

PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10415



Figure 1: File picture of the aircraft post-accident. (Source: Operator)

Description:

On Monday, 29 January 2024, a pilot and two passengers on-board a Beechcraft King Air C90A twin-turboprop aircraft registered ZS-FON took off on a private flight from Lanseria International Airport (FALA) in Gauteng province with the intention to land at Bona-Bona Lodge Airfield in the North West province. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

The pilot reported that the flight from the departure airport to the destination airfield was uneventful. However, during the landing roll on the asphalt-covered Runway 17, the left wheel assembly separated from the axle and the aircraft skidded on its left gear brake assembly before it veered off to the left of the runway. Whilst the aircraft skidded on its left gear brake assembly, the left wheel assembly contacted the left side propeller blades. The aircraft came to a stop on the grass area, approximately a metre from the edge of the runway. The No.1 engine propeller blades and the left landing gear wheel assembly were damaged. No person was injured during the accident sequence.

Occurrence Details

Reference Number : CA18/2/3/10415
Occurrence Category : Category 2
Type of Operation : Private
Name of Operator : Blue Skies and Tail Wind
Aircraft Registration : ZS-FON
Aircraft Make and Model : Beechcraft King Air C90A
Nationality : South African
Place : Runway 17 at Bona-Bona Lodge Airfield
Date and Time : 29 January 2024, 1135Z
Injuries : None
Damage : Substantial

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.

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.

Investigation Process

The Accident and Incident Investigations Division (AIID) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence involving a Beechcraft King Air C90A aircraft which occurred on Runway 17 at Bona-Bona Lodge Airfield in the North West province on 29 January 2024 at 1135Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and ICAO STD Annex 13 definitions.

The AIID has appointed an investigator-in-charge to conduct the investigation. The investigator did not dispatch to the accident site. Notifications were sent to the State of Registry and Manufacturer in accordance with the CAR 2011 Part 12 and the International Civil Aviation Organisation (ICAO) Annex 13 Chapter 4. The states did appoint an accredited representative and advisor. The AIID will lead the investigation and issue the final report of this accident in accordance with the CAR 2011 Part 12 and the ICAO Annex 13.

The information contained in this preliminary report is derived from the information gathered during the on-going investigation into the occurrence. Later, an interim or final report may contain altered information in case new evidence is found during the on-going investigation that requires changes to the information depicted in this report.

The AIID reports are made available to the public at:

<https://www.caa.co.za/industry-information/accidents-and-incidents/#aircraft-accident-reports>

Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:
Accident — this investigated accident
Aircraft — the Beechcraft C90A involved in this accident
Investigation — the investigation into the circumstances of this accident
Pilot — the pilot involved in this accident
Report — this accident report*
- Photos and figures used in this report were taken from diverse sources and may have been adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

Disclaimer

This report is produced without prejudice to the rights of the SACAA, which are reserved.

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
ATPL	Airline Transport Pilot Licence
CAR	Civil Aviation Regulations
C of R	Certificate of Registration
C of A	Certificate of Airworthiness
CRS	Certificate of Release to Service
E	East
FALA	Lanseria International Airport
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
kt	Knots
m	Metres
METAR	Meteorological Aerodrome Report
MHz	Megahertz
MPI	Mandatory Periodic Inspection
QNH	Altitude Above Mean Sea Level
S	South
SACAA	South African Civil Aviation Authority
Sct	Scattered Clouds
SAWS	South African Weather Service
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

- 1.1.1. On Monday, 29 January 2024 at 1056Z, a pilot and two passengers on-board a Beechcraft King Air C90A twin-turboprop aircraft registered ZS-FON took off on a private flight from Lanseria International Airport (FALA) in Gauteng province with the intention to land at Bona-Bona Lodge Airfield in the North West province. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.
- 1.1.2. The pilot reported that the flight from FALA to Bona-Bona Lodge was uneventful; the duration was approximately 40 minutes. However, during the landing roll after the pilot had feathered the propeller, the left wheel assembly unhinged from the axle. The pilot felt the aircraft pull to the left and he engaged the right rudder to correct the anomaly, but was unsuccessful. The pilot then applied the toe-brakes to decelerate, but the aircraft continued to pull to the left. A loud noise was heard thereafter, and the aircraft veered sharply to the left and exited the runway. Once the aircraft came to a stop, the pilot shut down the engines and secured the aircraft.
- 1.1.3. According to the pilot, a passenger remarked that whilst on-board, he saw the left-side wheel assembly after it detached from the aircraft. After disembarking from the aircraft, the pilot noticed that the left main wheel assembly was approximately 50 metres (m) in front of the aircraft and that the left main gear axle was missing the main wheel. He also noticed that the left wheel assembly had struck all four blades of the left-side propeller. The aircraft came to rest approximately a metre from the left side of the runway.
- 1.1.4. Damage was limited to the No.1 engine propeller blades and the left landing gear wheel assembly. *In-depth damage assessment will be discussed in the final report.* All occupants disembarked from the aircraft unharmed.
- 1.1.5. The accident occurred during day light on Runway 17 at Bona-Bona Lodge Airfield at Global Positioning System (GPS) co-ordinates determined to be 27°01'18.40" S 26°13'16.52" E at an elevation of 4760 feet (ft).



Figure 2: Aerial view of the threshold of Runway 17 and the approximate area where the aircraft had stopped. (Source: Google Earth)

1.2. **Injuries to Persons**

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	-	-	-	-	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	1	-	2	3	-
Total	1	-	2	3	-

Note: Other means people on the ground.

1.3. **Damage to Aircraft**

1.3.1. The No.1 engine propeller blades and the left-side gear wheel assembly (hubs and bearings) were damaged.



Figures 3 and 4: Damage to the No.1 engine propeller blades (left) and the left-side wheel assembly hubs (right).

1.4. **Other Damage**

1.4.1. None.

1.5. **Personnel Information**

Nationality	South Africa	Gender	Male	Age	42
Licence Type	Airline Transport Pilot Licence (ATPL) (Aeroplane)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Instrument Rating, and Instructor Grade 2				
Medical Expiry Date	31 December 2024				
Restrictions	None				
Previous Accidents	None				

Note: Previous accidents refer to past accidents the pilot was involved in, when relevant to this accident.

Flying Experience:

Total Hours	8 478.6
Total Past 24 Hours	2.5
Total Past 7 Days	2.5
Total Past 90 Days	70.8
Total on Type Past 90 Days	5.4
Total on Type	246.7

1.5.1. The pilot was initially issued an Airline Transport Pilot Licence (ATPL) on 30 April 2010 under the provisions of Part 61 of the CAR 2011. The licence was revalidated on 24 November 2023 and was reissued on the same day with an expiry date of 31 December 2024.

1.5.2. The pilot was issued a Class 1 medical certificate on 17 July 2023 with an expiry date of 31 July 2024.

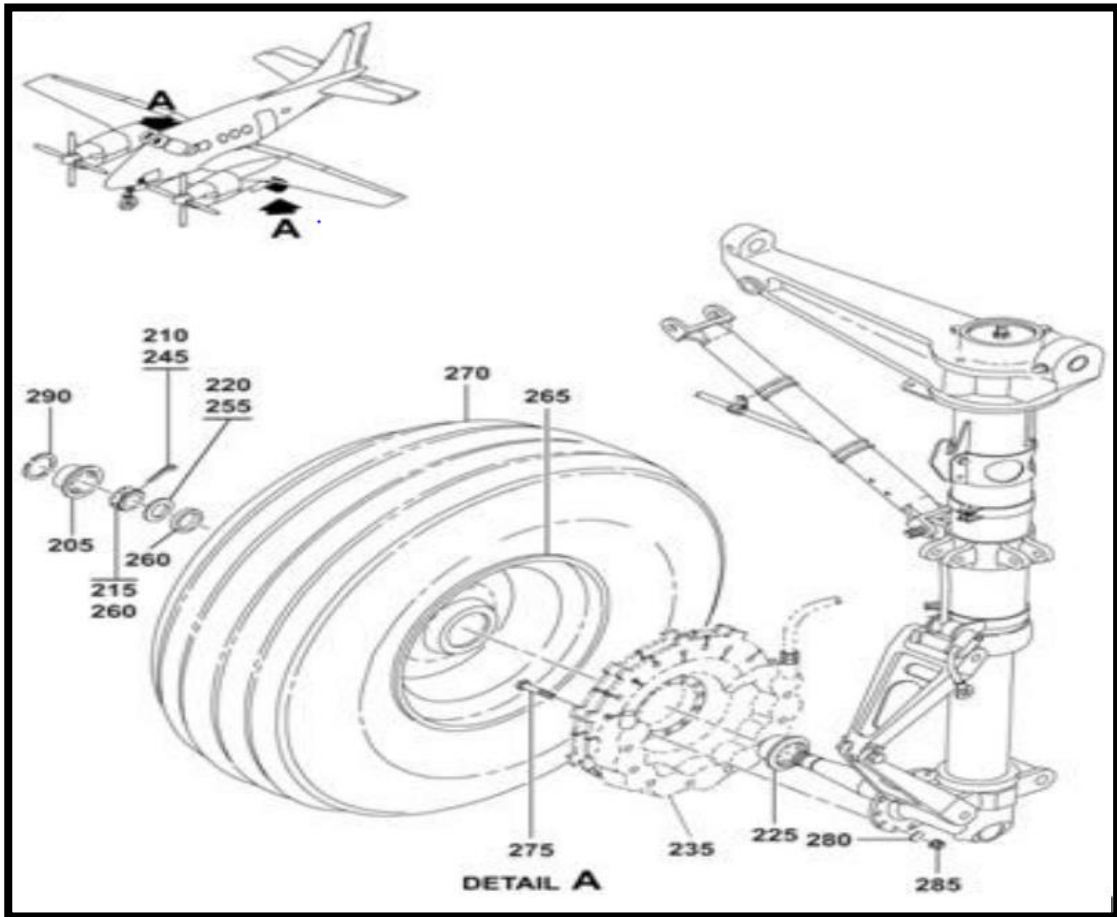
1.6. Aircraft Information

(Source: Aircraft Maintenance Manual (AMM) <https://www.globalair.com> specifications)

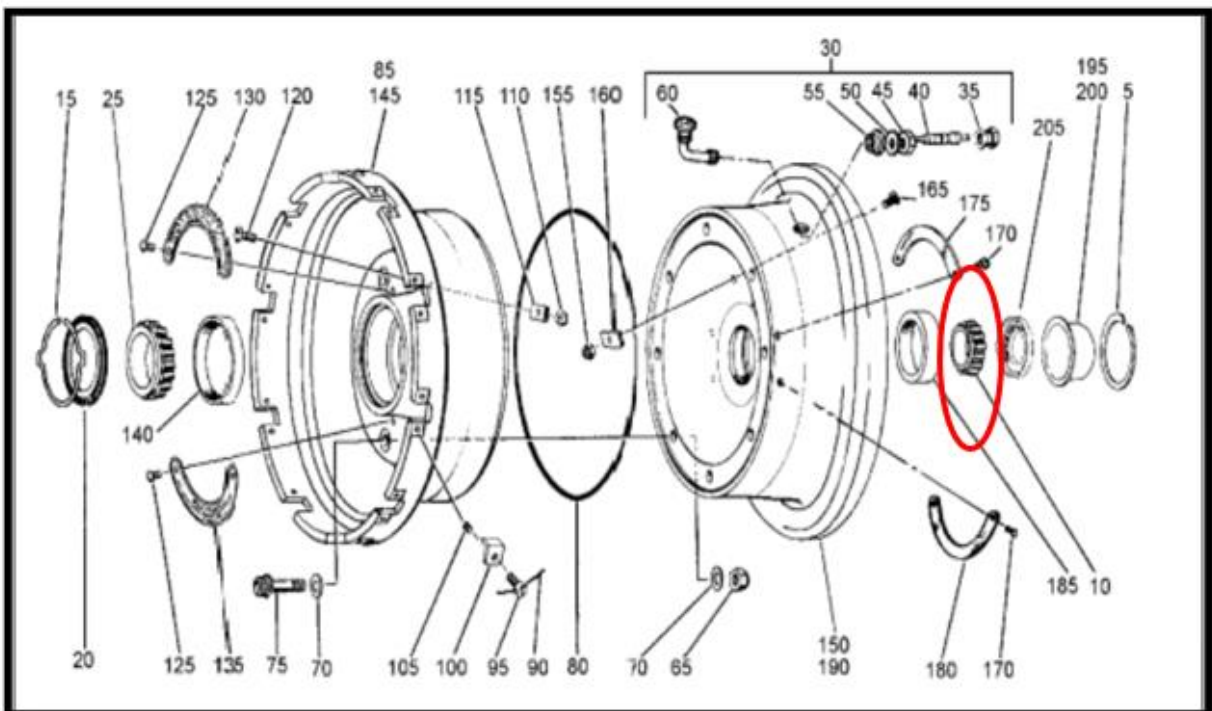
1.6.1. *The Beechcraft King Air C-90 is an all-metal, low-wing, twin-engine, turbo-propeller aircraft with retractable landing gear. The aircraft is equipped with conventional ailerons, elevators and rudder for roll, pitches and yaw control, respectively. The airplane is equipped with dual controls for the pilot and co-pilot. The ailerons and elevators are operated by control wheels interconnected by a T-bar. Flight instruments are arranged in a group directly in front of the pilot and the co-pilot. Complete pilot and co-pilot flight instrumentation is available, including dual navigation systems, two course selectors, dual gyro horizons and dual turn and slip indicators. The aircraft's length is 1082 centimetres (cm), wingspan is 1532 cm, and height is 434 cm.*

1.6.2. *The landing gear on King Air C90A aircraft are retracted and extended by an electrically operated hydraulic system. The electrically operated hydraulic power pack is located in the wing centre section forward of the main spar. As per the original equipment manufacturer (OEM) maintenance manual, the landing gear of King Air C90A aircraft should be inspected at an interval of every 8000 cycles/ 6 years.*

1.6.3. *King Air C90A aircraft's main wheel is a split-type assembly made of cast magnesium. The wheel assembly uses an 8.50 X 10 tubeless tyres.*



Number indicated in the above figure	Component nomenclature
215/260	NUT
210/245	PIN- COTTER
220/255	WASHER
260	SPACER



Number indicated in the above figure	Component nomenclature
5	Ring, Lock
10	Cone, Bearing, Outer
15	Retainer, Inner
20	Seal Assembly, Inner
25	Cone, Bearing, Inner
65	Nut, Self-locking
70	Washer, Countersunk
75	Bolt
85	Wheel Half Assembly, Inner
130	Identification Plate
135	Instruction Plate
140	Cup, Bearing, Inner
145	Wheel Half, Inner
150	Wheel Half Assembly, Outer
185	Cup, Bearing, Outer
190	Wheel Half, Outer
200	Cap, Hub (No Axle Hole)

Diagram / Tables 1: The main landing gear wheel assembly sketch and explanatory tables.

1.6.4 The left-side main wheel outer bearing (item number 10 in the Diagram / Table 1) was damaged, which resulted in the main wheel assembly separating from the axle.

Airframe

Manufacturer/Model	Raytheon Aircraft Company / Beechcraft King Air C90A	
Serial Number	LJ-1735	
Year of Manufacture	2005	
Total Airframe Hours (At Time of Accident)	2 797.5	
Last Inspection (Date & Hours)	8 December 2023	2 782.9
Hours Since Last Inspection	14.6	
CRS Issue Date	8 December 2023	
C of A (Issue Date & Expiry Date)	5 June 2005	31 July 2024
C of R (Issue Date) (Present Owner)	17 July 2023	
Type of Fuel Used	Jet A1	

Operating Category	Standard Normal Category
Previous Accidents	None

Note: Previous accidents refer to past accidents the aircraft was involved in, when relevant to this accident.

Engine Left side (Number 1)

Manufacturer/Model	Pratt & Whitney
Serial Number	PCE-PE0624
Part Number	PT6A-21
Hours Since New	2 797.5
Hours Since Overhaul	Not yet reached

Propeller Left side (Number 2)

Manufacturer/Model	Hartzell
Serial Number	HH2203
Part Number	HC-E4N-3N
Hours Since New	2 797.5
Hours Since Overhaul	797.1

Engine Right-side

Manufacturer/Model	Pratt & Whitney
Serial Number	PCE-PE0623
Part Number	PT6A-21
Hours Since New	2 797.5
Hours Since Overhaul	Not yet reached

Propeller Right-side

Manufacturer/Model	Hartzell
Serial Number	HH2201
Part Number	HC-E4N-3N
Hours Since New	2797.5
Hours Since Overhaul	797.1

1.7. Meteorological Information

- 1.7.1. The weather information below was obtained from the pilot questionnaire on 29 January 2024 at 1135Z.

Wind Direction	170°	Wind Speed	10kts	Visibility	9999m
Temperature	31°C	Cloud Cover	Sct	Cloud Base	10000ft
Dew Point	unknown	QNH	unknown		

1.8. Aids to Navigation

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator (SACAA). There were no records indicating that the navigational equipment was unserviceable prior to the flight.

1.9. Communication

1.9.1. The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight.

1.10. Aerodrome Information

Aerodrome Location	Wolmaransstad, North West Province
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	27°01'16" South 26°13'18" East
Aerodrome Elevation	4 605 feet
Runway Headings	17/35
Dimensions of Runway Used	1 296m X 19m
Heading of Runway Used	17
Surface of Runway Used	Tar
Approach Facilities	Unmanned
Radio Frequency	124.8 Megahertz (MHz)

1.11. Flight Recorders

1.11.1. The aircraft was not equipped with a flight data recorder (FDR) and it was not required by regulation to be fitted to the aircraft type. The cockpit voice recorder (CVR) was fitted to the aircraft. Data from the CVR will be discussed in the final report.

1.12. Wreckage and Impact Information

1.12.1. During the landing roll on Runway 17 at Bona-Bona Lodge Airfield, the No. 1 engine propeller blades contacted the left main gear wheel assembly which separated from the axle. The aircraft skidded on its left gear brake assembly for approximately 38m before it stopped on the grass on the left side of Runway 17.



Figure 5: Damaged tyre struck by the propeller blades. (Source: Pilot)



Figures 6, 7, 8 and 9: Damage sustained to the four (4) propeller blades. (Source: Pilot)

1.13. Medical and Pathological Information

1.13.1. Not applicable.

1.14. Fire

1.14.1. There was no evidence of a pre- or post-impact fire.

1.15. **Survival Aspects**

1.15.1. The accident was considered survivable as the cockpit was not affected. The pilot had worn his safety harness which remained intact during the accident sequence.

1.16. **Tests and Research**

1.16.1 To be discussed in the final report.

1.17. **Organisational and Management Information**

1.17.1. This was a private flight operated under the provisions of Part 91 of the CAR 2011 as amended.

1.17.2. The aircraft was maintained by the SACAA-approved aircraft maintenance organisation (AMO). The AMO was issued an approval certificate on 27 November 2023 with an expiry date of 30 November 2024.

1.18. **Additional Information**

1.18.1. To be discussed in the final report.

1.19. **Useful or Effective Investigation Techniques**

1.19.1. To be discussed in the final report.

2. **FINDINGS**

2.1. **General**

From the available evidence, the following preliminary findings were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusions heading:

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.

2.2. Findings

- 2.2.1 The pilot was initially issued an Airline Transport Pilot Licence (ATPL) on 30 April 2010 under the provisions of Part 61 of the CAR 2011. The pilot was reissued the licence on 24 November 2023 with an expiry date of 31 December 2024. The pilot had the night, instrument and instructor Grade 2 ratings in accordance with (IAW) the existing regulations.
- 2.2.2 The pilot was issued a Class 1 aviation medical certificate on 17 July 2023 with an expiry date of 31 July 2024.
- 2.2.3 The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the CAR 2011.
- 2.2.4 The aircraft was issued a Certificate of Registration (C of R) on 17 July 2023.
- 2.2.5 The aircraft was initially issued the Certificate of Airworthiness (C of A) on 5 June 2005. The C of A was renewed on 14 June 2023 with an expiry date of 31 July 2024.
- 2.2.6 The last 100-hour mandatory periodic inspection (MPI) that was conducted on the aircraft prior to the accident flight was certified on 8 December 2023 at 2782.9 airframe hours. The accident occurred at 2797.5 airframe hours, which meant that the aircraft had accrued an additional 14.6 hours since the last MPI inspection.
- 2.2.7 The aircraft was issued a Certificate of Release to Service (CRS) on 8 December 2023 with an expiry date of 7 December 2024 or at 2882.9 airframe hours, whichever occurs first.
- 2.2.8 The AMO which conducted the last MPI on the aircraft had an approval certificate that was issued on 27 November 2023 with an expiry date of 30 November 2024.
- 2.2.9 The left-side main wheel outer bearing item number 10 (Diagram / Table 1) was damaged which caused the main wheel assembly to separate from the axle. As a result, the No.1 engine propeller blades and the left-side gear wheel assembly were damaged.

3. ON-GOING INVESTIGATION

- 3.1. The AIID investigation is on-going and the investigator will be looking into other aspects of this occurrence which may or may not have the safety implications.

**This report is issued by:
Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa**