

PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident  
- Preliminary Report -  
AIID Ref No: CA18/2/3/10265



**Figure 1:** The Skyleader 600 aircraft, registered ZU-TAM. (Source: Flightzone.co.za)

**Description:**

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. According to the eyewitness who works at the airfield, the aircraft was due for its annual inspection and the pilot had arranged for the inspection to take place on that day at FABB. The eyewitness stated that the pilot taxied the aircraft to the holding point of Runway 08 after conducting pre-flight checks. He (eyewitness) then followed the aircraft to the runway to watch it take-off. The eyewitness reported that the take-off and the climb out were normal, and a few seconds later, the aircraft made a right turn towards the south. Before the aircraft disappeared from his line of sight, it made a turn to the left as if it was returning to the airfield. However, the aircraft lost height as it banked sharply to the left. After the aircraft passed the extend centreline, it impacted the ground and a post-impact fire ensued. The pilot was fatally injured, and the aircraft was destroyed.

## 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 and Skyleader 600  
**Nationality** : South African  
**Place** : Eagle's Creek Aviation Estate, Centurion  
**Date and Time** : 15 February 2023 at 0637Z  
**Injuries** : 1 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 occurrence involving a Skyleader 600 which occurred at Centurion, Gauteng Province, on 15 February 2023 at 0637Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and ICAO STD Annex 13 definitions.

The AIID has appointed an investigator-in-charge and a co-investigator who dispatched to the site to commence a full investigation. Notifications was sent to the State of Registry, Operator, Design and Manufacturer in accordance with the CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The State of manufacturer did not appoint an accredited representative and advisor. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and ICAO Annex 13.

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

*The AIID reports are made available to the public at:*

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

### Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:*  
*Accident — this investigated accident*  
*Aircraft — 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*

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**

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

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<b>Abbreviation</b>	<b>Description</b>
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
AP	Approved Person
ATF	Authority to Fly
°C	Degrees Celsius
C of R	Certificate of Registration
CAR	Civil Aviation Regulation
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FABB	Brakpan Airfield
FALA	Lanseria International Airport
FDR	Flight Data Recorder
fpm	Feet per Minute
ft	Feet
hPa	Hectopascal
kt	Knots
Litres	l
m	Metres
METAR	Meteorological Aerodrome Report
MHz	Megahertz
nm	Nautical Miles
POH	Pilot's Operating Handbook
RWY	Runway
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
TCU	Turbo Control Unit
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 The Skyleader 600 aircraft with registration ZU-TAM had an Authority to Fly (ATF) certificate that was due to lapse on 31 March 2023. The owner and pilot of the aircraft, together with the aircraft maintenance organisation (AMO) personnel, decided to have the annual inspection performed on Monday, 13 February 2023 at Brakpan Airfield (FABB) in Gauteng province. The ZU-TAM aircraft was based at Eagle's Creek Airfield in Centurion, Gauteng province. On Monday and Tuesday (13 and 14 February 2023), the pilot was unable to fly the aircraft to FABB due to persistent rain in the region. On Wednesday, 15 February 2023, the weather was favourable. The pilot then confirmed with his approved person (AP) that he would be ferrying the aircraft to FABB.
- 1.1.2 On the morning of 15 February 2023, the pilot took off from Eagle's Creek Airfield to FABB. 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.
- 1.1.3 On that morning, one of the workers at Eagle's Creek Airfield (who turned out to be an eyewitness) was exchanging pleasantries with the pilot before departure. The eyewitness stated that the pilot performed a pre-flight inspection but did not refuel the aircraft; he only loaded the aircraft tow bar. The eyewitness further stated that the pilot usually brought with him two 25-litre tanks of 95 Octane Unleaded fuel to refuel the aircraft. The flight folio revealed that the aircraft was refuelled with 50 litres (l) of 95 Octane Unleaded fuel on 30 January 2023. This was the last fuel uplift before the accident.
- 1.1.4 According to the official weather report, the wind was calm. The eyewitness stated that as he was not engaged in any activity at that time, he decided to watch the aircraft as it took off. The aircraft taxied to Runway (RWY) 08 holding point and the pilot took some time at the holding point. Thereafter, the aircraft entered RWY 08 and accelerated. Moments later, it got airborne. After a few seconds, the aircraft turned right but did not remain in that direction for long; it made a left turn as if it was returning to the airfield.
- 1.1.5 The eyewitness further mentioned that he could hear the engine sound but the aircraft was not gaining height. As the aircraft turned left, flying over the extended centreline, the eyewitness noticed that one wing was low, and the other was high before the aircraft impacted the ground. The aircraft came to a stop by 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 request assistance from other aviators at the airfield. They took hand-held fire

extinguishers and hurried to the accident site, which was outside of the airfield's perimeter fence. However, they could not get to the site quickly as the terrain was rugged, flooded with water and covered with long grass. The pilot was fatally injured and the aircraft was destroyed.

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



Figure 2: The path followed by the ZU-TAM. (Source Google Earth)

## 1.2. Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	1	-	-	1	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	-	-	-	-	-
<b>Total</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>-</b>

Note: Other means people on the ground.



### 1.3. Damage to Aircraft



**Figure 3:** Moments after the fire was extinguished.

1.3.1. The aircraft was destroyed by impact and 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 at FAKR whilst piloting ZU-TAM on 20 May 2020				

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	0.1
Total Past 90 Days	TBA
Total on Type Past 90 Days	TBA
Total on Type	TBA



- 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 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 Skyleader 600 aircraft rating on 20 January 2021 to act as a pilot-in-command.

**1.6. Aircraft Information** (Source: Manufacturer)

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 are 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, and the aircraft had 660.4 airframe hours.

1.6.3. 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 had been flown 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		

## 1.8. 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 accident.

## 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 accident.

## 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 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. After take-off from RWY 08, the pilot turned right and, a few seconds later, made a left turn as if he was returning to the airfield. The aircraft's left wing dropped sharply and the aircraft impacted the ground, left wing first. The aircraft pivoted before the right wing impacted the ground. The two composite propeller blades broke off at the root of the propeller hub, and the aircraft impacted the ground in an inverted position. The location of the accident site was the edge of an embankment that led to the river, which was flooded due to rain in the region prior to the accident flight. The aircraft had retractable undercarriage, and all the landing gear wheels were down and locked. Because of the accident location and the burnt wreckage, the investigating team requested that the wreckage be recovered to a dry area to continue with the investigation.



**Figure 4:** The damaged propellers.



**Figure 5:** The cracked aircraft spinner.

1.12.2. The aircraft was recovered to its hangar at Eagle's Creek Airfield where the following observations were made:

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



**Figure 6:** Vertical speed indicator



**Figure 7:** 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 found in the down and locked position.
- The propeller blades were found at different places – one was near the accident site and the other was found further down the river.
- The vertical speed indicator instrument had stopped at 1800ft per minute (fpm).
- The air speed indicator had stopped at 66 knots (kts) – the aircraft's landing speed is 32kts.
- The cabin area, engine bay and both wings were destroyed; the wings 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 it by hand. One of the carburettors was also burnt, and the other was still intact with Unleaded fuel 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. To be discussed in the final report.

### 1.14. Fire



**Figure 8:** The aircraft burst into flames immediately after impact with the ground.  
(Source: Investigator-on-call)

1.14.1. The aircraft burst into flames moments after impacting the ground. Fellow aviators at the airport grabbed the fire extinguishers and rushed to the accident site with the intention to extinguish the flames and assist the pilot.

### 1.15. Survival Aspects

1.15.1. The accident was considered not survivable due to the high impact force and the post-impact fire that destroyed the aircraft.

### 1.16. Tests and Research

1.16.1. To be discussed in the final report.

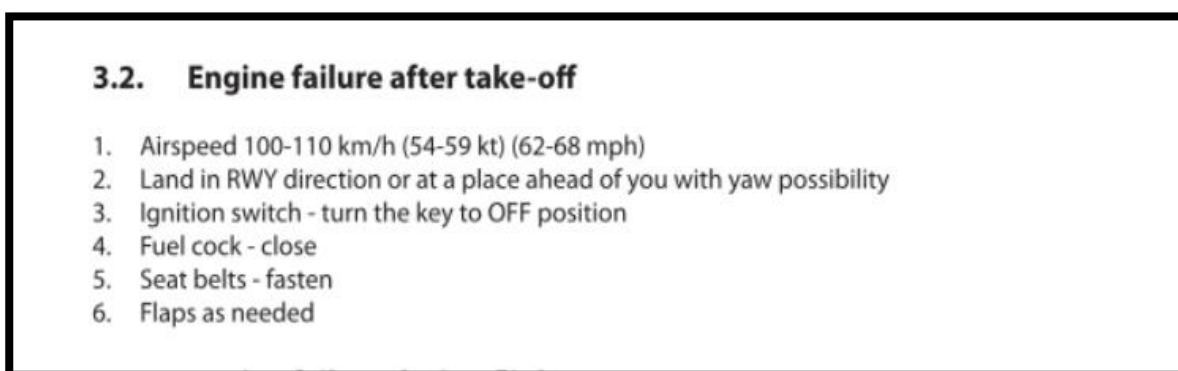
## 1.17. Organisational and Management Information

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

1.17.2. The approved person (AP) who certified the last maintenance inspection prior to the accident flight was in possession of an AP certificate that was issued by the Regulator on 20 February 2023 with an expiry date of 2 February 2024.

## 1.18. Additional Information

1.18.1. Engine Failure After Take-off (Source: Skyleader 600 Pilot's Operating Handbook)



**Figure 9:** Engine failure procedure. (Source: Skyleader 600 POH)

## 1.19. Useful or Effective Investigation Techniques

1.19.1. None.

## 2. FINDINGS

### 2.1. General

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

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

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



## **2.2. Findings**

- 2.2.1. The pilot 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. This flight was conducted under the provisions of Part 94 of the CAR 2011 as amended.
- 2.2.4. Based on the weather report from the SAWS, no significant weather was present at the time of the accident.
- 2.2.5. 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 had been flown a further 77.5 hours since the last inspection.
- 2.2.6. The Authority to Fly (ATF) certificate was issued on 16 March 2022 with an expiry date of 31 March 2023.
- 2.2.7. The Certificate of Registration (C of R) was issued to the current owner on 27 November 2011.
- 2.2.8. 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.
- 2.2.9. The eyewitness reported that he followed the aircraft to the runway to observe the take-off. He further stated that the take-off and climb out phases were normal, but a few seconds later, the aircraft was observed making a right turn towards the south. Before the aircraft could disappear from his line of sight, it turned to the left as if it was returning to the airfield. The aircraft lost height whilst banking sharply to the left, followed by one wing high, and the other wing low. After the aircraft passed the extend centreline, it impacted the ground and the post-impact fire engulfed the aircraft, which was found inverted at its final resting position.
- 2.2.10. The aircraft did not reach the runway; the pilot was fatally injured in the accident.

### **3. ON-GOING INVESTIGATION**

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

**This report is issued by:**

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