

PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10022



Figure 1: File photo of the ZU-FZZ accident aircraft. (Source: Jet photos)

Description:

On 9 July 2021, a student pilot and an instructor on-board a Sling 2 aircraft with registration mark ZU-FZZ took off from Panorama Airfield in Gauteng province to conduct solo consolidation. The student pilot completed three circuits successfully, thereafter, the instructor disembarked the aircraft and allowed the student pilot to conduct consolidation on his own. The student pilot carried out five circuit-and-landing exercises without incident. During the sixth circuit, he lost directional control during take-off and was seen flying over the road and, later, crashed onto an open field. The aircraft burst into flames and the student pilot was fatally injured. At the time of the accident, Visual Meteorological Conditions (VMC) prevailed. The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

INTRODUCTION

Reference Number : CA18/2/3/10022
Name of Owner/Operator : Johannesburg Flying Academy
Manufacturer : Sling Aircraft
Model : Sling 2
Nationality : South African
Registration Marks : ZU-FZZ
Place : Panorama Airfield, Gauteng Province
Date : 9 July 2021
Time : 0720Z

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 informed about the accident involving a Sling 2 aircraft, which occurred at Panorama Airfield, Gauteng Province, on 9 July 2021 at 0720Z. The accident was notified to the AIID's investigator-on-call (IOC) on 9 July 2021 at 0730Z.

The AIID has appointed an investigator-in-charge to conduct the investigation. The investigators were dispatched to the accident site. Notifications were sent to the State of Registry, and State of Manufacture and Design. The State of Manufacture and Design is South Africa. The AIID will lead the investigation and issue the final report.

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:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*

- *Accident — this investigated accident*
- *Aircraft — the Sling 2 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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ABBREVIATION	DESCRIPTION
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
AP	Approved Person
ATF	Authority to Fly
ATO	Approved Training Organisation
CAR	Civil Aviation Regulations
CAVOK	Ceiling and Visibility OK
CVR	Cockpit Voice Recorder
C of R	Certificate of Registration
CRS	Certificate of Release to Service
CS-VLA	Certification Standard Very Light Aircraft
E	East
FDR	Flight Data Recorder
FT	Feet
GPS	Global Positioning System
kt	Knot
m	Metre
MPI	Mandatory Periodic Inspection
nm	Nautical Mile
QNH	Query Nautical Height
RWY	Runway
S	South
SACAA	South African Civil Aviation Authority
SPL	Student Pilot Licence
TBO	Time Between Overhaul
UTC	Co-ordinated Universal Time
VMC	Visual Meteorological Conditions
VFR	Visual Flight Rules
Z	Zulu

1. FACTUAL INFORMATION

1.1. History of Flight

- 1.1.1 On Friday 9 July 2021, a student pilot and an instructor on-board a Sling 2 aircraft with registration mark ZU-FZZ took off on a solo consolidation flight from Runway (RWY) 20 at Panorama Airfield in Gauteng province. At the time of the flight, Visual Meteorological Conditions (VMC) prevailed. The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.
- 1.1.2 The student pilot carried out three circuit-and-landing exercises successfully with the instructor. Thereafter, the instructor allowed the student pilot to conduct solo circuit-and-landing exercises. The student pilot carried out five circuit-and-landing exercises on RWY 20 without incident (see Figure 2). However, on the sixth circuit, the student pilot changed circuit-to-fly from RWY 20 to RWY 02 (see Figure 3) because the wind direction had changed to a wind from the north. The aircraft landed on RWY 02 and veered off to the left. The pilot then lifted off (again) to evade trees on the left of the runway, however, the aircraft clipped the top of the trees.
- 1.1.3 An eyewitness (see position of eyewitness in Figure 4) stated that he observed the aircraft lift-off, then it made a descent, flying low over the road with the left-wing low. He then observed the aircraft striking the ground with the left-wing first, thereafter, the aircraft rolled over and the propellor struck the ground and came to rest in an inverted position. Moments later, the aircraft caught fire. The student pilot was fatally injured during the accident. The aircraft was destroyed by impact forces and a post-impact fire.
- 1.1.4 The accident occurred during daylight on an open field approximately 120 metres (m) west of RWY 02 at Panorama Airfield at the following Global Positioning System (GPS) co-ordinates: S 26°19'41.2", E 28°03'57.3" at an elevation of 5050 feet (ft).

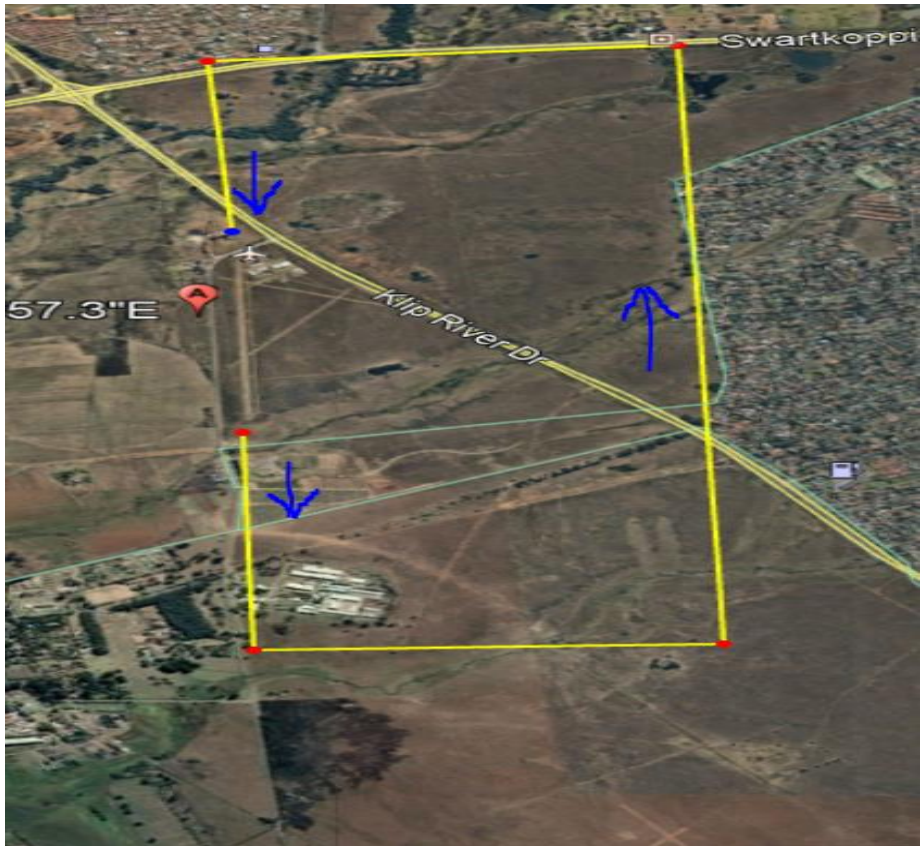


Figure 2: Runway 20 circuit. (Source: Google Earth)

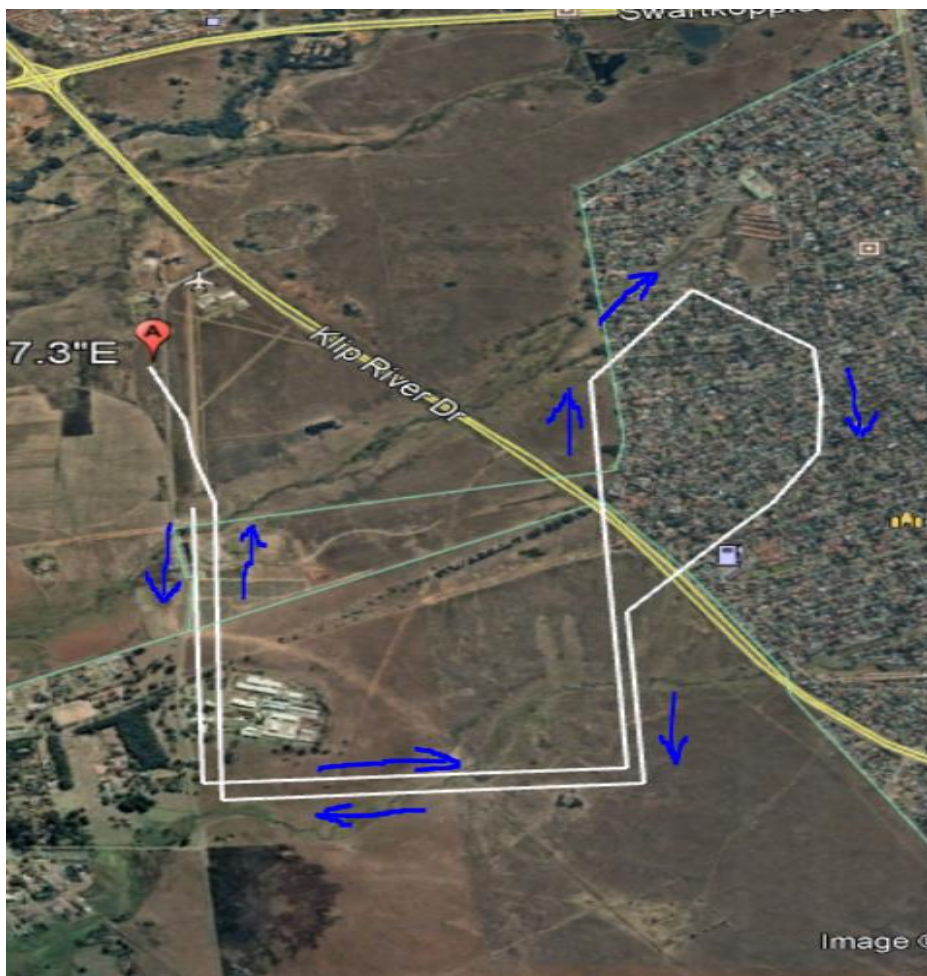


Figure 3: Pilot changed circuit to land from RWY 20 to RWY 02. (Source: Google Earth)



Figure 4: GPS location of the accident site. The human figure depicts the position of the witness.
(Source: Google Earth)

1.2. Injuries to Persons

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

Note: Other means people on ground.

1.3. Damage to Aircraft

1.3.1. The aircraft was destroyed during the accident sequence.



Figure 5: The aircraft at the accident scene post-accident.

1.4. Other Damage

1.4.1. Some trees were clipped by the aircraft during the accident sequence (see Figure 6).



Figure 6: Trees on the left-side of Runway 02 that were clipped by the aircraft.

1.5. Personnel Information

Nationality	South African	Gender	Male	Age	44
Licence Number	*****	Licence Type	SPL		
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	9 February 2023				
Restrictions	None				
Previous Accidents	None				

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

1.5.1. The pilot was issued a Student Pilot Licence (SPL) on 12 March 2021 with an expiry date of 11 March 2022. The pilot's Class 4 aviation medical certificate was issued on 9 February 2021 with an expiry date of 9 February 2023, with no restrictions.

Flying Experience:

Total Hours	25.9
Total Past 24 Hours	1.0
Total Past 7 Days	2.4
Total Past 90 Days	20.8
Total on Type Past 90 Days	20.8
Total on Type	25.9

1.5.2. The student pilot started flying on 2 March 2021 and had accumulated a total of 21.7 dual hours and 4.2 solo hours, according to his pilot logbook at the time and date of the accident.

1.6. Aircraft Information

1.6.1 Sling 2 (Source Slingaircraft.com):

The Sling 2 is a two-seat (side-by-side), single-engine, tricycle undercarriage aluminium aircraft with a conventional low wing design. The aircraft is based upon the EASA CS-VLA (Certification Standard Very Light Aircraft) standard, having a maximum all up weight of 700 kg. Designed to be a perfectly balanced aircraft, the Sling 2 is a stressed-skin, semi-monocoque aircraft made to precise standards from aviation grade aluminium, punched using CNC machines. Rugged aluminium lines combined with cutting-edge tech advances ensure that the Sling looks the way an aircraft should and flies even better.

The aircraft is fitted with a 100 hp Rotax 912 ULS which offers a time between overhauls of 2,000 hrs. The stall speed for this aircraft is 46 kts at maximum all up weight in the most forward CG configuration, with flaps fully retracted, engine idling, the aircraft will stall if flown slower than this speed. With full flaps, the stall speed is 42 kts

at maximum all up weight, engine idling the aircraft will stall if flown slower than this speed.

Airframe:

Manufacturer/Model	Sling Aircraft	
Serial Number	052	
Year of Manufacture	2019	
Total Airframe Hours (At Time of Accident)	1129.2	
Last MPI (Date & Hours)	11 June 2021	1071.5
Hours Since Last MPI	57.7	
Authority to Fly (Issue Date)	12 April 2018	
Authority to Fly (Expiry Date)	30 April 2022	
C of R (Issue Date) (Present Owner)	13 December 2016	
Type of Fuel Used in the Aircraft	MOGAS 95	
Operating Categories	Part 141 (Training)	
Previous Accidents	None	

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

1.6.2 The last maintenance inspection prior to the accident flight was carried out on 11 June 2021 at 1071.5 airframe hours. The aircraft was issued a Certificate of Release to Service (CRS) on 11 June 2021 with an expiry date of 10 June 2022 or at 1171.45 hours, whichever occurs first. The aircraft further flew 57.7 hours.

Engine:

Manufacturer/Model	Rotax 912 ULS
Serial Number	6781920
Hours Since New	1129.2
Hours Since Overhaul	TBO not reached

Propeller:

Type	Warp drive
Serial Number	T13989
Hours Since New	1129.2
Hours Since Overhaul	TBO not reached

1.7. Meteorological Information

1.7.1 The weather information below was obtained from the South African Weather Service (SAWS) for Panorama Airfield (Gauteng) on 9 July 2021 at 0730Z.

Wind Direction	290	Wind Speed	6 kts	Visibility	9999m
Temperature	16°C	Cloud Cover	CAVOK	Cloud Base	CAVOK
Dew Point	1°C	QNH	1030hPa		



Figure 7: The windsock showing an approximate 11 knot northerly wind at 0919LT (0719Z).
(Source: Aviation Webcams)

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 standard communication equipment as approved by the Regulator. No defects that could render the communication system unserviceable were recorded before the flight.

1.10. Aerodrome Information

1.10.1 The accident occurred during daylight on an open field approximately 120m west of RWY 02 at Panorama Airfield at the following GPS co-ordinates: S26°19'41.2", E28°03'57.3" at an elevation of 5050ft.

Aerodrome Location	Panorama Airfield Gauteng
Aerodrome Status	Licensed
Aerodrome Co-ordinates	S26°19'42" E028°04'07"
Aerodrome Altitude	5050 feet
Runway Headings	20/02
Runway Dimensions	974m X 20 m
Runway Used	20
Runway Surface	Grass
Approach Facilities	None
Radio Frequency	124.400

1.10.2 The pilot changed the circuit-to-fly from RWY 20 to 02 in accordance with the rules of Panorama Airfield.

<p>8. Shall comply with any instruction given by any member of Panorama Flight Park regarding safety at the airfield.</p> <p>9. Adhere to proper circuit procedures as set out by Panorama Flight Park.</p> <p style="text-align: center;">Circuit joining procedure as follows:</p> <ul style="list-style-type: none"> • Join overhead at 6300` • Descend on dead side to fixed wing/ light Aircraft 5800` , Microlight 5500` • Circuits: 02/20: Microlights and LSA to East, including students Faster Aircraft to West. (be aware of radio control airfield near threshold of 20 NW of the field.) 05/23 and 12/30: to South (Away from hangers.)

Figure 8: Circuit rules at Panorama Flight Park. (Source: Panorama Flight Park Rules)

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 this aircraft type.

1.12. Wreckage and Impact Information

1.12.1 The first set of ground scars were observed towards the left of RWY 02, indicating that the aircraft had veered off to the left of RWY 02 (see Figure 9). The ground scars (landing gear lines) stopped (ended) a few metres before the trees, while the tops of trees were severed, indicating that the aircraft had been airborne at this phase (see Figure 6 and Figure 10. Red aircraft is for illustrative purposes only).



Figure 9: The first ground scar shows that the aircraft had veered off to the left after touchdown before taking power for next circuit.



Figure 10: The second ground scars show the aircraft rolling before lift-off, with the student pilot attempting to avoid collision with the trees. (Aircraft figure source: 3D library)

1.12.2 Further ground scars were observed 120m west of RWY 02. The aircraft first made impact with the ground with its left wing. The second ground scar was made by the propeller 8m away. The aircraft finally came to rest in an inverted position before it caught fire (see Figure 11).



Figure 11: The first ground scar made by the left wing.



Figure 12: The left-wing that made contact with the ground first shows signs of impact damage on the wing tip.



Figure 13: The second ground scar caused by the engine propeller blades.

1.13. Medical and Pathological Information

1.13.1 To be discussed in the final report.

1.14. Fire

1.14.1 There was a post-impact fire which consumed the aircraft.

1.15. Survival Aspects

1.15.1 The accident was considered not survivable due to the speed at impact before rolling over and finally resting on its roof. The aircraft then caught fire.

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 aircraft was maintained by Sling Aircraft in accordance with Part 44 of the Civil Aviation Regulations (CAR) 2011 as amended, as well as aircraft maintenance manuals.

1.17.2. The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended. The training school was issued an Approved

Training Organisation Certificate on 27 August 2020 with an expiry date of 31 August 2025. According to the reviewed records, the aircraft type was endorsed on the ATO certificate, and the school was approved to conduct training.

1.17.3. The approved person (AP) who performed the last mandatory maintenance inspection (MPI) on the aircraft prior to the accident flight was in possession of an aircraft maintenance organisation (AMO) approval certificate. The AP was issued an Approved Person certificate on 9 October 2019 with an expiry date of 8 October 2021. According to the reviewed records, the aircraft type was endorsed on his certificate and he was rated on this aircraft type.

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 particular 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.

2.1.1 The student pilot started flying on 2 March 2021 and had accumulated a total of 21.7 dual hours and 4.2 solo hours according to his pilot logbook at the time and date of the accident. The pilot was issued a SPL on 12 March 2021 with an expiry date of 11

March 2022. The pilot's Class 4 aviation medical certificate was issued on 9 February 2021 with an expiry date of 9 February 2023, with no restrictions.

- 2.1.2 The aircraft was issued an Authority to Fly (ATF) on 12 April 2018 with an expiry date of 30 April 2022.
- 2.1.3 The aircraft was issued a Certificate of Registration (C of R) on 13 December 2016.
- 2.1.4 The last MPI was conducted on 11 June 2021 at 1071.5 airframe hours and the aircraft had flown a total of 57.7 hours since its last MPI. The aircraft was issued a Certificate of Registration to Service (CRS) on 11 June 2021 with an expiry date of 10 June 2022 or at 1171.45 hours, whichever occurs first.
- 2.1.5 The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended. The training school was issued an ATO certificate on 27 August 2020 with an expiry date of 31 August 2025. According to the reviewed records, the aircraft type was endorsed on the ATO certificate, and the school was approved to conduct training.
- 2.1.6 The AP who performed the last MPI on the aircraft prior to the accident flight was in possession of an AMO approval certificate. The AP was issued an Approved Person Certificate on 9 October 2019 with an expiry date of 8 October 2021. According to the reviewed records, the aircraft type was endorsed on his certificate and he was rated on this aircraft type.
- 2.1.7 No evidence of pre-existing failures could be found on the aircraft during an on-site investigation and wreckage examination post-accident.
- 2.1.8 The weather at the time of the accident was recorded as follows: Wind: 360° at 11 knots (kts); Visibility: 9999m; Cloud: ceiling and visibility okay (CAVOK); Temperature: 11°C.
- 2.1.9 The student pilot carried out three circuits successfully with the instructor. The student pilot was then allowed by his instructor to conduct solo circuit-and-landing exercises. The student pilot carried out five circuit-and-landing exercises on RWY 20 without any incident. On the sixth circuit, the student pilot changed the circuit direction to fly circuits using RWY 02 because the wind was coming from the north.
- 2.1.10 During inspection of the runway (RWY 02), it was noted that the pilot had an unstable take-off because of the ground scars (see Figures 9 and 10).

3. ON-GOING INVESTIGATION

3.1 The AIID investigation is on-going and the investigator/s 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**