

**LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL**

<b>Reference Number</b>	CA18/2/3/10304						
<b>Classification</b>	Accident	<b>Date</b>	8 May 2023		<b>Time</b>	2147Z	
<b>Type of Operation</b>	Remotely Piloted Aircraft System – Surveillance (Part 101)						
<b>Location</b>							
Place of Departure	Vryheid, KwaZulu-Natal Province		Place of Intended Landing	Vryheid, KwaZulu-Natal Province			
Place of Occurrence							
GPS Co-ordinates	Latitude	27° 41' 58" S	Longitude	30° 51' 22" E	Elevation	4990 ft	
<b>Aircraft Information</b>							
Registration	ZT-XNI						
Make; Model; S/N	Arace Sirin (Serial Number: 0032)						
Damage to Aircraft	Substantial		Total Aircraft Hours	690.18			
<b>Pilot-in-command</b>							
Licence Type	Remote Pilot Licence (RPL)		Gender	Male		Age	28
Licence Valid	Yes	Total Hours	539.6		Total Hours on Type	539.6	
Total Hours Past 90 Days	171.6		Total Flying Past 90 Days on Type	171.6			
<b>People Controlling</b>	1	Injuries	0	Fatalities	0	Other (on ground)	0
<b>What Happened</b>							
<p>On Monday evening, 8 May 2023, a remote pilot aircraft (RPA) Arace Sirin with registration ZT-XNI was engaged in an aerial surveillance flight in Vryheid, KwaZulu-Natal 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>The pilot reported that he conducted a pre-flight check with no anomalies noted and launched the RPA in attitude (ATTI) mode with 98% battery power at approximately 2127Z. The pilot then switched to 'loiter mode' to commence the mission and climbed to 80 metres (m) above ground level. Thereafter, he descended the RPA to 69m AGL and switched back to ATTI mode for 1.2 kilometres after spotting suspects; however, the pilot lost the Command and Control (C2) link with the RPA. He then activated the return-to-launch (RTL) function, but the RPA engaged 'auto land'. The pilot reported the last known location to dispatch and requested assistance with the recovery of the RPA. The RPA was recovered and had sustained damage to the landing gear and propeller. There were no reported injuries to persons on the ground.</p>							



**Figure 1:** Crash site on the mountain side, depicted by a yellow pin. (Source: Google Earth)



**Figure 2:** The RPA post-accident. (Source: Operator)

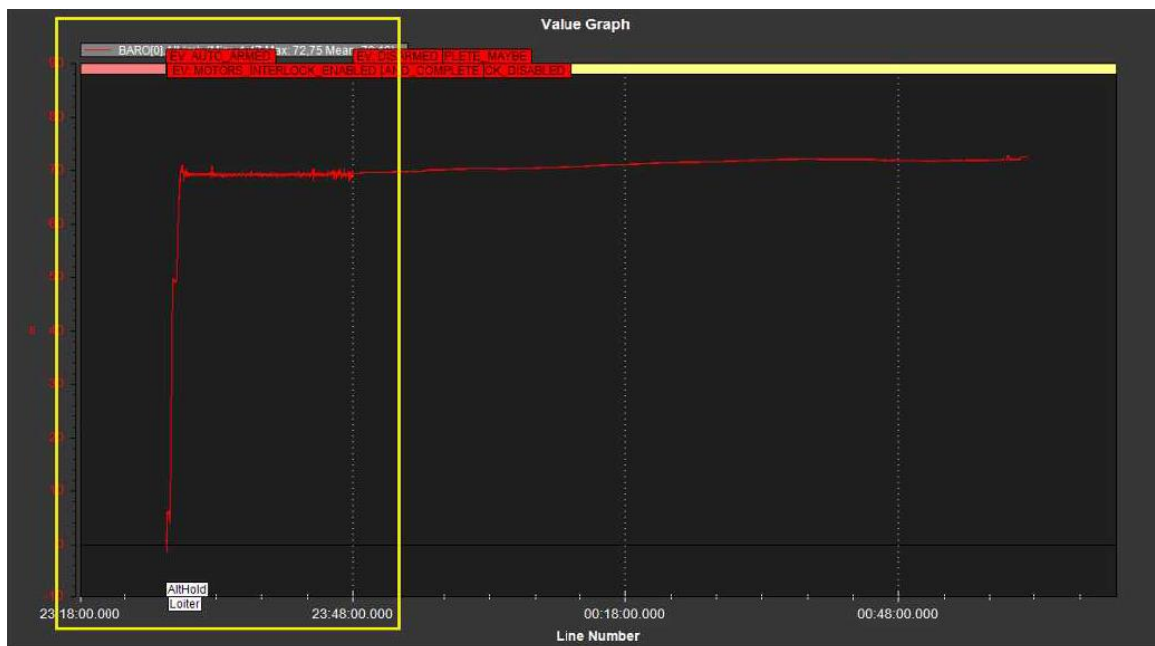
The operator reviewed the log analysis report post-accident which revealed that 20 minutes into the flight, the pilot made a slight input to the RPA and, as a result, it flew into the mountain side.

Sequence of events as per the flight log:

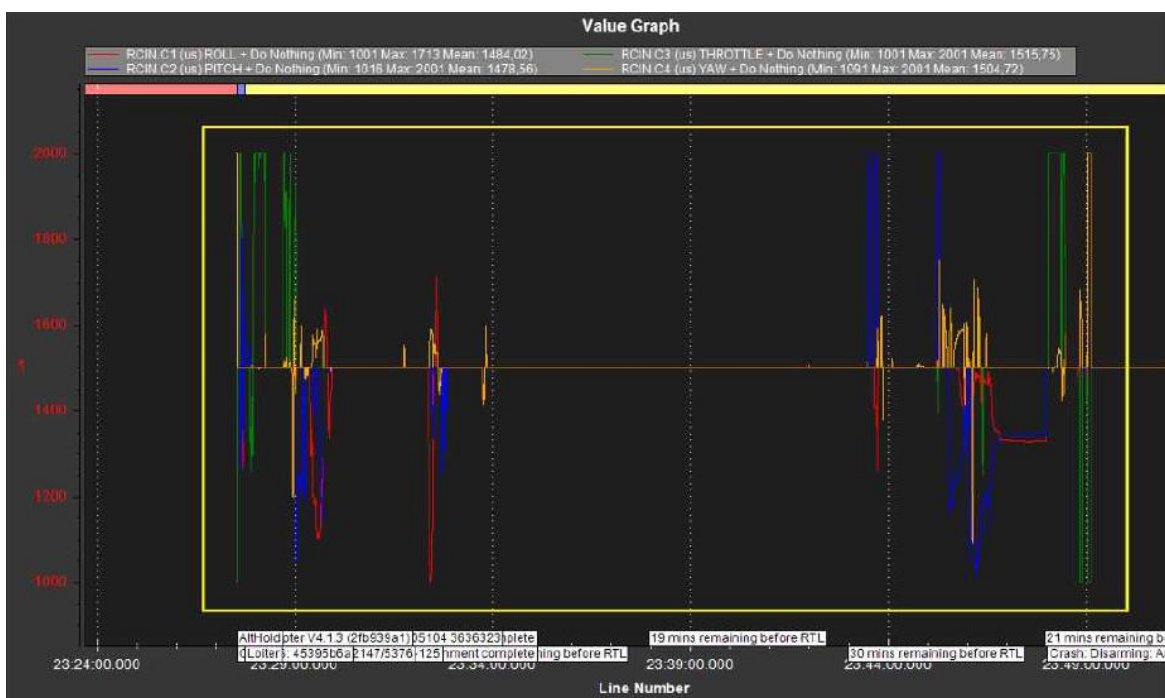
At 21:27Z: the pilot armed the aircraft in 'alt hold' mode and ascended to 22 feet (ft) above ground level (AGL).

At 21:27Z: the pilot switched to 'loiter mode' and ascended further to 230 ft AGL and commenced the operation.

At 21:47Z: 20 minutes into the flight the pilot flew into a mountain.



**Figure 3:** The graph shows that the aircraft did not descend or land. (Source: Operator)



**Figure 4:** The graph shows that the pilot made an input before the crash. (Source: Operator)

### Findings

- The pilot was issued a Remote Pilot Licence (RPL) with a visual line of sight (VLOS) rating on 15 March 2022 with an expiry date of 31 March 2024. The pilot also had a beyond visual

line of sight (BVLOS) rating that was issued on 7 July 2022 with an expiry date of 31 March 2024.

- The pilot's Class 3 medical certificate was issued on 22 January 2022 with an expiry date of 31 January 2026 with no medical restrictions.
- The operator was issued a Remotely Pilot Aircraft System Operating Certificate (ROC) no. CAA/G1291D on 31 October 2022 with an expiry date of 31 October 2023.
- The RPA was initially issued a Remotely Pilot 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 accumulated 30.2 hours since the last Mandatory Periodic Inspection (MPI).
- The RPA was manually flown during the last phase of the flight.
- The downloaded logs showed that the pilot made inputs to the RPA which caused it to crash into the mountain.

#### **Probable Cause(s)**

Controlled flight into terrain.

#### **Contributing Factor(s)**

Lack of situational awareness.

#### **Safety Action(s)**

None.

#### **Safety Message**

Pilots must maintain situational awareness during all phases of flight.

#### **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.*

<b>Disclaimer</b>
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<i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i>
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**This report is issued by:  
Accident and Incident Investigations Division  
South African Civil Aviation Authority  
Republic of South Africa**