

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10297						
Classification	Accident	Date	29 April 2023		Time	2000Z	
Type of Operation	Remotely Piloted Aircraft System – Surveillance (Part 101)						
Location							
Place of Departure	Vrede, Free State Province		Place of Intended Landing	Vrede, Free State Province			
Place of Occurrence	Vrede, Free State Province						
GPS Co-ordinates	Latitude	27° 27' 9.66" S	Longitude	029° 9' 2.93" E	Elevation	5560 ft	
Aircraft Information							
Registration	ZT-XVM						
Make; Model; S/N	Arace Sirin (Serial Number: SR0053)						
Damage to Aircraft	Substantial			Total Aircraft Hours	679.22		
Pilot-in-command							
Licence Type	Remote Pilot Licence (RPL)		Gender	Male		Age	30
Licence Valid	Yes	Total Hours	208.1		Total Hours on Type	208.1	
Total Hours Past 90 Days	88.2		Total Flying Past 90 Days on Type	88.2			
People Controlling	1	Injuries	0	Fatalities	0	Other (on ground)	0
What Happened							
<p>On Saturday evening, 29 April 2023, a pilot controlling a remotely pilot aircraft (RPA) with registration ZT-XVM was engaged in aerial surveillance in Vrede, Free State province. Visual meteorological conditions (VMC) by night prevailed at the time of the flight. The flight was conducted under beyond visual line of sight (BVLOS) rules and under the provisions of Part 101 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>According to the pilot, a pre-flight inspection was conducted on the RPA with no anomalies found. At 1950Z, the RPA was launched to 150 feet (ft) above ground level (AGL) with 98% battery power.</p> <p>Upon reaching the set height, the pilot switched off the RPA’s navigational lights as part of the procedure for stealth approach during surveillance. At approximately 2000Z whilst the RPA was 4 kilometres (km) from the launch site, the pilot’s controller unit displayed the message “potential loss of thrust”. Immediately following the message, the RPA signal disconnected. The pilot tried to reconnect but with no success. The RPA did not return to home, which is a failsafe mode of the RPA. The pilot drove to the last known location as indicated in the controller unit and found the RPA crashed</p>							

with substantial damage to the propellers, one motor arm and the landing gear. No injuries were reported on the ground.



Figure 1: The Arace Sirin post-accident. (Source: Operator)

The RPA log analysis report was not available post-accident because the RPA's memory card was full, even though it was wiped clean 58 hours prior during the Mandatory Periodic Inspection (MPI) as per the operator's service schedule.

Findings

- The pilot was issued a Remote Pilot Licence (RPL) with a visual line of sight (VLOS) rating on 18 October 2022 with an expiry date of 31 October 2024. The pilot also had a beyond visual line of sight (BVLOS) rating endorsed on his licence, issued on 3 January 2023 with an expiry date of 31 October 2024.
- The pilot was issued a Class 3 medical certificate on 27 August 2022 with an expiry date of 31 August 2026 with no medical restrictions.
- The operator was issued a Remotely Piloted Aircraft System Operating Certificate (ROC) no. CAA/G1291D on 31 October 2022 with an expiry date of 31 October 2023.
- The operator was issued a Certificate of Registration (C of R) on 25 January 2022.

- The RPA was initially issued a Remotely Piloted Aircraft System Letter of Approval (RLA) on 7 April 2022, which was renewed on 27 February 2023 with an expiry date of 6 April 2024.
- The RPA had 16.07 hours until the next Mandatory Periodic Inspection (MPI) at the time of the accident.
- The operator failed to ensure the serviceability of the memory card prior for the intended operation because the card was full at the time of the flight; therefore, the cause of accident or loss of link could not be determined.

Probable Cause(s)

The RPA lost forward thrust and disconnected from the controller unit and crashed. The cause for loss of thrust could not be determined as the RPA's memory card was full prior to the flight.

Contributing Factor(s)

None.

Safety Action

The operator will be using memory cards with a higher storage capacity.

Safety Message

Operators and pilots are to ensure that they have enough memory card space for every flight intended.

About this Report

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.

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.

Purpose

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.

Disclaimer

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