

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/10265	
Aircraft Registration	ZU-TAM	Date of Accident	15 February 2023		Time of Accident	0637Z	
Type of Aircraft	Skyleader 600		Type of Operation		Private (Part 94)		
Pilot-in-command Licence Type	Private Pilot Licence (PPL) Aeroplane		Age	66	Licence Valid	Yes	
Pilot-in-command Flying Experience	Total Flying Hours		1321.9	Hours on Type	Unknown		
Last Point of Departure	Eagle's Creek Airfield, Gauteng Province						
Next Point of Intended Landing	Brakpan Airfield (FABB), Gauteng Province						
Damage to Aircraft	Destroyed						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
At 314m from the threshold of Runway 26 at Eagle's Creek Aviation Airfield in Centurion; GPS co-ordinates 25°54'14.67"S 28° 2'30.59"E at an elevation of 4620.8 feet (ft)							
Meteorological Information	Surface wind: 190°/03; Visibility: 10km; Temperature: 19°C; Dew point: 18°C; Clouds: FEW; Cloud Base: 1500 feet; QNH: 1018						
Number of People On-board	1+0	Number of People Injured	0	Number of People Killed	1	Other (On Ground)	0
Synopsis							
<p>On Wednesday morning, 15 February 2023, a pilot on-board a Skyleader 600 aircraft with registration ZU-TAM took off on a private flight from Eagle's Creek Airfield in Gauteng province to Brakpan Airfield (FABB) in the same 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>According to the eyewitness, the aircraft was due for its annual inspection which was scheduled to take place at FABB on 15 February 2023. The eyewitness stated that after conducting pre-flight checks, the pilot taxied the aircraft to the holding point of Runway (RWY) 08 and that the take-off and the climb were normal. A few seconds after take-off, the aircraft made a right turn towards the south and, before it could disappear from his line of sight, it made a left turn back to the airfield. As it neared the runway, the aircraft lost height whilst it banked sharply to the left; it flew over the extend centreline of the runway and impacted the embankment near the edge of the river. A fire ensued soon after. The pilot was fatally injured, and the aircraft was destroyed.</p> <p>The investigation found that the propellers broke off after impact. The burnt engine components were later removed after recovery, and the engine was rotated by hand to check for resistance; it rotated normally, this indicated that the engine was operational at the time of impact. The pilot's decisions to return to the airfield and then proceed to fly a short circuit which placed the aircraft in an attitude that led to a stall are not known; the aircraft did not reach the runway to land safely.</p>							
Probable Cause/s and/or Contributory Factors							
It is likely that the engine was not producing enough power due to carburettor icing. This led to the pilot's decision to return to the departure runway. Whilst in an attempt to line up on the runway, the left wing dropped and then the right wing. The aircraft lost height, stalled, and impacted the embankment.							
Contributory Factor							
Overbanking the aircraft to align with the runway centreline.							
SRP Date	19 March 2024		Publication Date	25 March 2024			

Occurrence Details

Reference Number : CA18/2/3/10265
Occurrence Category : Accident
Type of Operation : Private (Part 94)
Name of Operator : Betts Townsend Aviation (PTY) LTD
Aircraft Registration : ZU-TAM
Aircraft Make and Model : Jihlavan Airplanes S.R.O, Skyleader 600
Nationality : South African
Place : Eagle's Creek Aviation Airfield, Centurion
Date and Time : 15 February 2023 at 0637Z
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 the accident which occurred on 15 February 2023 at 0637Z. Investigators had dispatched to the accident site. 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 States of Design and Manufacturer in accordance with the CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The states did not appoint an accredited representative and/or advisor.

Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:
Accident — this investigated accident
Aircraft — the Jihlavan Skyleader 600 involved in this accident
Investigation — the investigation into the circumstances of this accident
Pilot — the pilot involved in this accident
Report — this accident report*
- 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 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
AMO	Aviation Maintenance Organisation
AP	Approved Person
ATC	Air Traffic Control
ATF	Authority to Fly
C of R	Certificate of Registration
CRS	Certificate of Release to Service
FABB	Brakpan Airfield
FEW	Few Clouds
fpm	Feet per Minute
ft	Feet
hPa	Hectopascal
kt	Knots
m	Metres
MHz	Megahertz
METAR	Meteorological Aerodrome Report
POH	Pilot's Operating Handbook
PPL	Private Pilot Licence
RPM	Revolutions per Minute
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
TBO	Time Between Overhaul
Vs1	Stalling Velocity with Flaps Up
QNH	Altitude Above Mean Sea Level
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

- 1.1.1 On the morning of 15 February 2023, a pilot on-board the Skyleader 600 aircraft with registration ZU-TAM took off on a private flight from Eagle's Creek Airfield in Gauteng province with the intention to land at Brakpan Airfield (FABB) in the same province. The flight was conducted under visual flight rules (VFR) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.
- 1.1.2 The pilot and owner of the aircraft as well as the Approved Person (AP) personnel had initially planned to perform an annual inspection of the aircraft on Monday, 13 February 2023 at Brakpan Airfield (FABB) in Gauteng province. The aircraft was based at Eagle's Creek Airfield in Centurion, Gauteng province. The pilot was unable to fly the aircraft to FABB on 13 February 2023 due to the persistent rain in the province; the rain still persisted on 14 February 2023. On Wednesday, 15 February 2023, the weather conditions were favourable, and the pilot confirmed with his AP that he would be ferrying the aircraft to FABB.
- 1.1.3 On the day of the flight, one of the workers at Eagle's Creek Airfield exchanged pleasantries with the pilot before departure. The worker, who is an eyewitness, stated that the pilot performed a pre-flight inspection but did not refuel the aircraft, and that the pilot loaded the aircraft's tow bar in the aircraft. The eyewitness further stated that usually the pilot brings with him two 25-litre tanks of 95 Octane Unleaded fuel to refuel the aircraft. *Note: The flight folio revealed that the aircraft was last refuelled with 50 litres on 30 January 2023 and was not flown since.* According to the official weather report, the wind was calm.
- 1.1.4 The eyewitness stated that as he was not engaged in any activity, he decided to watch the aircraft as it departs. The aircraft taxied to Runway (RWY) 08 holding point; the pilot took time before departure. According to Eagle's Creek pilot information, landing is uphill on RWY 26 and take-off is on RWY 08, wind permitting. The aircraft entered RWY 08, accelerated, and was airborne. After gaining some height, the aircraft turned right but did not remain in that direction for long. It made a left turn to return to the airfield.
- 1.1.5 The eyewitness recalled hearing the engine sound, but the aircraft was not gaining height. As the aircraft turned left and flew over the extended centreline, he noticed that one wing was lower than the other. The aircraft impacted the embankment near the edge of the river. The eyewitness saw a ball of fire, followed by rising black smoke. He then rushed to a nearby hangar to alert and request assistance from the other aviators who hurriedly brought hand-held fire extinguishers to the accident site, just outside the airfield's perimeter fence. The witness reported that they could not get to the accident site quickly enough as the terrain was

rugged, flooded with water and overgrown with grass. The pilot was fatally injured during the accident. The aircraft was destroyed by impact forces and the post-impact fire.

- 1.1.6 The accident occurred during day light under visual meteorological conditions (VMC) at Global Positioning System (GPS) co-ordinates determined to be 25°54'14.67" South 28° 2'30.59" East at an elevation of 4620.8 feet (ft).



Figure 1: The green line depicts the path that was followed by ZU-TAM. (Source Google Earth)

1.2. Injuries to Persons

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

Note: Other means people on the ground.

- 1.2.1. The pilot was fatally injured.

1.3. Damage to Aircraft



Figure 2: Moments after the fire was extinguished.

1.3.1. The aircraft was destroyed by impact and a post-impact fire.

1.4. Other Damage

1.4.1. None.

1.5. Personnel Information

Nationality	South African	Gender	Male	Age	66
Licence Type	Private Pilot Licence (PPL) Aeroplane				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 July 2023				
Restrictions	None				
Previous Accidents	Belly landing on 20 May 2020 at FAKR whilst piloting ZU-TAM				

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

Flying Experience:

Total Hours	1321.9
Total Past 24 Hours	0.1
Total Past 7 Days	1.0
Total Past 90 Days	11.2
Total on Type Past 90 Days	11.2
Total on Type	1321.9

- 1.5.1. The pilot was issued a Private Pilot Licence (PPL) Aeroplane on 16 November 2022 with an expiry date of 30 November 2024.
- 1.5.2. The pilot was issued a Class 2 aviation medical certificate on 21 July 2022 with an expiry date of 31 July 2023 with no medical restrictions.
- 1.5.3. The pilot was issued a rating on Skyleader 600 aircraft on 20 January 2021 to act as pilot-in-command.

1.6 Aircraft Information

- 1.6.1. *The Skyleader 600 is an all-metal two-seat, low wing constructed aircraft with a trapezoidal wing. The aircraft has a tricycle towed fixed landing gear with wheel pants and a steerable nose wheel. The aircraft was designated mainly for recreational flying, pilot training and special operations.*

Airframe:

Manufacturer/Model	Jihlavan Airplanes / Skyleader 600	
Serial Number	6190215Q	
Year of Manufacture	2011	
Total Airframe Hours (At Time of Accident)	814.3	
Last Inspection (Date & Hours)	1 March 2022	736.8
Hours Since Last Inspection	77.5	
CRS Issue Date	1 March 2022	
ATF (Issue Date & Expiry Date)	16 March 2022	31 March 2023
C of R (Issue Date) (Present Owner)	27 July 2011	
Type of Fuel Used	Unleaded fuel	
Operating Category	Part 94	
Previous Accidents	Belly landing at FAKR on 20 May 2020	

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

Engine:

Manufacturer/Model	Rotax 914
Serial Number	6774348
Hours Since New	814.3
Hours Since Overhaul	TBO not reached

Propeller:

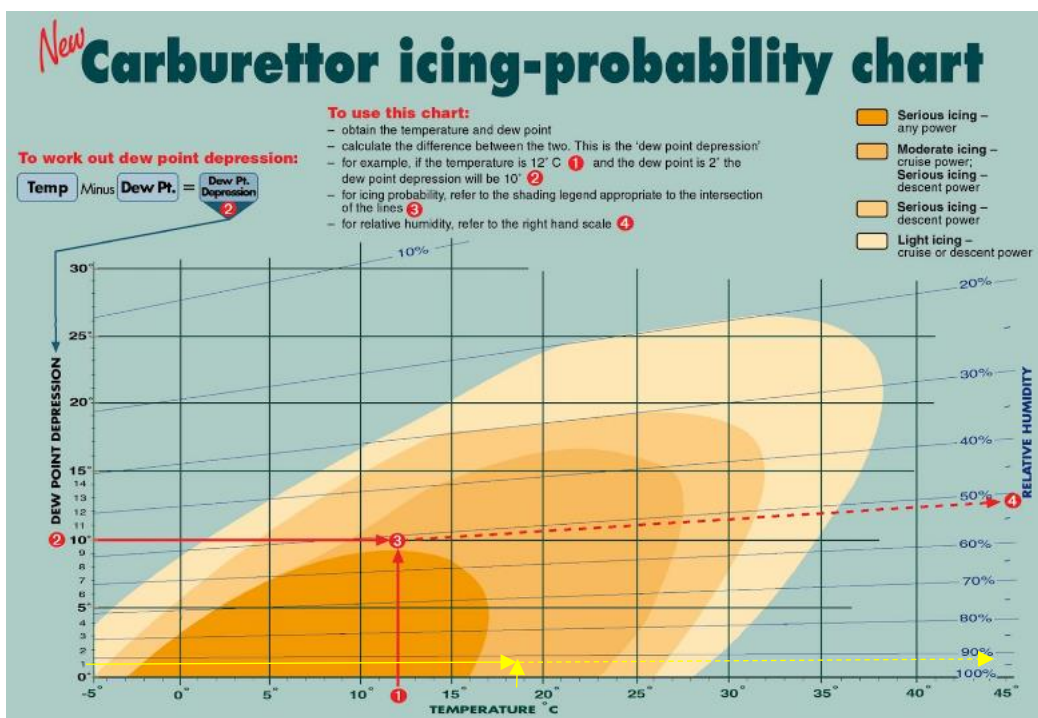
Manufacturer/Model	Idrovario
Serial Number	4890 H28
Hours Since New	153.9
Hours Since Overhaul	TBO not reached

- 1.6.2. The new propeller, Idrovario, was fitted to the aircraft on 18 June 2021 at 660.4 airframe hours.
- 1.6.3. The aircraft had an Authority to Fly (ATF) Certificate that was issued by the Regulator on 16 March 2022 with an expiry date of 31 March 2023. The last 100-hour annual inspection prior to the accident flight was certified on 1 March 2022 at 736.8 airframe hours. The aircraft had logged 814.3 total hours at the time of the accident, which meant that it had accrued a further 77.5 hours since the last inspection. The Certificate of Release to Service (CRS) was issued on 1 March 2022 with an expiry date of 28 February 2023 or at 836.8 hours, whichever occurs first.

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 Lanseria International Airport (FALA) on 15 February 2023 at 0700Z. FALA is located 6.51 nautical miles (nm) from the accident site.

Wind Direction	190°	Wind Speed	03kt	Visibility	9999m
Temperature	19°C	Cloud Cover	FEW	Cloud Base	1500ft
Dew Point	18°C	QNH	1018hPa		



1.7.2. The carburettor icing chart above indicates a 92% relative humidity with dew point depreciation at 1°C and temperature at 19°C. This would place the engine or carburettor at risk of moderate icing on cruise power (serious icing descent power setting).

1.8. Aids to Navigation

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator (SACAA). There were no recorded defects with the navigational equipment 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. Eagle's Creek Airfield information:

Aerodrome Location	Centurion, Gauteng Province
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	25°54'14.67"South, 28° 2'30.59"East
Aerodrome Elevation	4723.2 ft
Runway Headings	08/26
Dimensions of Runway Used	838m x 10m
Heading of Runway Used	08
Surface of Runway Used	Tar
Approach Facilities	None
Radio Frequency	125.8 MHz

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. After take-off on RWY 08, the pilot turned right and, a few seconds later, made a left turn as if to return to the airfield. The aircraft's right wing dropped sharply, and the aircraft impacted the ground first. It faced an easterly direction on its final rest. The impact caused damage to the back of the wings which resulted in the aircraft's forward half bending towards the tail section. The two composite propeller blades broke off at the root of the propeller hub. The accident location was on the edge of an embankment near the river, which was flooded at

the time due to rain in the region prior to the accident flight. The aircraft had retractable undercarriage, and the landing gear wheels were down and locked.

1.12.2. Because it was difficult to assess the extent of damage at the accident site, the aircraft was recovered to its hangar at Eagle's Creek Airfield where the following observations were made:

- The pilot's safety harness belt was locked, and the opposite end (of the buckle) had a straight cut to it. The emergency medical personnel made the incision when they freed the pilot from the wreckage.
- Two pieces of steel were found on-board the aircraft, which the eyewitness confirmed were part of the tow bar.
- Two spare wheels (one main and one nose) were on-board the aircraft.
- The nose wheel was still attached to the rudder pedals and was in the down position.



Figure 3: The damaged propellers.



Figure 4: The cracked aircraft spinner.



Figure 5: The vertical speed indicator.



Figure 6: The indicated air speed.

- The aircraft had 17 circuit breakers; only 10 were still attached and the remainder had separated from the instrument panel.
- The two main wheels struts on the underside of both wings were in the down and locked position.
- One propeller blade was found near the aircraft at the accident site, and the other was found further down the river.
- The vertical speed indicator instrument had stopped at 1800 feet per minute (fpm).
- The air speed indicator had stopped at 66 knots (kts) – *the aircraft's landing speed is 54kts.*
- The cabin area, engine bay and both wings were destroyed; they had separated from the rest of the empennage.
- The control cables were all accounted for.

1.12.3. Some parts of the engine were burnt, and it was not possible to turn the engine by hand on site (only after the engine was recovered and after the burnt parts and spark plugs were removed was it possible to turn the engine by hand). One of the carburettors was burnt, and the other was still intact, however, the fuel (Unleaded) was leaking from it. The engine and the turbo control unit (TCU) were sent to the engine specialist for further inspection and analysis.

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, it would be treated as new evidence which will necessitate the reopening of this investigation.

1.14. Fire



Figure 7: The aircraft burst into flames immediately after impact. (Source: On-call-investigator)

1.14.1 The aircraft burst into flames moments after impacting the ground. The fire was extinguished by the running water as it sank.

1.15. Survival Aspects

1.15.1. The accident was considered not survivable due to the impact forces and the post-impact fire that compromised the structural integrity of the cockpit and the cabin area.

1.16. Tests and Research

1.16.1. None.

1.17. Organisational and Management Information

1.17.1. The flight was conducted in accordance with the provisions of Part 94 (private operations) of the CAR 2011 as amended.

1.17.2. The AP who certified the last maintenance inspection prior to the accident flight had an AP certificate that was issued by the Regulator on 20 February 2023 with an expiry date of 20 February 2024.

1.18. Additional Information

1.18.1. Pilots Information (Source: <https://eaglescreek.net/pilots-information>)

- Pilots to contact Lanseria ATC on 124.00 before entering the circuit or take off.
- Aircraft to join overhead at an altitude of 6300 ft.
- Circuits to the south of the airfield.
- Circuit height 1000 ft. AGL. 5700 ft (downwind leg on Summit Road).
- Land uphill RWY 26; take off RWY 08, wind permitting.
- Landings on runway 08 require prior approval from Lanseria ATC.
- No low flying or beat ups allowed in the proximity of the airfield.
- All aircraft must be transponder equipped.

1.18.2. Performance (Source: Skyleader Aircraft Pilot’s Operating Handbook)

☐ If you need to extend an approach, use engine power or keep flaps retracted till final approach.

4.11. Procedures on final approach, landing

1. Hold airspeed at 100 km/h (54 kt) (62 mph); raised idle; maximal descend speed 2,7 m/s (530 fpm)
2. Flaps – in take-off or landing position – according pilot discretion
3. Trim – set nose up
4. RWY – check if it is clear for landing, report
5. At 5 m (15 ft) – set engine on idle and align at 1m (3 ft)
6. Lose speed by step less pulling of control stick and touch down on main landing gear

Figure 8: Landing speed is 54 knots. (Source: Skyleader Aircraft POH)

5.2. Take-off and landing distances

Take-off	R 912 UL	R 912 ULS	R 914 UL/F	
Total distance of take-off until reaching 15 m (50 ft)	295 m 968 ft	250 m 820 ft	240 m 787 ft	Data are valid for concrete RWY
Rolling distance	150 m 492 ft	130 m 427 ft	125 m 410 ft	

☐ Take-off distances for grass RWY depend on the surface condition.

Figure 9: Take-off and landing distance. (Source: Skyleader Aircraft POH)

5.1. Airspeeds

Airspeed	Abbreviation	IAS [km/h]	CAS [km/h]	IAS [kt]	CAS [kt]	IAS [mph]	CAS [mph]
Never exceed airspeed	V_{NE}	252	235	136.1	126.9	156.6	146.0
Maximum speed of horizontal flight	V_{H}	224	209	121.0	112.9	139.2	129.9
Max. speed of cruising flight - this speed can be exceeded in calm air only	V_{NO}	215	201	116.1	108.5	133.6	124.9
Max. manoeuvring speed - do not use full deflections of control surfaces above this velocity	V_A	152	145	82.1	78.3	94.4	90.1
Maximum velocity for flap extending and retracting	V_{FD}	120	117	64.8	63.2	74.6	72.7
Maximum velocity with flaps fully extended	V_{FE}	110	112	59.4	60.5	68.4	69.6
Min. permitted speed in landing configuration	V_{LO}	57	63	30.8	34.0	35.4	39.1
Min. permitted speed with flaps fully retracted	V_{S1}	72	77	38.9	41.6	44.7	47.8
Cruising speed (75% max. continuous power) Rotax 912 UL	V_C	180	169	97.2	91.3	111.8	105.0
Cruising speed (75% max. continuous power) Rotax 912 ULS	V_C	190	178	102.6	96.1	118.1	110.6
Cruising speed (75% max. continuous power) Rotax 914 UL/F	V_C	190	178	102.6	96.1	118.1	110.6

Figure 10: The stall speed V_{S1} is 42 knots. (Source: Skyleader Aircraft POH)

1.18.3 Recognition of Stalls (Source: FAA Airplane Flying Handbook, 2004, Pages 4-2,3,4)

Kinesthesia, or the sensing of changes in direction or speed of motion, is probably the most important and the best indicator to the trained and experienced pilot. If this sensitivity is properly developed, it will warn of a decrease in speed or the beginning of a settling or mushing of the airplane. Feel is an important sense in recognizing the onset of a stall. The feeling of control pressures is very important. As speed is reduced, the resistance to pressures on the controls becomes progressively less. Pressures exerted on the controls tend to become movements of the control surfaces. The lag between these movements and the response of the airplane becomes greater, until in a complete stall all controls can be moved with almost no resistance, and with little immediate effect on the airplane. Just before the stall occurs, buffeting, uncontrollable pitching, or vibrations may begin. Several types of stall warning indicators have been developed to warn pilots of an approaching stall. The use of such indicators is valuable and desirable, but the reason for practicing stalls is to learn to recognize stalls without the benefit of warning devices.

Fundamentals of Stall Recovery

During the practice of intentional stalls, the real objective is not to learn how to stall an airplane, but to learn how to recognize an approaching stall and take prompt corrective action. Though the recovery actions must be taken in a coordinated manner, they are broken down into three actions here for explanation purposes. First, at the indication of a stall, the pitch attitude and angle of attack must be decreased positively and immediately. Since the basic cause of a stall is always an excessive angle of attack, the cause must first be eliminated by releasing the back-elevator pressure that was necessary to attain that angle of attack or be moving the elevator control forward. This lowers the nose and returns the wing to an effective angle of attack. The amount of elevator control pressure or movement used depends on the design of the airplane, The severity of the stall, and the proximity of the ground. In some airplanes, a moderate movement of the elevator control—perhaps slightly forward of neutral—is enough, while in others a forcible push to the full forward position may be required. An excessive negative load on the wings caused by excessive forward movement of the elevator may

impede, rather than hasten, the stall recovery. The object is to reduce the angle of attack but only enough to allow the wing to regain lift.

Common errors in the performance of slow flight are:

- Failure to adequately clear the area.
- Inadequate back-elevator pressure as power is reduced, resulting in altitude loss.
- Excessive back-elevator pressure as power is reduced, resulting in a climb, followed by a rapid reduction in airspeed and “mushing.”
- Inadequate compensation for adverse yaw during turns.
- Fixation on the airspeed indicator.
- Failure to anticipate changes in lift as flaps are extended or retracted.
- Inadequate power management.
- Inability to adequately divide attention between airplane control and orientation.

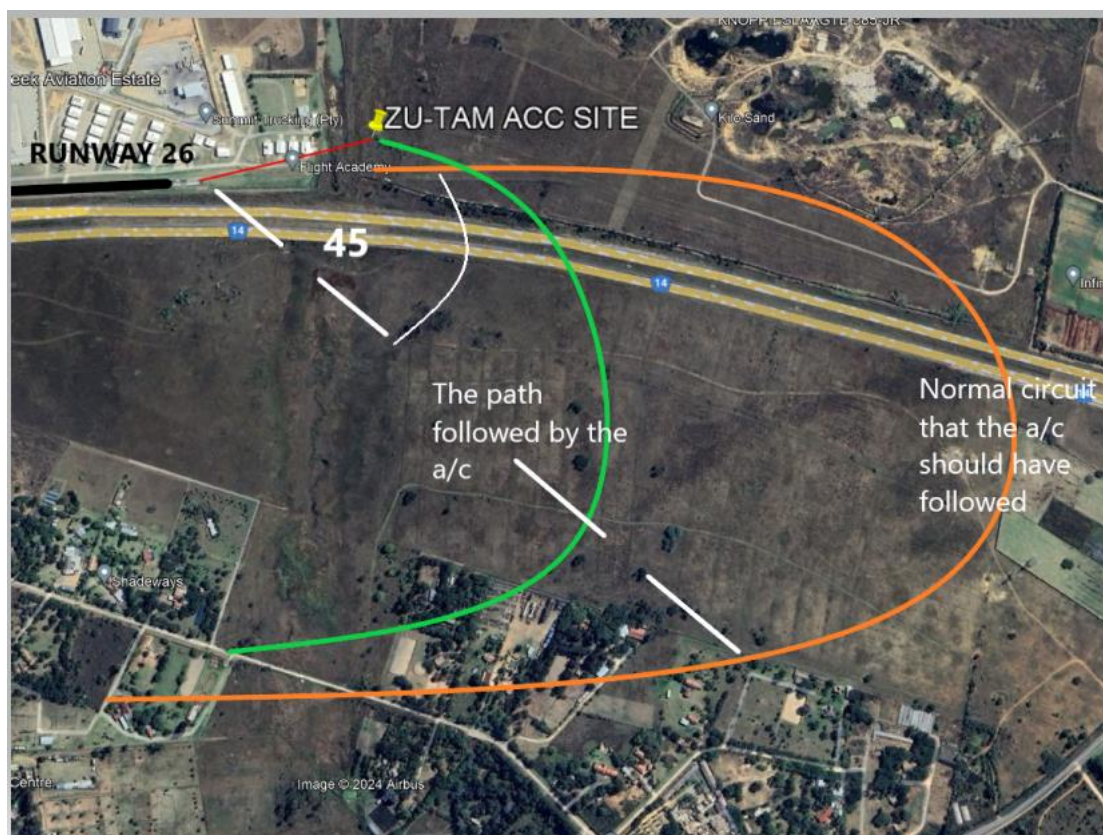


Figure 11: The orange line depicts an approximate circuit that ZU-TAM should have followed using the white dotted line that is at 45° from the threshold of Runway 26. The green line is the approximated path followed by ZU-TAM. The accident site is 297m (red line) from the threshold of RWY 26.
(Source: Google Earth)

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 was issued the Private Pilot Licence (PPL) Aeroplane by the SACAA on 22 November 2022 with an expiry date of 30 November 2024. At the time of the accident, the pilot had flown a total of 1321.9 hours.
- 2.2.2 The pilot had a valid Class 2 aviation medical certificate that was issued on 21 July 2022 with an expiry date of 31 July 2023 with no medical restrictions.
- 2.2.3 The calculation on the carburettor icing chart indicated a 92% relative humidity with dew point depreciation at 1°C and the temperature at 19°C. This places the engine or carburettor at a risk of moderate icing on cruise power (serious icing descent power setting). In addition, the calculated carburettor icing would lead to engine power loss, hence, the pilot's decision to return to the departure runway.
- 2.2.4 After getting airborne and making a slight right turn (Figure 11), the aircraft turned left and did not follow a normal circuit. This meant that there was a problem or performance issues which prompted the pilot to shorten the circuit. In terms of landing direction, Runway 26 is the preferred runway at Eagle's Creek Airfield. The witness stated that he saw the aircraft make a tight left turn and in the final manoeuvre, the right-side wing dropped excessively and, thereafter, the aircraft impacted the ground and bursts into flames.
- 2.2.5 It is likely that when the aircraft flew over the extended centreline, the speed was below the stall speed and the aircraft was not producing enough power due to carburettor icing conditions. The reduced speed and lift led to a stall closer to the ground and, thus, the subsequent crash. The pilot did not have adequate height for safe recovery.

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 was issued the Private Pilot Licence (PPL) Aeroplane by the SACAA on 22 November 2022 with an expiry date of 30 November 2024. At the time of the accident, the pilot had flown a total of 1321.9 hours.
- 3.2.2 The pilot had a valid Class 2 aviation medical certificate that was issued on 21 July 2022 with an expiry date of 31 July 2023 with no medical restrictions.
- 3.2.3 This flight was conducted under the provisions of Part 94 of the CAR 2011 as amended.
- 3.2.4 It is likely that the engine lost power due to carburettor icing and the pilot elected to return to the departure runway.
- 3.2.5 The last 100-hour annual inspection prior to the accident flight was certified on 1 March 2022 at 736.8 airframe hours. The aircraft had logged 814.3 total hours at the time of the accident; meaning that it was flown a further 77.5 hours since the last inspection.
- 3.2.6 The Authority to Fly (ATF) Certificate was issued on 16 March 2022 with an expiry date of 31 March 2023.
- 3.2.7 The Certificate of Registration (C of R) was issued to the current owner on 27 November 2011.
- 3.2.8 The Certificate of Release to Service (CRS) was issued on 1 March 2022 with an expiry date of 28 February 2023 or at 836.8 hours, whichever occurs first.

3.2.9 The pilot followed Eagle's Creek Aviation Airfield recommendations which states: *land uphill RWY 26; take-off RWY 08, wind permitting*. However, the aircraft's final two turns of the circuit were short, which resulted in overbanking and loss of control.

3.2.10 It is likely that the engine experienced carburettor icing after take-off and during the climb which prompted the pilot to return to the departure airfield to land. The aircraft stalled during an attempt to turn left to line up on the runway and, due to insufficient height, the pilot could not recover the aircraft from the stall, and it impacted the embankment.

3.3. Probable Cause

3.3.1. It is likely that the engine was not producing enough power due to carburettor icing which prompted the pilot to return to the departure airfield to land. Whilst attempting to line up on the runway, the left wing dropped and then the right wing. The aircraft lost height, stalled, and impacted the embankment.

3.4. Contributory Factor

3.4.1. Overbanking the aircraft to align with the runway centreline.

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 Message

4.2.1. Pilots are advised to conduct proper flight planning prior to undertaking any flight. In their planning, pilots are to ensure correct interpretation of the weather report.

5. APPENDICES

5.1. None.

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