Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10178

Figure 1: Aircraft type Sling 2 (Source:Jetphotos.com)

Description:

On 25 June 2022, a pilot and a passenger on-board a Sling 2 aircraft with registration ZU-WCG were engaged on a private night navigation flight. The aircraft took off from Gqeberha International Airport (FAPE), Eastern Cape province, to Buyskloof general flying area, towards the north-east of the aerodrome, with the intention to land back at FAPE.

The last communication with FAPE air traffic control (ATC) was during their departure in which the pilot reported that he intended to conduct a two-hour flight at approximately 1545Z. According to the radar recordings, at approximately 1648Z the aircraft was flying in the vicinity of Buyskloof with its altitude reducing from 3100 feet (ft) until it reached 600ft at approximately 1650Z, and the aircraft disappeared from radar.

The Distress Phase (DETRESFA) was activated and a search for the missing aircraft was communicated to all relevant parties. The aircraft was located by the South African National Defence Force Air Force helicopter the next morning at approximately 0604Z in a dense terrain, about 1 nautical mile (nm) from the position it had disappeared from the radar. Both occupants were fatally injured, and the aircraft was destroyed during the accident sequence.

Occurrence Details

Reference Number	**:** CA18/2/3/10178
Occurrence Category	**:** Category 1
Type of Operation	**:** Private (Part 91)
Name of Operator	**:** Private (hire-and-fly)
Aircraft Registration	**:** ZU-WCG
Aircraft Make and Model	**:** Airplane Factory SA/ Sling 2
Nationality	**:** South African
Registration Marks	**:** ZU-WCG
Place	**:** 70 kilometres (km) east of FAPE, Eastern Cape province
Date and Time	**:** 25 June 2022
Injuries	**:** 1+1
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 Sling 2 aircraft, which occurred at Essenwood Dairy Farm, Eastern Cape province, on 25 June 2022 at 1650Z. 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 conduct the full investigation. Notifications were sent to the State of Registry/Operator/Design/Manufacturer in accordance with CAR 2011 Part 12 and ICAO Annex 13 Chapter 4. The AIID will lead the investigation and issue the final report of this accident in accordance with 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:

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

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
ACCID	Accident
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
AMSL	Above Mean Sea Level
ATC	Air Traffic Controller
CAA	Civil Aviation Authority
CAVOK	Cloud and Visibility Ok
CoA	Certificate of Airworthiness
CoR	Certificate of Registration
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
DETRESFA	Distress Phase
ECU	Engine Control Unit
FAPE	Gqeberha International Airport
FDR	Flight Data Recorder
Ft	Feet
GFA	General Flying Area
GPS	Global Positioning System
hPa	Hectopascal
kt	Knots
LSA	Light Sport Aircraft
m	Metres
N/A	Not Applicable
nm	Nautical Mile
METAR	Meteorological Aerodrome Report
PPL	Private Pilot Licence
QNH	Altitude Above Mean Sea Level
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
SAPS	South African Police Service
TSI	Technical Service Instructions
VFR	Visual Flight Rules
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 Saturday, 25 June 2022, a pilot accompanied by a passenger on-board a Sling 2 aircraft with registration ZU-WCG took off on a night navigation flight from Gqeberha International Airport (FAPE) in the Eastern Cape province, with the intention to land back at the same aerodrome. The passenger had a private pilot license. The aircraft was a hire-and-fly, and the flight was for hour building towards the pilot's Commercial Pilot Licence (CPL). The flight was conducted under visual meteorological conditions (VMC) by night and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.1.2 According to the chief flight instructor, the pilot intended to fly for two hours, and he did not file the flight plan. The aircraft had a fuel endurance of about seven hours at take-off. At approximately 1545Z, the aircraft was cleared for take-off by FAPE air traffic control (ATC). According to the ATC and the radar recordings, the crew requested clearance for take-off at approximately 1546Z and to route to Buyskloof. There was no further communication between the pilot and the FAPE ATC during the course of the flight. The radar recordings showed the aircraft flying in the vicinity of Buyskloof at approximately 1648Z whilst its altitude was reducing from 3100 feet (ft) to 2200ft above mean sea level (AMSL). The aircraft's altitude continued to reduce until it reached 600ft AMSL at about 1650Z before it disappeared from the radar.

1.1.3 The Distress Phase (DETRESFA) was activated and a search for the missing aircraft was communicated to the investigation authorities, Mountain Climbing Search and Rescue, the South African Police Service (SAPS) and the South African National Defence Force. The aircraft was located by the South African National Defence Force Air Force helicopter the next morning at approximately 0604Z in a bushy terrain, about 1 nautical mile (nm) from the position contact was lost on the radar. Both occupants were fatally injured, and the aircraft was destroyed during the accident sequence.

1.1.4 The aircraft accident occurred during night meteorological conditions at Essenwood Dairy Farm, situated approximately 16nm north-east of FAPE at GPS co-ordinates determined to be S 33°38'26.79" E 026°0'44.85" at a field elevation of 750ft.

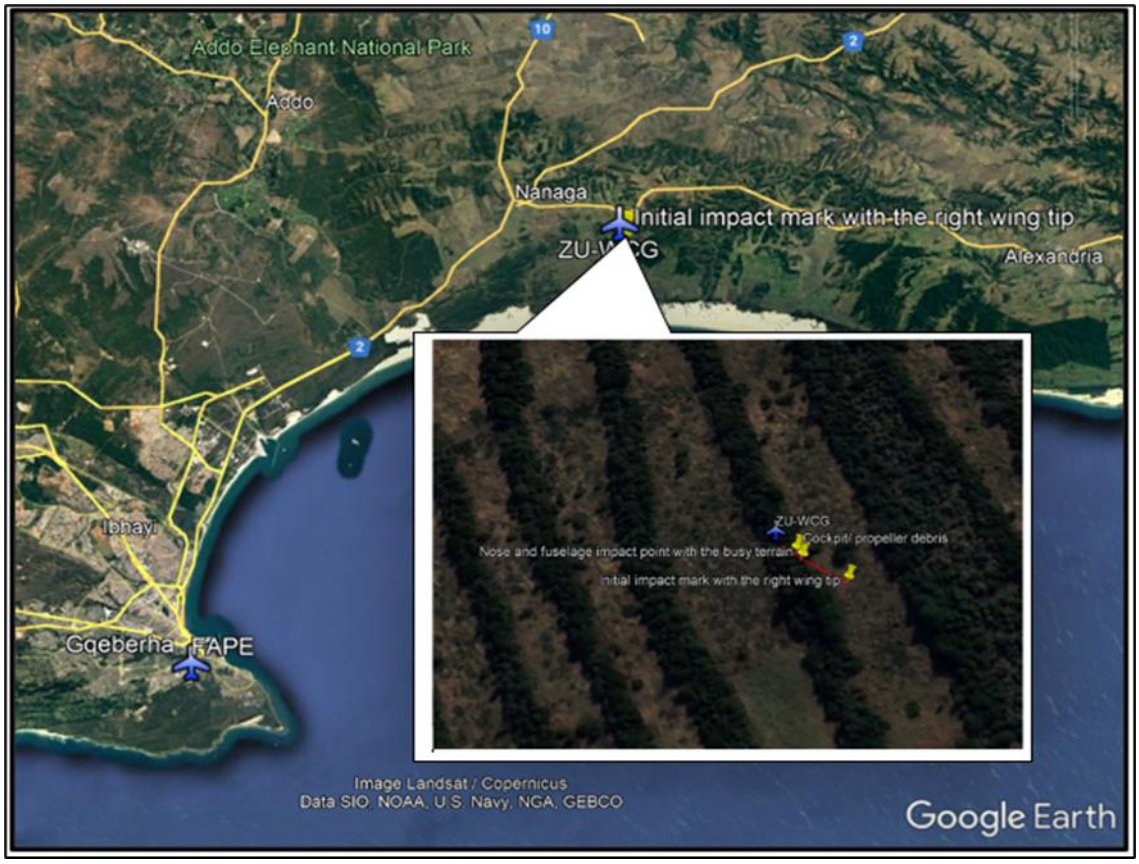

Figure 2: View of the accident site. (Source: Google Earth)

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 pilot and the passenger were both foreign nationals who were also members of the area's flying club.

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed during the accident sequence.

Figure 3: Arial view of the aircraft wreckage at the accident site. (Source: SAPS)

1.4 Other Damage

1.4.1 None.

1.5 Personnel Information

Nationality	South Sudan	Gender	Male	Age	33
Licence Type	Private Pilot Licence (PPL) Aeroplane				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Night				
Medical Expiry Date	31 December 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	85.5
Total Past 24 Hours	1.0
Total Past 7 Days	1.8
Total Past 90 Days	1.8
Total on Type Past 90 Days	1.8
Total on Type	11.7

1.5.1 The pilot was initially issued a Private Pilot Licence (PPL) by the Regulator (SACAA) on 2 June 2017. His renewed licence was reissued by the Regulator on 17 January 2022 with an expiry date of 31 January 2023. His Class 2 medical certificate was issued on 11 December 2019 with an expiry date of 31 December 2024 with no restrictions. The aircraft type involved in the accident was endorsed on his licence.

1.6 Aircraft Information

1.6.1 A Sling 2 aircraft is a two-seat light sport aircraft (LSA) manufactured in South Africa. The aircraft features a low wing and is equipped with a single Rotax 912iS engine and a fixed tricycle landing gear.

Airframe:

Manufacturer/Model	The Airplane Factory/ Sling 2	
Serial Number	094	
Year of Manufacture	2012	
Total Airframe Hours (At Time of Accident)	2472	
Last Inspection (Date & Hours)	5 May 2022	2404.5
Hours Since Last Inspection	67.5	
CRS Issue Date	5 May 2022	
C of ATF (Issue Date & Expiry Date)	27 October 2021	31 October 2022
C of R (Issue Date) (Present Owner)	3 July 2015	
Type of Fuel Used	Avgas 100	
Operating Category	Part 91	
Previous Accidents	5 July 2021 (Engine failure during flight)	

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

Engine:

Manufacturer/Model	Rotax/ 912iS
Serial Number	4417284
Part Number	N/A
Hours Since New	2472
Hours Since Overhaul	343.3

Propeller:

Manufacturer/Model	Airmaster/ AP 332
Serial Number	T15335
Part Number	N/A
Hours Since New	1048.2
Hours Since Overhaul	N/A

1.6.2 A preliminary review of the aircraft maintenance records such as logbooks (airframe, engine and propeller), flight folio and defect records were carried out, which revealed that all airframe and engine/manufacturer-published service bulletins, service instructions and technical service instructions (TSI) were adhered to by both the operator and the maintenance organisation that serviced the aircraft.

1.6.3 The aircraft had a valid Authority to Fly certificate issued by the Regulator on 27 October 2021 with an expiry date of 31 October 2022.

1.6.4 The latest annual inspection maintenance conducted on the aircraft was on 5 May 2022 and the aircraft maintenance organisation (AMO) issued the aircraft a Certificate of Release to Service on 5 May 2022 at 2404.5 airframe hours with an expiry date of 5 May 2023 or at 2499.8 airframe hours, whichever comes first.

1.6.5 The AMO that serviced the aircraft had an AMO approval certificate issued by the Regulator on 26 November 2021 with an expiry date of 30 November 2022.

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 on 25 June 2022 at 1851Z at FAPE, which is located 70 kilometres from the accident site.

Wind Direction	350°	Wind Speed	05kt	Visibility	CAVOK
Temperature	11.5°C	Cloud Cover	None	Cloud Base	None
Dew Point	Unknown	QNH	1023.5hPa		

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 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 The aircraft accident occurred at Essenwood Dairy Farm in the Eastern Cape province, approximately 16nm north-east of FAPE at GPS position: S 33°38'26.79" E 026° 0'44.85" and at a field elevation of 750ft.

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 The aircraft accident occurred at a private dairy farm situated approximately 16nm north-east of FAPE in a dense terrain (tree congestion). The accident site was not easily accessible due to the dense terrain. The wreckage distribution was within a radius of approximately 50 metres (m). The aircraft's structure and all components were accounted for at the accident site.

1.12.2 Wreckage and accident site observation:

- The accident site had a ground mark – the single line that extended approximately 45m towards the position where the main wreckage was located.
- Along the ground mark line, there was evidence of composite material with paint colour markings that were consistent with the colours on the right-wing tip. Two large pieces of composite skin material were found along the same line, about 10m from the first point of impact towards the position of the main wreckage.

Figure 4: The ground mark of the right wing and the composite material.

1.12.3 The second impact point was with the nose section at a high forward speed and in the much denser terrain. The aircraft's cockpit door was found in this area, as well as the propeller and some cockpit debris.

Figure 5: The second impact point as well as some cockpit debris.

1.12.4 After the second impact, the aircraft tumbled over before it came to a full stop; it was found resting on thick vegetation in a tail-high attitude.

Figure 6: The wreckages at the accident site.

1.12.5 The aircraft's nose section and the cockpit were disintegrated. The right-side cockpit seat was uprooted (pulled out) from its anchor in the aircraft due to impact and was found a few metres away from the wreckage, with the passenger's body close-by. The right-side seat belt and harness were found still latched on the seat. The pilot was trapped on his

seat on the left-side of the wreckage with the seat belt still strapped on. The nose landing gear and the engine were located just behind the aircraft's left wing.

Figure 7: The left-side view of the aircraft wreckage.

1.12.6 Both wings sustained extensive damage during the accident sequence. The right-side wing exhibited damage on the tip and the leading-edge, which extended to the trailing edge. The damage was consistent with a collision at a high forward speed. The right-side wing's main spar was bent in the middle section towards the fuselage.

Figure 8: The damage on the right-side wing.

Figure 9: Damage on the outer part of the left-side wing.

1.12.7 The left-side wing exhibited damage which was consistent with collision with the outer part of the wing's leading edge. The damage was mostly on the outer part of the wing.

1.13 Medical and Pathological Information

1.13.1 To be discussed in the final report.

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 not survivable as the cockpit structure was destroyed on impact. Both occupants had made use of the aircraft's safety harnesses, the pilot was fastened. The passenger was thrown out of the wreckage during the accident sequence.

1.16 Tests and Research

1.16.1 The aircraft's engine control unit (ECU) manufactured by MGL Avionics with serial number iE121200125 was recovered from the site and was sent for data download and analysis. The results of the report will 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 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.17.2 On the day of the accident, the aircraft was operated as a hire-and-fly by the pilot who was also a member of the area's flying club. The flight was intended for night navigation hour building towards his CPL.

1.17.3 The AMO that conducted maintenance on the aircraft had an AMO approval certificate issued by the Regulator on 26 November 2021 with an expiry date of 30 November 2022.

1.18 Additional Information

1.18.1 A video footage of the last radar tracking from one member of the search and rescue team was shared with the investigating team. The contents were consistent with the ATC's radar recordings, indicating the same route and location of the wreckage.

1.18.2 The following information is an extract from the Aeronautical Information Publication (AIP):

Distress Phase (DETRESFA) A situation wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger and require immediate assistance or has crashed. This phase will be declared when: a) Attempts made during the alert phase to establish contact with the aircraft and to gain information through more widespread enquiries have failed and the aircraft is clearly missing and probably in distress; b) The fuel on board is considered exhausted or insufficient for the aircraft to reach safety; c) Information is received which indicates that the operating efficiency of the aircraft has become impaired to the extent that a forced landing is likely; d) Information is received, or it is reasonably certain that the aircraft is about to make or has made a forced landing, or has crashed; e) The transmission of MAYDAY-MAYDAY-MAYDAY!) A downed aircraft is inadvertently located as the result of a sighting or of homing on an ELT transmission.

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 initially issued a Private Pilot Licence (PPL) by the Regulator on 2 June 2017. His renewed licence was issued by the Regulator on 17 January 2022 with an expiry date of 31 January 2023. His Class 2 medical certificate was issued on 11 December 2019 with an expiry date of 31 December 2024 with no restrictions. The aircraft type was endorsed on his licence.

2.2.2 The aircraft had a valid Authority to Fly certificate issued by the Regulator on 27 October 2021 with an expiry date of 31 October 2022.

2.2.3 The latest annual inspection maintenance conducted on the aircraft was on 5 May 2022 in which the AMO issued the aircraft a Certificate of Release to Service on 5 May 2022 at 2404.5 airframe hours with an expiry date of 5 May 2023 or at 2499.8 airframe hours, whichever comes first.

2.2.4 The AMO that serviced the aircraft had an AMO-approval certificate issued by the Regulator on 26 November 2021 with an expiry date of 30 November 2022.

2.2.5 The flight was conducted in accordance with the provisions of Part 91 of the CAR 2011 as amended. On the day of the accident, the aircraft was operated as a hire-and-fly by the pilot who was also a member of the area's flying club. The intention of the flight was for night navigation hour building towards the pilot's CPL.

2.2.6 The aircraft lost contact with FAPE ATC radar when it was at an altitude of 600ft.

2.2.7 The aircraft was located the next morning with both occupants fatally injured.

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