

UAS LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10344						
Classification	Accident	Date	4 July 2023		Time	2202Z	
Type of Operation	Remotely Piloted Aircraft System (Part 101)						
Location							
Place of Departure	Panbult near Piet Retief, Mpumalanga Province		Place of Intended Landing	Panbult near Piet Retief, Mpumalanga Province			
Place of Occurrence	Open field in Panbult near Piet Retief, Mpumalanga Province						
GPS Co-ordinates	Latitude	26°49'.38" S	Longitude	30°29'.05" E	Elevation	4 725 feet	
Aircraft Information							
Registration	ZT-XRX		Class	3A			
Make; Model; S/N	Arace Sirin (Serial Number: SIR0038)						
Damage to UAS	Substantial			Total UAS Hours	819.19		
Pilot-in-command							
Licence Type	Remote Pilot Licence (RPL)		Gender	Male	Age	33	
Licence Valid	Yes	Total Hours	282.35		Total Hours on Type	97.45	
Total Hours Past 90 Days	97.45		Total Flying Hours on Type Past 30 Days	35.2			
People Controlling	1	Injuries	0	Fatalities	0	Other (on ground)	0
What Happened							
<p>On Tuesday, 4 July 2023, a pilot launched the unmanned aircraft system (UAS) Arace Sirin with registration ZT-XRX to inspect the railway lines in Panbult near Piet Retief, Mpumalanga province, with the intention to return to the take-off launch. The flight was conducted under beyond visual line of sight (BVLOS) rules by night and under the provisions of Part 101 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot reported that he conducted a pre-flight inspection, and no anomalies were noted on the UAS. The pre-flight checks included checking for the UAS's software updates and confirming that the battery voltage was full. The pilot launched the UAS at 2100Z and it climbed to 200 metres (m) above ground level (AGL), travelling at a speed of 6 metres per second (m/s). After 1 hour and 2 minutes of flight time whilst on its return to the launch area, the UAS experienced a gust of wind and, as a result, the pilot decided to land the UAS on an open field, approximately 350 metres (m) from the launch area. The pilot reported that as he initiated the land mode, the UAS lost signal. Later, the pilot drove to the last location recorded on the remote pilot station and found the UAS crashed on the ground with substantial damage. No people on the ground were injured, and no damage to property was caused.</p>							

The accident occurred during nighttime at Global Positioning System (GPS) co-ordinates determined to be 26°49'.38" South 30°29'.05" East, at an elevation of 4 725 feet (ft).

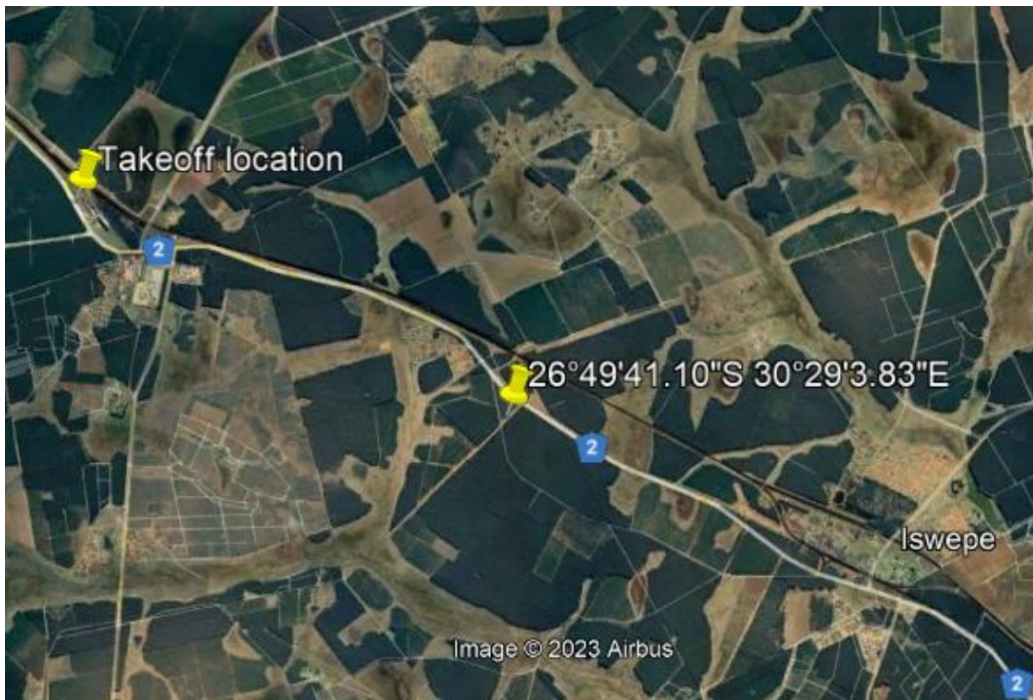


Figure 1: The take-off location and the accident site. (Source: Operator)



Figure 2: The UAS at the accident site. (Source: Operator)

Weather Information

The weather conditions estimated by the pilot at the take-off point were as follows:

Wind Direction	80°	Wind Speed	5 – 10 knots	Visibility	> 10km
Temperature	3°C	Cloud Cover	None	Cloud Base	Nil
Dew Point	N/a	QNH	N/a		

Findings

1. The pilot was initially issued a Remote Pilot Licence (RPL) by the South African Civil Aviation Authority (SACAA) on 27 July 2022 with an expiry date of 26 July 2024.
2. The pilot had a valid Class 3 aviation medical certificate that was issued on 18 June 2022 with an expiry date of 30 June 2026.
3. The pilot had flown a total of 282.35 hours of which 97.45 hours were on the UAS type.
4. The pilot was properly licensed and medically fit to conduct the flight in accordance with the existing regulations.
5. No person was injured on the ground during the accident sequence.
6. Fine weather conditions prevailed at the time of the flight.
7. The last maintenance inspection on the UAS prior to the accident flight was certified on 25 June 2023 at 792 hours and 10 minutes. The UAS was flown a further 27 hours and 9 minutes since the last inspection.
8. The UAS was issued a Remotely Piloted Aircraft Systems Letter of Approval (RLA) by the SACAA on 17 January 2023 with an expiry date of 1 February 2024.
9. The operator was issued the Remotely Piloted Aircraft Systems Operating Certificate (ROC) on 21 June 2023 with an expiry date of 20 June 2024.
10. The UAS Certificate of Registration was issued to the present owner on 23 November 2021.
11. The UAS's technical records indicated that the aircraft was properly certificated and maintained in accordance with the Civil Aviation Regulations (CAR) 2011.
12. During the interview, the pilot indicated that the flight logs were not downloaded after the accident.
13. The Arace Sirin manual states that the model has a battery endurance of up to 85 minutes with more than 40 kilometres (km) coverage in a single flight.

Probable Cause

The UAS disconnected from the remote pilot station unit during the flight, whereafter it entered an uncontrolled descent and crashed on the ground. The cause of the disconnection could not be determined.

Contributing Factor(s)

None.

Safety Action(s)

None.

Safety Message and/or Safety Recommendation/s
None.
About this Report
<p><i>The decision to conduct a limited investigation is based on factors including whether the cause is known and the evidence supporting the cause is clear, the level of safety benefit likely to be obtained from an investigation and that will determine the scope of an investigation. For this occurrence, a limited investigation has been conducted, and the Accident and Incident Investigations Division (AIID) has relied on the information submitted by the affected person/s and organisation/s to compile this limited report. The report has been compiled using information supplied in the initial notification, as well as from follow-up desk top enquiries to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as possible safety action/s that the industry might want to consider in preventing a recurrence of a similar occurrence.</i></p> <p><i>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.</i></p>
Purpose
<p><i>In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011 and ICAO Annex 13, 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.</i></p>
Disclaimer
<p><i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i></p>

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