SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

# LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

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| **Reference Number** | CA18/2/3/10210 | | | | | | |
| **Classification** | Accident | **Date** | 28 June 2022 | | **Time** | 0737Z | |
| **Type of Operation** | Aerial Survey (Part 101) | | | | | | |
| **Location** | | | | | | | |
| Place of Departure | Groote Schuur Hospital, Western Cape Province | | Place of Intended Landing | | Groote Schuur Hospital, Western Cape Province | | |
| Place of Occurrence | Groote Schuur Hospital, Western Cape Province | | | | | | |
| GPS Co-ordinates | Latitude | 33° 56' 28.47" S | Longitude | 18° 27' 41.83" E | Elevation | 197 ft | |
| **Aircraft Information** | | | | | | | |
| Registration | ZT-UKZ | | | | | | |
| Make; Model; S/N | DJI Phantom 4 PRO; (Serial Number: OAXDECD00S1736) | | | | | | |
| Damage to Aircraft | Substantial | | Total Aircraft Hours | 122.36 | | | |
| **Pilot-in-command** | | | | | | | |
| Licence Type | Remote Pilot Licence (RPL) | | Gender | Male | Age | 57 | |
| Licence Valid | Yes | Total Hours | 254.42 | Total Hours on Type | 245.30 | | |
| Total Hours 90 Days | 12.07 | | Total Flying on Type Past 90 Days | 9.08 | | | |
| **People Controlling** | 1 | **Injuries** | 0 | **Fatalities** | 0 | **Other (on ground)** | 0 |

**What Happened**

On 28 June 2022 at about 0722Z, a pilot launched a DJI Phantom 4 Pro Remotely Piloted Aircraft (RPA) with registration ZT-UKZ for surveillance operation from Groote Schuur Hospital in the Western Cape province with the intention to land back at the same launch area. The surveillance flight was conducted in visual line of sight (VLOS) by day and under the provisions of Part 101 of the Civil Aviation Regulations (CAR) 2011 as amended.

The pilot stated that he launched the RPA after performing the pre-flight checks, and it climbed to an altitude of 320 feet (ft). Thereafter, he commenced with the survey operation. When the RPA flew overhead the hospital facility, he lost sight of it, but still had command and control. The pilot then steered the RPA back to the landing zone and restarted the application. The RPA was relaunched a few minutes later with the battery capacity of 90%; however, the camera feed was intermittent, possibly due to signal interference. The RPA followed the planned flight parameters whilst capturing imagery correctly. Approximately 15 minutes into the flight, the pilot received a notification of 30% battery voltage remaining. This was followed by the sound of the low battery voltage warning on his controller. About 5 seconds later, the pilot lost the video feed and the command and control link.

- ***Note:*** *Command and Control (C2) refers to the communications link between a UAV (unmanned aerial vehicle)* (*RPA) and its ground station that is responsible for the management and control of the aircraft. C2 links are an essential part of drone operations whether the aircraft is being directly remotely piloted by a human or programmed to fly autonomously.* (Source: www.unmannedsystemstechnology.com)

The pilot stated that he lost sight of the RPA even though it was suspected to have been approximately 150 metres (m) to 200m from his position. The pilot attempted to re-establish connection but without success. He deduced that the RPA might have crashed. The RPA was located on one of the roads in the hospital; it had 28% battery power remaining at the time of the accident.

The RPA sustained damage to the landing gear, camera, gimbal mount and body during the accident sequence. No people on the ground were injured and there was no damage to property.

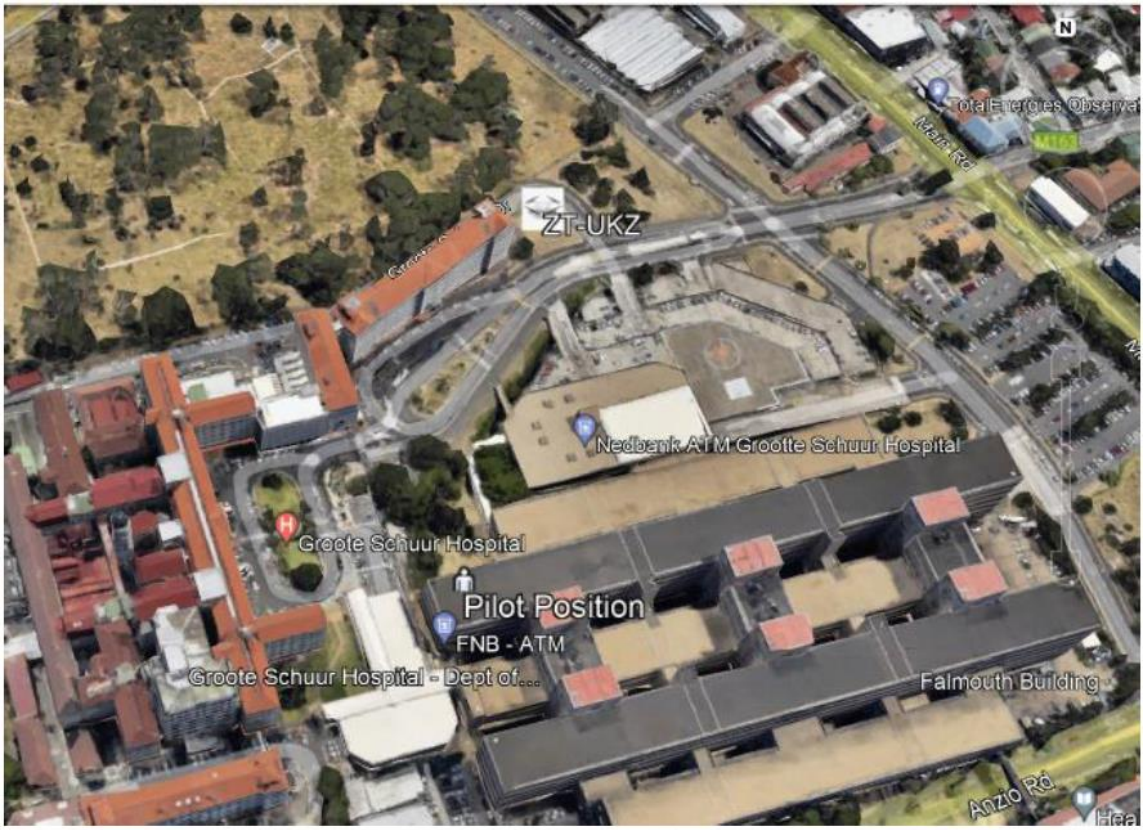


**Figure 1**: An aerial representation of the pilot's position and where the RPA was found. (Source: Google Earth)

**Figure 2**: The RPA at the accident site. (Source: Pilot)

**Figure 3**: The damaged RPA post-accident. (Source: Pilot)

**Figure 4**: A similar make to the accident RPA. (Source: Africa Drone Kings website)

**Findings**

- The pilot had a Remote Pilot Licence (RPL) which was initially issued by the South African Civil Aviation Authority (SACAA) on 10 November 2017. The pilot completed his last skills test on 24 December 2021. The RPL was re-issued on 18 January 2022 with an expiry date of 31 January 2024. His Class 3 medical certificate was issued by the SACAA on 7 December 2021 with an expiry date of 31 December 2023, with the restriction to wear corrective lenses. The pilot was qualified for the flight operation and his licence had an endorsement of a multirotor

remotely piloted aircraft operator. The pilot also had the VLOS rating endorsed on his licence. He had a total of 245.30 aircraft type operating hours.

- The RPA was registered with the Regulator on 26 March 2018. The last maintenance inspection that was carried out on the RPA prior to the accident flight was certified on 18 May 2022 at 112 hours and 37 minutes. The RPA was operated a further 10 hours since the said inspection. The RPA was issued the Release to Service Certificate on 18 May 2022 with an expiry date of 18 August 2022 or at 132 hours and 37 minutes, whichever occurs first.

- The operator was in possession of a Remotely Piloted Aircraft System (RPAS) Letter of Approval (LOA), initially issued by the Regulator on 19 December 2018. The LOA had an expiry date of 31 December 2022. The operator was issued an Operating Certificate with ROC No: CAA/G1240D on 29 April 2022 with an expiry date of 30 April 2023.

- The pilot lost control and command link or signal of the RPA during flight. The loss of control and command link could not be determined.

**Probable Cause**

During a surveillance flight, the control and command link between the RPA and the pilot was lost, and the RPA crashed; the cause of loss of control and command link could not be determined.

**Contributing Factor(s)**

None.

**Safety Action(s)**

None.

**Safety Message and/or Safety Recommendation/s**

None.

**About this Report**

*Decisions 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.*

**Disclaimer**

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**This report is issued by:**

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