

UAS LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

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| Reference Number | CA18/2/3/10343 | | | | | | |
| Classification | Accident | Date | 29 June 2023 | Time | 1723Z | | |
| Type of Operation | Remotely Piloted Aircraft Systems – Aerial Survey (Part 101) | | | | | | |
| Location | | | | | | | |
| Place of Departure | Sasol Syferfontein Mine in Secunda, Mpumalanga Province | | Place of Intended Landing | Sasol Syferfontein Mine in Secunda, Mpumalanga Province | | | |
| Place of Occurrence | Sasol Syferfontein Mine in Secunda, Mpumalanga Province | | | | | | |
| GPS Co-ordinates | Latitude | 26°41'54" S | Longitude | 029°20'59" E | Elevation | 5315 ft | |
| Aircraft Information | | | | | | | |
| Registration | ZT-XXM | | Class | 3A | | | |
| Make; Model; S/N | Arace Sirin (Serial Number: SIR0077) | | | | | | |
| Damage to Aircraft | Substantial | | Total UAS Hours | 653.58 | | | |
| Pilot-in-command | | | | | | | |
| Licence Type | Remote Pilot Licence (RPL) | | Gender | Male | Age | 29 | |
| Licence Valid | Yes | Total Hours | 750.22 | Total Hours on Type | 750.22 | | |
| Total Hours 30 Days | 82.32 | | Total Flying on Type Past 90 Days | 250.73 | | | |
| People Controlling | 1 | Injuries | 0 | Fatalities | 0 | Injuries (On ground) | 0 |
| What Happened | | | | | | | |
| <p>On Thursday evening, 29 June 2023, an unmanned aircraft system (UAS) with registration ZT-XXM was engaged in an aerial survey operation at Sasol Syferfontein Mine in Secunda, Mpumalanga province, when the accident occurred. 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>The pilot stated that he conducted pre-flight checks on the UAS with no anomalies detected. Thereafter, he launched the UAS at 1719Z, which climbed to 120 feet (ft) (36m) above ground level (AGL) to conduct after take-off checks whilst the UAS was on hover mode. A few minutes later, the remote pilot station screen display became intermittent before it shut off completely. After a few seconds, the remote pilot station screen came back 'on'; it displayed a 'GPS glitch error' message. As the pilot tried to land the UAS slowly, the UAS entered an uncontrolled fast descent and crashed. The UAS sustained damage to the propellers, camera and the landing gear. There were no reported injuries to persons on the ground.</p> | | | | | | | |



Figure 1: A view of the accident site. (Source: Google Earth)



Figure 2: The aircraft after the accident. (Source: Operator)



Figure 3: A similar type Arace Sirin UAS. (Source: araceuas.com)

Findings

1. The pilot was issued a Remote Pilot Licence (RPL) by the Regulator (SACAA) on 15 November 2021 with an expiry date of 31 December 2023. The pilot had a BVLOS rating which was endorsed on his licence.
2. The pilot's Class 3 medical certificate was issued on 11 February 2022 with an expiry date of 28 February 2027.
3. The UAS was issued an Unmanned Aircraft Systems Letter of Approval (LOA) by the Regulator on 11 April 2022. The LOA was reissued on 10 February 2023 with an expiry date of 11 April 2024.
4. The UAS mandatory periodic inspection (MPI) was conducted on 1 June 2023 at 609.55 hours. The UAS was operated a further 62.03 minutes at the time of the accident. The UAS Certificate of Registration (C of R) was issued to the current owner on 10 February 2022.
5. The remote maintenance technician (RMT) who conducted the last inspection was initially issued a RMT Licence (RMTL) by the Regulator (SACAA) on 27 March 2018. The RMTL was reissued on 27 July 2022 with an expiry date of 26 July 2024.

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| <p>6. The operator had an Unmanned Aircraft Systems Operating Certificate (ROC) that was issued by the Regulator on 31 October 2022 with an expiry date of 31 October 2023. The operation specification of the UAS type was endorsed on the ROC with an effective date of 10 November 2022.</p> <p>7. The Arace Sirin is a vertical take-off multirotor with an endurance of up to 85 minutes.</p> |
| <p>Probable Cause(s)</p> <p>Interrupted remote pilot station screen display, followed by loss of control and the subsequent crash of the UAS.</p> |
| <p>Contributing Factor(s)</p> <p>Incorrect disarming procedure.</p> |
| <p>Safety Action(s)</p> <p>None.</p> |
| <p>Safety Message and/or Safety Recommendation/s</p> <p>None.</p> |
| <p>About this Report</p> <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> |
| <p>Purpose</p> <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> |
| <p>Disclaimer</p> <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