SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Accident and Incident Investigations Division** Form Number: CA 12-57

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10216										
Classification	Accident		**Date**	1 September 2022			**Time**	1308Z			
Type of Operation	Surveillance (Part 101)										
Location											
Place of Departure	Gamsberg Mine, Northern Cape Province		Place of Intended Landing				Gamsberg Mine, Northern Cape Province				
Place of Occurrence	Gamsberg Mine, Northern Cape Province										
GPS Co-ordinates	Latitude	29°13' 17.6"S	Longitude	18°57'42.4"E			Elevation	2931ft			
Aircraft Information											
Registration	ZT-UHL										
Make; Model; S/N	IQlaser, eBee Plus (Serial Number: EP-11-19486)										
Damage to Aircraft	Destroyed			Total Aircraft Hours			414.3				
Pilot-in-command											
Licence Type	Remote Pilot Licence (RPL)			Gender	Male			Age	24		
Licence Valid	Yes	Total Hours		642.4	Total Hours on Type			33.5			
Total Hours Past 30 Days	07.2			Total Hours on Type Past 90 Days				20.3			
People Controlling	1	**Injuries**	0	**Fatalities**	0		**Other (on ground)**	0			

What Happened

On 1 September 2022, a pilot operating an eBee Plus remotely piloted aircraft (RPA) with registration ZT-UHL launched the RPA for surveillance work at Gamsberg Mine in the Northern Cape province. The flight was conducted Beyond Visual Line of Sight (B-VLOS) by day and under the provisions of Part 101 of the Civil Aviation Regulations (CAR) 2011 as amended.

Each mission is programmed in the RPA controller and, when the mission is complete, the RPA automatically resumes a return-to-home (RTH) flight. The operator indicated that the RPA must be landed with a minimum 20% battery power.

The pilot stated that he launched the RPA at 1244Z with 100% battery power. After reaching 200 feet (ft) above ground level (AGL), the RPA commenced its programmed mission of taking surveillance pictures of run-of-mine (ROM) piles. Eighteen (18) minutes into the mission (including the flight time), the battery power was at 65%. After 22 minutes and 11 seconds, 52% of battery power remained in the RPA. The RPA completed the mission and commenced a RTH flight. At 22 minutes and 19 seconds, the RPA became unstable. The remote controller monitor at home base transmitted the RPA in a sharp left bank and, thereafter, spiralled towards the ground until the signal was lost. The location where the RPA crashed was above the mined material which was delivered by a roller belt. The RPA wreckage was not found.

Figure 1: A type of RPA similar to the one involved in this accident. (Source: eBee Plus)

Figure 2: Aerial view of the accident site. (Source: Google Earth)

Findings

1. The pilot was issued a Remote Pilot Licence (RPL) on 7 March 2022 with an expiry date of 31 March 2024. His Class 3 medical certificate was issued on 22 March 2019 with an expiry date of 31 March 2024 with no medical restrictions.

2. The mandatory periodic inspection (MPI) carried out on the RPA prior to the accident flight was conducted on 30 August 2022 at 414:06:58 airframe hours. During the MPI, the motor and the servo were checked; there was no friction on the motor, and the ailerons moved smoothly. The RPA was operated a further 28.0 hours after the MPI.

3. The RPA was issued a Remotely Piloted Aircraft Systems (RPAS) Letter of Approval (LOA) on 12 November 2018 with an expiry date of 30 November 2022.

4. The weather conditions as per the pilot questionnaire were as follows: surface wind: north-easterly at 13 knots; temperature: 29°; clouds: few at 6800 feet AGL; visibility: greater than 10km.

5. The operator was issued an RPAS Operating Certificate (ROC) number CAA/G1279D with an authorisation to operate the certificate in accordance with Part 101 of the CAR 2011 as amended by the Regulator (SACAA) on 25 October 2021 with an expiry date of 31 October 2022.

Probable Cause

The RPA lost signal and spiralled down towards the ground. The cause of loss of control could not be determined and the RPA was never recovered.

Contributing Factors

None.

Safety Action

None.

Safety Message and/or Safety Recommendation/s

None.

About this Report

Decisions to conduct a limited investigate 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

This report is issued by:

Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa