PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10450

Figure 1: The file picture of ZU-COB aircraft. (Source: http://airliners.net)

Description:

On Wednesday afternoon, 8 May 2024, a pilot on-board the Orion Cub aircraft with registration ZU-COB took off on a private flight from Krugersdorp Aerodrome (FAKR) in Gauteng province with the intention to return to the same aerodrome.

Upon the pilot's return to FAKR, the engine stopped after he had completed a turn; he then opted to perform a precautionary landing on the north side of the aerodrome. During the landing roll, the aircraft rolled over a trench. The aircraft was substantially damaged during the accident. The pilot was not injured.

Occurrence Details

Reference Number	**:** CA18/2/3/10450
Occurrence Category	**:** Category 2
Type of Operation	**:** Private (Part 94)
Name of Operator	**:** Avroy Shlain
Aircraft Registration	**:** ZU-COB
Aircraft Make and Model	**:** Orion Cub
Nationality	**:** South African
Place	**:** Krugersdorp Aerodrome (FAKR), Gauteng Province
Date and Time	**:** 8 May 2024 at 1445Z
Injuries	**:** None
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 which involved the Orion Cub aircraft at Krugersdorp Aerodrome, Gauteng province, on 8 May 2024 at 1445Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the International Civil Aviation Organisation (ICAO) STD Annex 13 definitions.

The AIID has appointed an investigator-in-charge to conduct the full investigation. The investigator did not dispatch to the accident site. Notifications were 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 AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and the ICAO Annex 13.

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

The AIID reports are made available to the public at:
https://www.caa.co.za/industry-information/accidents-and-incidents/#aircraft-accident-reports

Notes:

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

Table of Contents

Abbreviation	Description
°	Degrees
°C	Degrees Celsius
A/C	Aircraft
AIID	Accident and Incident Investigations Division
AMSL	Above Mean Sea Level
AP	Approved Person
ATF	Authority to Fly
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CAR	Civil Aviation Regulations
CAVOK	Ceiling and Visibility OK
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FAKR	Krugersdorp Aerodrome
FDR	Flight Data Recorder
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
ICAO	International Civil Aviation Organisation
IIC	Investigator-in-charge
Km	Kilometre/s
kt	Knot/s
METAR	Meteorological Aerodrome Report
NPL	National Pilot Licence
QNH	Query: Nautical Height
RWY	Runway
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
STOL	Short Take Off and Landing
UTC	Co-ordinated Universal Time
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Wednesday, 8 May 2024, a pilot on-board the Orion Cub aircraft with registration ZU-COB took off on a private flight from Krugersdorp Aerodrome (FAKR) in Gauteng province with the intention to land at the same aerodrome. 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.

1.1.2. The pilot reported that he conducted a pre-flight inspection with no anomalies found. Thereafter, he uplifted 60 litres of Avgas 100LL into the aircraft's fuel tanks.

1.1.3. At approximately 1400Z, the aircraft took off from Runway 26 (RWY 26) and climbed to 6 300 feet (ft) above mean sea level (AMSL). The aircraft circled overhead the aerodrome for a few minutes before it headed north.

1.1.4. The pilot stated that upon his return to the aerodrome as he rolled the aircraft out of a turn, the engine stopped. He then switched on the auxiliary fuel pump and selected the individual fuel tanks, but he was unsuccessful to restart the engine. After deducing that he will not reach the aerodrome, he landed the aircraft on a farm located north of the aerodrome.

1.1.5. During the landing roll, the left main landing gear rolled over a trench and broke off. Moreover, one of the wooden propeller blades also broke off.

1.1.6. The aircraft was substantially damaged, and the pilot was not injured during the accident.

1.1.7. The accident occurred during daylight, approximately 2 kilometres (km) from FAKR at Global Positioning System (GPS) co-ordinates determined to be 26°07'98" South 027°72'91" East, at 5 400 feet (ft) AMSL.

Figure 2: The accident location. (Source: Google Earth)

1.2. **Injuries to Persons**

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

Note: Other means people on the ground.

1.3. **Damage to Aircraft**

1.3.1. The aircraft was substantially damaged.

1.4. **Other Damage**

1.4.1. None.

1.5. **Personnel Information**

Nationality	South African	Gender	Male	Age	65
Licence Type	National Pilot Licence (NPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Instruments and Night Rating				
Medical Expiry Date	31 August 2026				
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	TBA
Total Past 24 Hours	1.0
Total Past 7 Days	3.6
Total Past 90 Days	TBA
Total on Type Past 90 Days	TBA
Total on Type	TBA

1.5.1. The pilot was initially issued a National Pilot Licence (NPL) on 5 March 2019. His last licence validation was conducted on 6 March 2023 with an expiry date of 26 February 2025. The aircraft type was endorsed on the pilot's licence. The pilot was issued a Class 4 aviation medical certificate on 4 August 2023 with an expiry date of 31 August 2026.

1.6. **Aircraft Information** (Source: Orion Cub Manual)

1.6.1 *The Orion Cub is a high-wing tailwheel aircraft, weighing 800 kilograms (kg). It features seating for two in tandem configuration. Powered by a single Rotax 912UL turbo engine, the aircraft boasts a fuel capacity of 126 litres (L). Equipped with large, slotted flaps, it offers enhanced short take-off and landing (STOL) performance.*

Airframe:

Manufacturer/Model	Avroy Shlain	
Serial Number	22-02	
Year of Manufacture	2024	
Total Airframe Hours (At Time of Accident)	3.6	
Last Inspection (Date & Hours)	17 February 2024	0.0
Hours Since Last Inspection	3.6	
CRS Issue Date	17 February 2024	
ATF (Issue Date & Expiry Date)	7 May 2024	6 May 2025
C of R (Issue Date) (Present Owner)	15 February 2024	
Type of Fuel Used	Avgas 100LL	
Operating Category	Private (Part 94)	
Previous Accidents	None	

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

1.6.2 According to the maintenance records, the construction of the aircraft was approved by the Regulator (SACAA) on 15 March 2023 with approval number CAAD493E. The construction of the aircraft was signed off by an approved person (AP) on 17 February 2024.

1.6.3 The aircraft was first registered to the present owner on 15 February 2024. The Certificate of Release to Service (CRS) was issued by the approved person (AP) on 17 February 2024 at 0.0 airframe hours with an expiry date of 16 February 2025 or at 50 airframe hours, whichever occurs first.

1.6.4 The aircraft had a valid proving flight Authority to Fly (ATF) that was initially issued by the Regulator on 7 May 2024 with an expiry date of 6 May 2025.

1.6.5 Based on the aircraft maintenance records, the last annual inspection on the aircraft was conducted on 17 February 2024 at 0.0 airframe hours (after construction). The aircraft had accrued 3.6 airframe hours since the last inspection.

Engine:

Manufacturer/Model	Rotax 912ULS Turbo
Serial Number	10000617
Hours Since New	3.6
Hours Since Overhaul	Not Reached

Propeller:

Manufacturer/Model	Ax Sport Variable Speed
Serial Number	0016
Hours Since New	3.6
Hours Since Overhaul	Not Reached

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 FAKR on 8 May 2024 at 1445Z. FAKR is located 2km from the accident site.

Wind Direction	180°	Wind Speed	03kt	Visibility	9999m
Temperature	21°C	Cloud Cover	Nil	Cloud Base	Nil
Dew Point	16°C	QNH	hPa		

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 approximately 2km from FAKR.

Aerodrome Location	Krugersdorp, Gauteng Province
Aerodrome Status	Licensed
Aerodrome GPS coordinates	26°4’52” South, 27°43’32” East
Aerodrome Elevation	5 400ft
Runway Headings	8/26
Dimensions of Runway Used	9mx818m
Heading of Runway Used	26
Surface of Runway Used	Asphalt
Approach Facilities	None
Radio Frequency	122.0 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. As the pilot rolled the aircraft out of a turn, the engine stopped; he attempted to restart the engine but was unsuccessful. He conducted a precautionary landing on the farm approximately 2km north of FAKR after deducing that he would not make it to the aerodrome. During the landing roll, the left main landing gear rolled over a trench and broke off. One of the wooden propeller blades broke off.

Figure 3: The aircraft at the accident site. (Source: Operator)

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 there was no damage to the cockpit and the cabin.

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 under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.17.2. The Regulator had inspected the aircraft after its construction on 19 April 2024.

1.18. **Additional Information**

1.18.1. To be discussed in the final report.

1.19. **Useful or Effective Investigation Techniques**

1.19.1. To be discussed in the final report.

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 initially issued a National Pilot Licence (NPL) on 5 March 2019. His last licence validation was conducted on 6 March 2023 with an expiry date of 26 February 2025. The aircraft type was endorsed on the pilot's licence. The pilot was issued a Class 4 aviation medical certificate on 4 August 2023 with an expiry date of 31 August 2026.

2.2.2. The flight was conducted under the provisions of Part 94 of the CAR 2011 as amended.

2.2.3. The construction of the aircraft was approved by the Regulator on 15 March 2023 with approval number CAAD493E. The construction of the aircraft was signed off by an approved person on 17 February 2024.

2.2.4. The aircraft was first registered to the present owner on 15 February 2024. The Certificate of Release to Service (CRS) was issued by the approved person (AP) on 17 February 2024 at 0.0 airframe hours with an expiry date of 16 February 2025 or at 50 airframe hours, whichever occurs first.

2.2.5. The aircraft had a valid proving flight Authority to Fly (ATF) that was initially issued by the Regulator on 7 May 2024 with an expiry date of 6 May 2025.

2.2.6. The last annual inspection on the aircraft was conducted on 17 February 2024 at 0.0 airframe hours after construction. The aircraft had accrued 3.6 airframe hours since the last inspection.

2.2.7. The Regulator had inspected the aircraft after construction on 19 April 2024.

2.2.8 The engine stopped after the aircraft completed a turn. The pilot switched on the auxiliary fuel pump and selected individual fuel tanks but was unsuccessful to restart the engine.

3. ON-GOING INVESTIGATION

3.1. The AIID investigation is on-going, and the investigator will investigate 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