

**LIMITED OCCURRENCE INVESTIGATION REPORT – DRAFT**

|  |  |                    |   |  |                            |                            |
|--|--|--------------------|---|--|----------------------------|----------------------------|
| <b>Reference Number</b>  | CA18/2/3/10546   |                    |   |  |                            |                            |
| <b>Classification</b>  | Accident   | <b>Date</b>        | 19 January 2025                         | <b>Time</b>  | 0948Z                      |                            |
| <b>Type of Operation</b>   | Aerial Survey (Part 127)                                     |                    |   |  |                            |                            |
| <b>Location</b>  |  |                    |   |  |                            |                            |
| <b>Place of Departure</b>  | Chief Dawid Stuurman Aerodrome (FAPE), Eastern Cape Province |                    | <b>Place of Intended Landing</b>        | Chief Dawid Stuurman Aerodrome (FAPE), Eastern Cape Province |                            |                            |
| <b>Place of Occurrence</b>   | Bird Island, Gqeberha, Eastern Cape Province                 |                    |   |  |                            |                            |
| <b>GPS Co-ordinates</b>  | <b>Latitude</b>  | S 33°50'22.65"     | <b>Longitude</b>                        | E 026°17'26.79"  | <b>Elevation</b>           | 2 ft                       |
| <b>Aircraft Information</b>  |  |                    |   |  |                            |                            |
| <b>Registration</b>  | ZS-RJC   |                    |   |  |                            |                            |
| <b>Make; Model; S/N</b>  | Robinson; R44 Raven II (Serial Number: 10347)                |                    |   |  |                            |                            |
| <b>Damage to Aircraft</b>  | Substantial  |                    | <b>Total Aircraft Hours</b>             | 4 364.7  |                            |                            |
| <b>Pilot-in-command</b>  |  |                    |   |  |                            |                            |
| <b>Licence Type</b>  | Commercial Pilot Licence (CPL)                               |                    | <b>Gender</b>                           | Male   |                            | <b>Age</b> 35              |
| <b>Licence Valid</b>   | Yes  | <b>Total Hours</b> | 1 650                                   |  | <b>Total Hours on Type</b> | 1 051.7                    |
| <b>Total Hours 30 Days</b>   | 11.7   |                    | <b>Total Hours on Type Past 90 Days</b> | 36   |                            |                            |
| <b>People On-board</b>   | 1+3  | <b>Injuries</b>    | 0                                       | <b>Fatalities</b>  | 0                          | <b>Other (on ground)</b> 0 |
| <p>On Saturday afternoon, 19 January 2025, a pilot and three passengers on-board a Robinson R44 Raven II helicopter with registration ZS-RJC were conducting an aerial survey flight from Chief Dawid Stuurman Aerodrome (FAPE) in Eastern Cape province with the intention to land at the same aerodrome. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 127 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot stated that the purpose of the flight was to transport a specialist to conduct an aerial survey of Bird Island in Gqeberha, Eastern Cape province. After lift-off from FAPE, the helicopter headed to Bird Island. Once the survey was complete, the pilot identified a suitable landing spot in the island and safely landed the helicopter. The specialist requested that they transport one of the penguins back to FAPE. The pilot agreed to the request and the penguin was placed in a cardboard box. The pilot conducted a risk assessment of the flight; however, he omitted to include the carriage (transportation) of the penguin on-board. <i>Therefore, the risk assessment procedure was deemed not in line with Part 127.07.34 of the CAR.</i> The passenger seated on the left front seat placed the cardboard box containing the penguin on his lap and secured it with his hands.</p> |  |                    |   |  |                            |                            |

The pilot reported that before lifting off, he conducted the inspection of the helicopter and no abnormalities were found. The helicopter had approximately 90 litres (L) of Avgas 100LL fuel in the tanks. The pilot started the engine and advanced the power to 103 revolutions per minute (RPM); the helicopter lifted off at approximately 0945Z.

Whilst transitioning and about 15 metres (m) above ground level (AGL), the cardboard box slid off to the right and on to the pilot's cyclic pitch control lever. As a result, the cyclic pitch control lever advanced to the far-right position. The helicopter rolled to the right and the pilot could not recover timeously. Subsequently, the main rotor blades struck the ground. The helicopter impacted the ground on its starboard side approximately 20m from the point of lift-off. The helicopter sustained substantial damage. None of the occupants was injured; the penguin was also unharmed.

The accident occurred during daylight at Global Positioning System (GPS) co-ordinates determined to be 33°50'22.65" South 026°17'26.79" East, at an elevation of 2 feet (ft).



**Figure 1:** Aerial view of the Bird Island. (Source: Google Earth)



**Figure 2:** The helicopter as it came to rest. (Source: Pilot)



**Figure 3:** Closer view of the helicopter cabin. (Source: Pilot)



**Figure 4:** The penguin in a cardboard box. (Source: Operator's Safety Manager)

Helicopter Description (Source: Robinson R44 Raven II Pilot's Operating Handbook [POH]).

*The Robinson R44 Raven II is a four-seat helicopter powered by a six-cylinder fuel injected engine rated at 205 brake horsepower (BHP). It is certified for visual flight rules (VFR) operations only. The flight controls are actuated by a conventional system of push-pull rods and bellcranks. Power is transmitted from the engine to the main rotor gearbox by four rubber V-belts, mounted on two sheaves (pulleys). The lower sheave is bolted directly to the engine output shaft. The V-belts transmit power from the lower sheave to the upper sheave, which in turn transmits power forward to the main rotor and aft to the tail rotor, via a main rotor and tail rotor gearbox. The transmission is engaged and disengaged by means of a clutch, which is operated by a two-position guarded switch on the instrument panel. The main rotor flight controls are hydraulically boosted to eliminate cyclic and collective feedback forces. The system is controlled by a HYD/OFF switch on the pilot's cyclic control and can be deactivated by placing the switch to OFF position. The hydraulic system operates at a pressure between 450 – 500 pounds per square inch (psi). The helicopter is equipped with 15 warning lights on the instrument panel to warn the pilots of conditions requiring attention. Eight of these lights are on the top of the instruments panel and seven are in the middle panel. The fuel system comprises two crashworthy bladder fuel tanks, the main tank has the capacity of 120l and the auxiliary tank 70l.*

#### Meteorological Information

The weather information entered in the table below was obtained from the pilot questionnaire.

|                |       |             |         |            |        |
|----------------|-------|-------------|---------|------------|--------|
| Wind Direction | 240°  | Wind Speed  | 3 kts   | Visibility | 9999 m |
| Temperature    | 25° C | Cloud Cover | BKN     | Cloud Base | 020    |
| Dew Point      | 19° C | QNH         | Unknown |            |        |

The transportation of the penguin in a cardboard box was not conducted in accordance with Part 127, Subpart 7 of the CAR 2011 as amended.

*Securing of Passenger Cabin and Galley:*

*Part 127.07.34 (1) Before take-off and landing and whenever deemed necessary in the interests of aviation safety, the pilot-in-command shall ensure that—*

*(a) all equipment, baggage and loose articles in the cabin of the helicopter, including passenger service items and crew members' and passengers' personal effects, are properly secured and stowed so as to avoid the possibility of injury to persons or damage to such helicopter through the movement of such articles caused by in-flight turbulence or by unusual accelerations or manoeuvres”.*

Whilst the pilot conducted inspection of the helicopter at Bird Island with no abnormalities found, the pilot omitted to state in the risk assessment form the intention to transport the penguin in a cardboard box on-board. The pilot made the decision despite that the procedure in which the penguin was transported was not in line with Part 127.07.34 of the CAR. An evaluation of the situation and potential hazards (such as cargo shifting) should have been conducted. The lack of secure containment for the penguin created a dangerous situation. The absence of a proper, secured crate meant that the penguin's containment was not suitable for the flight conditions. Proper cargo handling is crucial to ensure that items on-board do not interfere with flight controls or the safety of the passengers.

This accident emphasises the importance of adhering to established safety protocols and compliance with aviation safety procedures.

**Findings**

1. Personnel Information

1.1. The pilot had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator (SACAA) on 11 March 2021. The licence was reissued on 18 November 2024 with an expiry date of 31 March 2025. The pilot had flown a total of 1 650 hours of which 1 051.7 hours were flown on the aircraft type.

- 1.2. The pilot had a Class 1 aviation medical certificate that was issued on 7 January 2025 with an expiry date of 31 January 2026 with no restrictions.

2. Aircraft Information

- 2.1. The helicopter was maintained by the SACAA-approved aircraft maintenance organisation (AMO). The latest maintenance inspection of the helicopter was certified on 23 October 2024 at 4 338.80 total airframe hours. The helicopter had accrued 25.90 hours since the said inspection.
- 2.2. The helicopter was issued a Certificate of Release to Service (CRS) on 23 October 2024 at 4 338.80 total airframe hours with an expiry date of 22 October 2025 or at 4 396.70 airframe hours, whichever occurs first.
- 2.3. The helicopter had a valid Certificate of Airworthiness (C of A) that was initially issued on 12 May 2004. The latest C of A had an expiry date of 31 May 2025.
- 2.4. The helicopter's Certificate of Registration (C of R) was issued to the present owner on 5 October 2020.

3. Human Factors

- 3.1 The pilot's decision regarding the transportation of the penguin was not conducted in accordance with Part 127.07.34 (1a) of the Civil Aviation Regulations (CAR) 2011 as amended.

**Probable Cause(s)**

The cardboard box that contained the penguin slid off from the passenger's grip to the right and on to the pilot's cyclic pitch control lever. Consequently, the pilot lost control of the helicopter.

**Contributing Factor(s)**

1. Disregard for Standard Operating Procedures.

**Safety Action(s)**

1. Strict adherence to Standard Operating Procedures (SOPs): Operators should reinforce adherence to SOPs and the Air Operator Certificate (AOC) to ensure that no animals are transported on-board aircraft unless permitted by the AOC and SOP. This would prevent illegal or unsafe practices.

|   |
|---|
| <p>2. Training on load security: All personnel should receive training on the importance of securing loads, including non-standard items such as animals. This could include clear guidelines on the proper securing of cargo to prevent movement during flight.</p> <p>3. Pre-flight safety briefings: Safety briefings regarding carrying of passengers and the risks associated should be adhered to prior to flights. This will ensure that passengers are informed of the risks involved whilst also emphasising the responsibility of both pilots and passengers to manage those risks, thereby ensuring a safe operation.</p> <p>4. Risk assessment: It is recommended that when a deviation from a process is anticipated by the crew, the operator is notified to ensure that a risk assessment in line with their approved Safety Management System is completed and adhered to.</p>  |
| <p><b>Safety Message and/or Safety Recommendation/s</b></p> <p>None.</p>  |
| <p><b>About this Report</b></p> <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 desktop inquiries 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> |
| <p><b>Purpose</b></p> <p><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></p>   |
| <p><b>Disclaimer</b></p> <p><i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i></p>   |

**This report is issued by:**

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