

UAS LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10319				
Classification	Accident	Date	31 May 2023	Time	0935Z
Type of Operation	Remotely Piloted Aircraft Systems (Aerial survey) – Part 101				
Location					
Place of Departure	Seriti Klipspruit Mine near Ogies, Mpumalanga Province		Place of Intended Landing	Seriti Klipspruit Mine near Ogies, Mpumalanga Province	
Place of Occurrence	Klipspruit Mine near Ogies				
GPS Co-ordinates	Latitude	26° 00' 13.4" S	Longitude	029° 00' 13.04" E	Elevation 5188 ft
Aircraft Information					
Registration	ZT-XHA		Class	Class 4A	
Make; Model; S/N	Sensefly; eBee X (Serial Number: IX-12-17181)				
Damage to Aircraft	Destroyed		Total UAS Hours	309.59	
Pilot-in-command					
Licence Type	Remote Pilot Licence (RPL)		Gender	Male	Age 29
Licence Valid	Yes	Total Hours	120.09	Total Hours on Type	85.84
Total Hours 30 Days	8.92		Total Flying on Type Past 90 Days	26.75	
Injuries	0	Injuries (On ground)	0	Fatalities	0
				Number of People Controlling	1
What Happened					
<p>On Wednesday, 31 May 2023, an unmanned aircraft system (UAS) with registration ZT-XHA was engaged in an aerial survey flight at Klipspruit Mine, near Ogies in Mpumalanga province. The flight was conducted beyond visual line of sight (BVLOS) rules by day and under the provisions of Part 101 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot reported that he launched the UAS, which he operated overhead the mine pit. During the fifth line of aerial survey in crosswind conditions, the pilot observed the UAS flying in an inverted attitude before it spiralled uncontrollably towards the ground. He engaged the 'fast climb' button on the remote pilot station to stop the UAS from spiralling down and that is when he noticed a 'data downlink' warning on the remote pilot station. The UAS stalled and descended until it impacted the ground. The wings detached from the fuselage on impact. The UAS sustained substantial damage, however, no person was injured on the ground. There were no flight logs for the flight.</p>					



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



Figure 2: The wreckage post-accident. (Source: Pilot)



Figure 3: A eBee X aircraft that is similar to the accident UAS. (Source: ageagle.com/drones/ebec-x)

Findings
<p><u>The Pilot</u></p> <ol style="list-style-type: none"> 1. The pilot was initially issued a Remote Pilot Licence (RPL) by the Regulator (SACAA) on 9 September 2021 with an expiry date of 30 September 2023. The pilot had a BVLOS rating which was endorsed on his licence. 2. The pilot's Class 3 medical certificate was issued on 17 May 2021 with an expiry date of 31 May 2026. <p><u>The Aircraft</u></p> <ol style="list-style-type: none"> 1. The UAS was issued a Remotely Piloted Aircraft Systems Letter of Approval (LOA) by the Regulator on 23 August 2021. The LOA was reissued on 17 August 2022 with an expiry date of 22 August 2023. The UAS Certificate of Registration (C of R) was issued to the current owner on 8 July 2021. 2. The UAS mandatory periodic inspection (MPI) was conducted on 15 May 2023 at 309.59 hours. It was operated for a further 4.5 minutes at the time of the accident after the MPI. The remote maintenance technician (RMT) who conducted the MPI maintenance was issued an RMT licence on 1 September 2021 with an expiry date of 31 July 2023. 3. The UAS Operating Certificate was issued on 31 October 2022 with an expiry date of 31 October 2023. The approved operation specifications included aerial patrol and survey (G3) for night operations.
Probable Cause
Loss of control during a mission which led to a stall and the subsequent crash to the ground.
Contributing Factor(s)
None.
Safety Action(s)
None.
Safety Message and/or Safety Recommendation/s
None.
About this Report
<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</i>

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

This report is produced without prejudice to the rights of the AIID, which are reserved.

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