank angle between 45° and 60° should be maintained to avoid excessive load factors.

3.2.9 The pilot lost control of the aircraft and it nose-dived to the left and impacted the ground.

3.3. Probable Cause/s

3.3.1 The pilot lost control of the aircraft during a low-level steep turn which led to a stall and the subsequent crash.

3.4. Contributory Factor/s

3.4.1. Disregard of the standard unmanned airfield joining procedure.

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