SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

# LIMITED SERIOUS INCIDENT INVESTIGATION REPORT

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Reference Number** | CA18/3/2/1382 | | | | | | | | | | |
| **Classification** | Serious Incident | **Date** | 14 October 2021 | **Time** | 1630Z | | | | | | |
| **Type of Operation** | Parachute (Part 105) | | | | | | | | | | |
| **Location** | | | | | | | | | | | |
| Place of Departure | Mossel Bay Aerodrome (FAMO), Western Cape | Place of Intended Landing | Mossel Bay Aerodrome (FAMO), Western Cape | | | | | | | | |
| Place of Incident | Mossel Bay | | | | | | | | | | |
| GPS Co-ordinates | Latitude | S 34º09'25" | Longitude | E 022º03'41" | Altitude | 16500 feet (ft) | | | | | |
| **Aircraft Information** | | | | | | | | | | | |
| Registration | ZS-OHB | | | | | | | | | | |
| Model/Make | Beechcraft Aircraft, King Air B90 (Serial Number: LJ-431) | | | | | | | | | | |
| Damage to Aircraft | None | Total Aircraft Hours | 10950.6 | | | | | | | | |
| **Pilot-in-command** | | | | | | | | | | | |
| Licence Type | Private Pilot Licence (PPL) | Gender | Male | Age | 55 | | | | | | |
| Licence Valid | Yes | | | | | | | | | | |
| Total Hours on Type | 530 | Total Flying Hours | 1150 | | | | | | | | |
| People On-board | 1+15 | Injuries | 0 | Fatalities | 0 | Other (on ground) | 0 | | | | |
| **What Happened** | | | | | | | | | | | |

On 14 October 2021 at 1606Z, a pilot and 15 parajumpers on-board a King Air B90 aircraft with registration mark ZS-OHB took off from Mossel Bay Aerodrome (FAMO) on a paradropping exercise overhead the aerodrome with the intention to land at the same aerodrome. The flight was conducted during day light in visual meteorological conditions (VMC) and under the provisions of Part 105 of the Civil Aviation Regulations (CAR) 2011 as amended.

The aircraft climbed to altitude 16500 feet (ft) before the pilot reduced speed for parajumping to begin. Approximately six parajumpers who were holding on to the rail which was fixed above the main door jumped out, one after the other. A YouTube video *shows the sixth jumper exiting the aircraft; soon after, the left wing pitches up and then drops. The aircraft then stalls. During the stall, two more jumpers jump out. Soon after, the aircraft enters a left spin and completes two spins*

*before the pilot recovers, stops the left spin and continues with the descent with the remaining seven para-jumpers still on-board.* The aircraft landed safely at approximately 1630Z.

## The Investigation:

- Weather: visibility 9999m; wind: light and variable; clouds broken at 1800ft; overcast at 3700ft, QNH: 1013. The weather did not contribute to the incident.

- When the sixth jumper exited and joined the group outside of the aircraft, the aircraft started to pitch up and entered a stall from which the pilot recovered after two spins.

Liter 3.785412
US Gallon 1

B90 Gross weight 9650

| | | | | | | | | | | Kg | Lbs | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Weight 1 Gallon JETA1 | 3.043608 | 6.71 |
| | | | | | | | | | | Weight 1 liter JETA2 | 0.79 | 1.74165 |
| | | | | | | | | | Fuel uplift Liters | MASS lbs | ARM ins | MOMENT lb.ins | |
| **Total corrected empty weight** | | | | | | | | | | **5785.9** | **151** | **873670.9** | From TPSC weight and balance report |
| **Fuel Nacelles** | | | | | | | | | **450** | **783.7424** | **88.80469** | **69600** | Moment from POH "Usefule weights and mome |
| **Fuel Wing tanks** | | | | | | | | | 0 | **0** | **0** | **0** | |
| Pilot | 1 | 87 | | | | | | | | 191.8019 | 129 | 24742.45 | From Aerostruct provided ARM for pilot positio |
| | | **Jumper weight** | **Lead** | **Equipment** | **Jumper weight** | **Lead** | **Equipment** | **All up weight kg** | | **All up weight lbs** | | **MOMENT lb.ins** | |
| Co-pilot (Jumper 1) | 1 | | | | 70 | 3 | 10 | 83 | | 182.9835 | 129 | 23604.87 | From Aerostruct provided ARM for jumper posi |
| Jumper 2,3 | 2 | 64 | 4 | 10 | 71 | 0 | 10 | 159 | | 350.5346 | 165 | 57838.21 | From Aerostruct provided ARM for jumper posi |
| Jumper 4,5 | 2 | 80 | 0 | 10 | 63 | 3 | 10 | 166 | | 365.9669 | 175 | 64044.21 | From Aerostruct provided ARM for jumper posi |
| Jumper 6,7 | 2 | 77 | 0 | 10 | 88 | 0 | 10 | 185 | | 407.8547 | 190 | 77492.39 | From Aerostruct provided ARM for jumper posi |
| Jumper 8,9 | 2 | 83 | 0 | 10 | 65 | 2 | 10 | 170 | | 374.7854 | 205 | 76831.01 | From Aerostruct provided ARM for jumper posi |
| Jumper 10,11 | 2 | 86 | 0 | 10 | 63 | 0 | 10 | 169 | | 372.5808 | 210 | 78241.96 | From Aerostruct provided ARM for jumper posi |
| Jumper 12,13 | 2 | 80 | | 10 | 82 | 0 | 10 | 182 | | 401.2408 | 215 | 86266.78 | From Aerostruct provided ARM for jumper posi |
| Jumpers 14,15 | 2 | 75 | 0 | 10 | 98 | 0 | 10 | 193 | | 425.4917 | 245 | 104245.5 | From Aerostruct provided ARM for jumper posi |
| | | | | | | | | | | | | | |
| | 15 | | | | | | | | | **9642.883** | **159.3484** | **1536578** | |
| | | | | | | | | | | **Mass** | **Arm** | **Moment** | |

**Figure 1**: Fifteen jumpers and the aircraft's all-up mass was 8 pounds (lb) short of 9650lb.

**Figure 2:** The aircraft as it enters the two spins before recovery. (Source: www.youtube.com)

**Probable cause**

During a paradropping exercise while the jumpers were preparing to launch, a change in-flight configuration caused the centre of gravity (CoG) to shift aft, resulting in the aircraft stalling and entering a left-side spin. The aircraft completed two spins before the pilot recovered and landed safely.

## Safety Action/s

- The operator stated that in future, a maximum of five jumpers will be allowed on the outside step.
- The operator will brief the big formations to be wary/observant of the pitch movement of the nose of the aircraft.
- This information will be placated inside the aircraft and will be part of the briefing before departure.

## Safety Recommendation/s

- It is recommended to the operator to review/include the procedure that will ensure that the jump master monitors all jumps and that he/she be the last one to jump out.
- It is recommended to the Director of Civil Aviation that the SACAA should consider evaluating the effectiveness of its Part 105 operation oversight programme, as well as ensure that Part 105 operations are conducted at the same level of safety as Part 121 and 135 operations.

## Purpose of the Investigation

*In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011, 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****.*

**About this Report**

*Decisions regarding whether to investigate, and the scope of an investigation are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, no 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 brief report. The report has been compiled using information supplied in the initial notification, as well as follow-up information 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 accident.*

*This report provides an opportunity to share safety message/s in the absence of an investigation.*

*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.*

**Disclaimer**



**This report is issued by:**

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