

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

| | | | | | | | |
|---|--|-----------------|-----------------------------------|----------------------|---------------------------------|--------------------------|-------|
| Reference Number | CA18/2/3/10235 | | | | | | |
| Classification | Accident | Date | 6 October 2022 | | | Time | 1925Z |
| Type of Operation | Aerial Surveillance (Part 101) | | | | | | |
| Location | | | | | | | |
| Place of Departure | Emalahleni, Mpumalanga Province | | Place of Intended Landing | | Emalahleni, Mpumalanga Province | | |
| Place of Occurrence | Private spot, 9 nautical miles south-west of Emalahleni, Mpumalanga Province | | | | | | |
| GPS Co-ordinates | Latitude | 25°58'05" S | Longitude | 029°07'32" E | Elevation | 5213 ft | |
| Aircraft Information | | | | | | | |
| Registration | ZT-XSZ | | | | | | |
| Make; Model; S/N | DJI Mavic 2, Enterprise Advanced (Serial Number: MAV0096) | | | | | | |
| Damage to Aircraft | Substantial | | | Total Aircraft Hours | 290 | | |
| Pilot-in-command | | | | | | | |
| Licence Type | Remote Pilot Licence (RPL) | | Gender | Male | | Age | 29 |
| Licence Valid | Yes | Total Hours | 250.25 | | Total Hours on Type | 95.9 | |
| Total Hours 30 Days | 95.9 | | Total Flying on Type Past 90 Days | 95.9 | | | |
| People Controlling | 1 | Injuries | 0 | Fatalities | 0 | Other (on ground) | 0 |
| What Happened | | | | | | | |
| <p>On 6 October 2022, a pilot operating a remotely piloted aircraft (RPA) with registration ZT-XSZ launched the aircraft on an aerial surveillance of a railway line, approximately 9 nautical miles (nm) south-west of Emalahleni in Mpumalanga province. The flight was conducted beyond visual line of sight (BVLOS) by night 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, and no anomalies were observed on the RPA. The pilot completed a flight mission and landed the RPA back at home base to change the batteries before resuming the next flight mission at 1919Z with a 91% battery power indication on the control screen. Approximately six minutes after launch, the RPA disconnected from the pilot's controller unit and crashed to the ground. The pilot made his way to the crash site to recover the substantially damaged RPA, approximately 200 metres (m) from the launch site.</p> <p>Post-inspection of the RPA revealed the burnt battery terminals, which led to loss of C2 communication link between the pilot's controller unit and the RPA. This resulted in the RPA disconnecting from the pilot's controller unit. There were no reported injuries during the occurrence and the RPA sustained damage to the propellers and arms.</p> | | | | | | | |

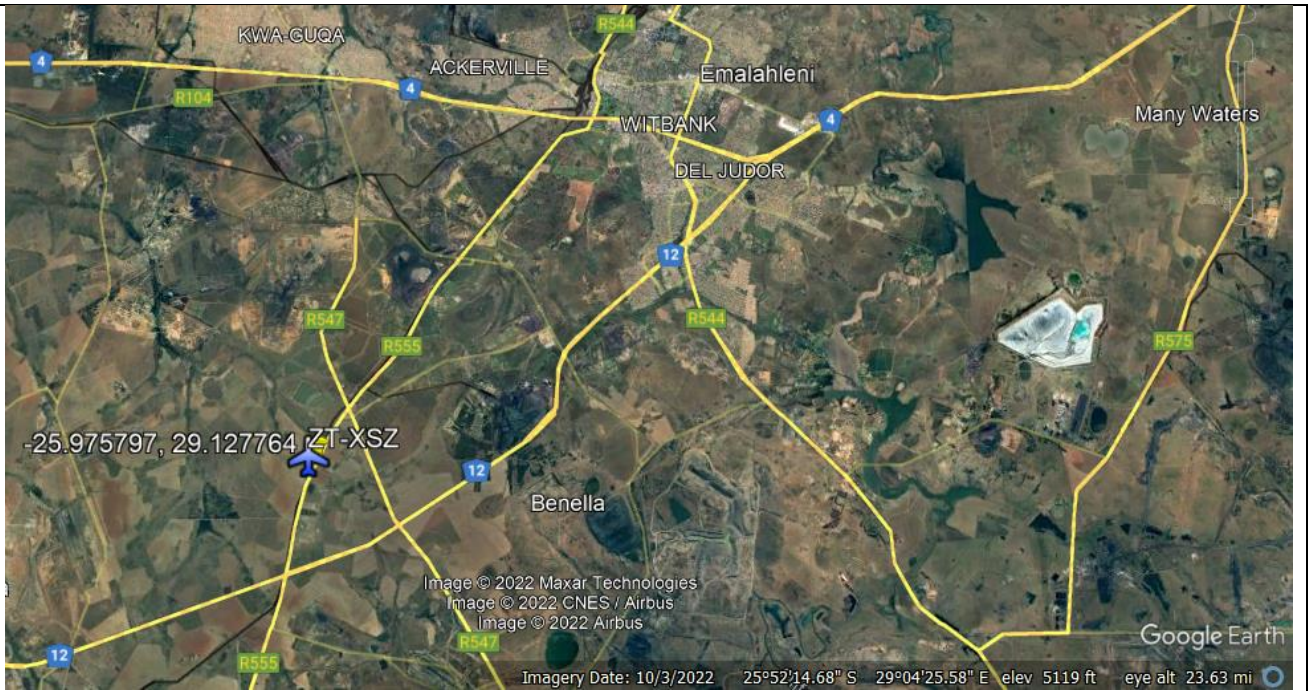


Figure 1: The aerial view of the accident site. (Source: Google Earth)



Figure 2: The damage sustained by the ZT-XSZ. (Source: Pilot)



Figure 3: The damaged battery terminals. (Source: Operator)

Figure 3 shows five damaged battery terminals on the left-side and one damaged terminal on the right-side. The six terminals in the middle were still serviceable.

Findings

The Pilot

- The pilot was issued a Multirotor (MR) Remote Pilot Licence (RPL) by the Regulator (SACAA) on 13 April 2022 with an expiry date of 30 April 2024. The licence was endorsed with a visual line of sight (VLOS) and beyond visual line of sight (BVLOS) ratings.
- The pilot had a Class 3 aviation medical certificate with no restrictions, which was issued on 23 November 2021 with an expiry date of 30 November 2025.

Aircraft information

- The aircraft had a Remotely Piloted Aircraft Systems (RPAS) Letter of Approval (LoA) which was issued on 2 March 2022 with an expiry date of 1 March 2023. The aircraft's Certificate of Registration was issued to the current owner on 21 December 2021.

| |
|---|
| <ul style="list-style-type: none"> • The last scheduled maintenance inspection prior to the accident flight was conducted on 2 September 2022 at 235.0 airframe hours. The aircraft flew a further 55.0 hours since the last scheduled maintenance inspection was conducted. • The operator had a Remotely Piloted Aircraft Operating Certificate (ROC) that was issued by the Regulator on 31 October 2021 with an expiry date of 31 October 2022. • During recovery of the aircraft, the pilot discovered that the battery terminals (Serial Number: MAV1263) were burnt. |
| Probable Cause |
| Burnt battery terminals led to loss of C2 communication link between the pilot's controller unit and the RPA after take-off. |
| Contributing Factor |
| Battery connector terminal failure. |
| Safety Action(s) |
| None. |
| Safety Message and/or Safety Recommendation/s |
| None. |
| About this Report |
| <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> |
| Purpose |
| <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> |
| Disclaimer |
| <i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i> |

This report is issued by:

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