SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10384								
Classification	Accident		**Date**	4 November 2023			**Time**	1145Z	
Type of Operation	Private (Part 91)								
Location									
Place of Departure	Lydenburg Airfield (FALL), Mpumalanga Province		Place of Intended Landing			Lydenburg Airfield (FALL), Mpumalanga Province			
Place of Occurrence	Runway 04, Lydenburg Airfield (FALL) Mpumalanga Province								
GPS Co-ordinates	Latitude	25º6’76” South (S)	Longitude	030º24’63” East (E)		Elevation	4 880 feet		
Aircraft Information									
Registration	ZS-DOB								
Make; Model; S/N	Beech Aircraft Corporation; G35 Bonanza (Serial Number: D-4654)								
Damage to Aircraft	Substantial			Total Aircraft Hours		8225.54			
Pilot-in-command									
Licence Type	Private Pilot Licence (PPL)		Gender	Male		Age	50		
Licence Valid	Yes	Total Hours	405		Total Hours on Type		145.6		
Total Hours 30 Days	9		Total Flying on Type Past 90 Days		42				
People On-board	1+3	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0		

What Happened

On Saturday, 4 November 2023, a pilot and three passengers on-board a Beech G35 Bonanza aircraft with registration ZS-DOB took off on a private flight from Lydenburg Airfield (FALL) in Mpumalanga province to the local general flying area (GFA), with the intention to return to FALL. 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 during the take-off roll, approximately 500 metres (m) from the threshold of Runway 04 before rotation, the left landing gear collapsed, followed by the right landing gear and the nose landing gear. As a result, the propeller struck the runway and the aircraft veered off to the left of the grass-covered runway; it skidded on its belly for about 5 metres (m) before it stopped.

The aircraft sustained substantial damage. The occupants on-board the aircraft were not injured during the accident sequence.

After the accident, the aircraft maintenance organisation (AMO) conducted a visual inspection of the aircraft, and the following damage was recorded: the undercarriage covers and the engine lower cowlings sustained damage; the propeller blades were curled backwards (see Figure 1). The landing gear selector lever was found in the down position (see Figure 2).

On 17 January 2024, the investigator-in-charge (IIC) emailed the AMO to make an arrangement to come inspect the aircraft. However, the IIC was informed that the owner had sold the aircraft during the festive holidays, and that the new owner has had it dismantled. The IIC was not informed of the sale even though the aircraft was still under investigation and had not been released by the investigation team; therefore, Part 12.04.4 of the South African CAR was contravened (see Appendix A). As a result, this investigation could not be completed.

Figure 1: The damaged propeller blades. (Source: Operator)

Figure 2: The cockpit instruments. (Source: Operator)

The Description and Operation of the Landing Gear System

(Source: Airplane Flight Manual, Section 3)

The landing gears are operated through adjustable linkage connected to an actuator assembly mounted beneath the front seats. The actuator assembly is driven by an electric motor controlled by the landing gear control switch mounted on the right hand switch panel and limit switches mounted adjacent to the actuator assembly. The landing gear motor and the actuator assembly are accessible by removing the front seat. Access to the limit switches on serials D-1 through D-2680 may be gained by removing the inspection door in the fuselage skin beneath the cabin. On serials D-2681 and after, the switches are accessible by removing the front seats.

The landing gears may be electrically retracted and extended, and in an emergency may be lowered manually. The landing gear motor circuit consists of the landing gear control switch, limit switches, safety switch, motor and circuit breaker. The push button for resetting the landing gear motor circuit breaker is located in the right hand subpanel.

When the landing gear control switch is placed in the "UP" position, the circuit is completed to the safety switch on the right hand landing gear. If the safety switch has been actuated to complete the circuit to the up winding of the landing gear motor, as would be the case if the airplane were airborne or supported on jacks, the landing gearmotor will run until the landing is fully retracted and the up limit switch is actuated, breaking the circuit to the landing gear motor. When the reversing switch is placed in the "DOWN" position, the circuit is completed to the down winding of the landing gear motor and the motor will operate until the landing gear has been fully extended and the down limit switch actuated, breaking the circuit to the landing gear motor.

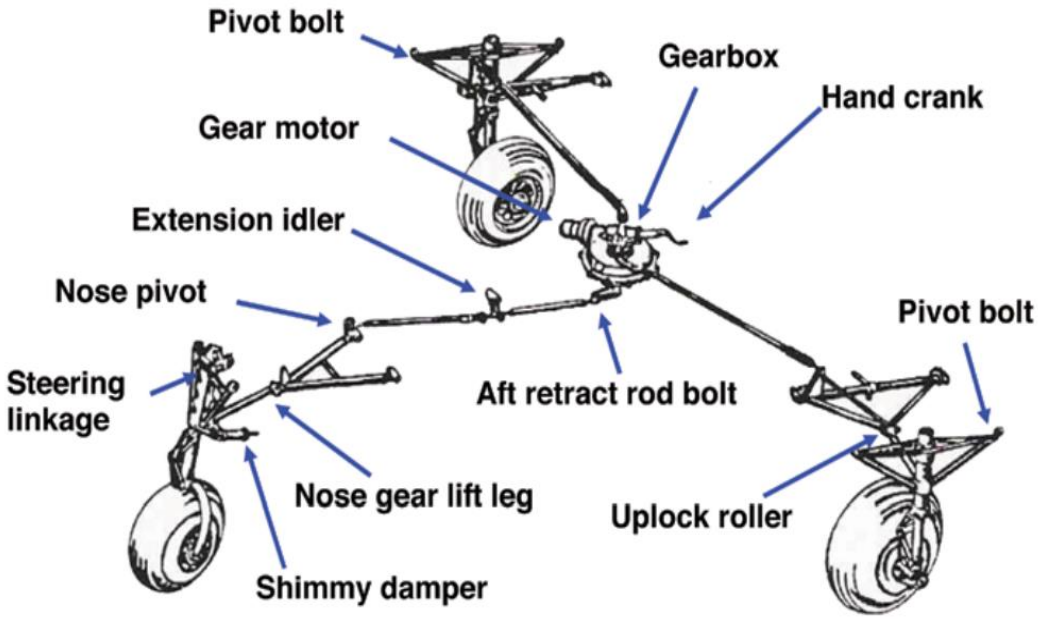

Illustration 1: The landing gear system schematic.

The aircraft's empty weight is 2450 pounds (lb) (1111.30 kilograms [kg]). The maximum certificated take-off mass is 2775 lb (1258.71 kg) (see table below). On the day of the accident, the pilot and the three passengers (children) were on-board with no baggage; the aircraft had 130 litres of fuel.

AIRCRAFT EMPTY WEIGHT					
2450	lb	79.6	in	202184	lb-in
1111.30	kg	2.02	m	2244.82	kg-m
MAXIMUM CERTIFICATED TAKEOFF MASS		2775	lb	1258.71	kg

Table 1: Mass and balance weight. (Source: SACAA Database)

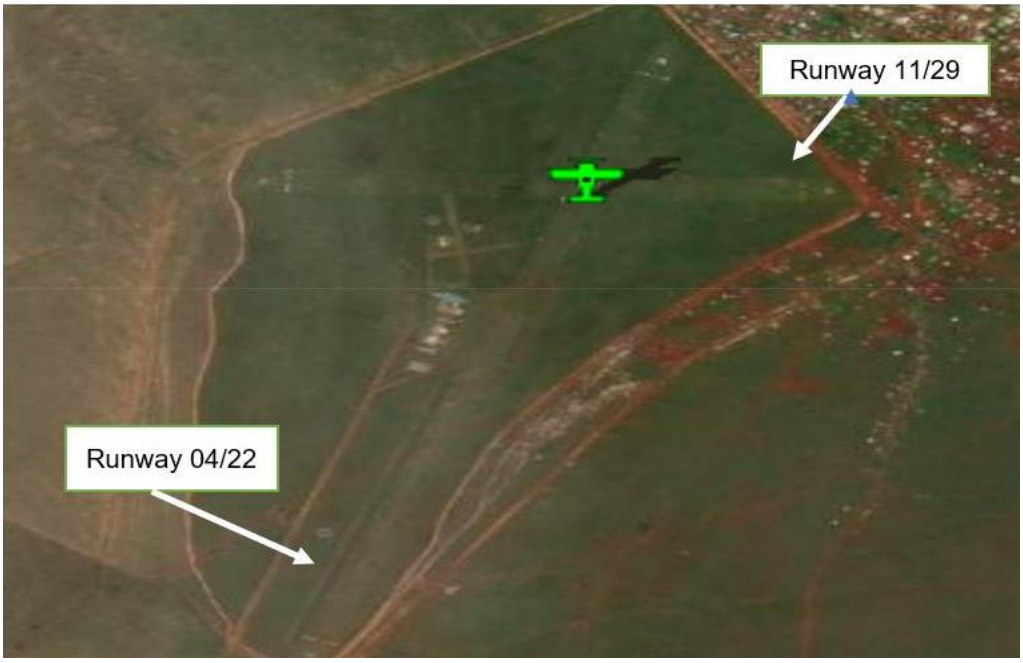

Figure 3: The Lydenburg Airfield layout. (Source: Google Earth)

The airfield is for public use; thus, it is registered with the Regulator (SACAA).

It comprises four runways:

- Runway 04/22, which is 1363 metres (m) long and 46m wide with grass surface.
- Runway 11/29, which is 702m long and 46m wide with grass surface.

The weather information below was obtained from the Meteorological Aerodrome Report (METAR) that was issued by the South African Weather Service (SAWS), recorded at Nelspruit Airfield (FAKN) which is the closest weather station to the accident site.

METAR FAKN 041200Z 06009KT CAVOK 25/14 Q1018 NOSIG=

Wind Direction	065°	Wind Speed	09kt	Visibility	9999m
Temperature	25°C	Cloud Cover	Nil	Cloud Base	Nil
Dew Point	14ºC	QNH	1018hPa		

According to the pilot, the grass was dry on the day of the accident, which was consistent with the weather report. The pilot further reported that the runway surface was smooth and suitable for use.

Findings

The Pilot.

1. The pilot was initially issued a Private Pilot Licence (PPL) on 24 April 2003. His last licence validation was on 21 April 2023, and the licence was reissued with an expiry date of 14 April 2025. The aircraft type was endorsed on the pilot's licence. The pilot was issued a Class 4 aviation medical certificate on 7 June 2022 with an expiry date of 30 June 2024 with no medical waivers.

2. At the time of the accident, the pilot had a total of 405 flying hours, of which 145.6 were on the aircraft type.

The Aircraft

3. The aircraft was first registered to the present owner on 24 July 2020, and the Certificate of Registration (C of R) was issued thereof. The Certificate of Airworthiness (C of A) was reissued on 31 July 2022 with an expiry date of 31 July 2024.

4. According to the aircraft's latest Certificate of Release to Service (CRS) and logbooks, the last 100-hour annual inspection was certified on 14 June 2023 at 8165.34 total airframe hours with an expiry date of 14 June 2024 or at 8265.34 airframe hours, whichever occurs first. At the time of the accident, the aircraft had accumulated 8225.54 airframe hours. The aircraft had accrued a further 60.2 airframe hours since the last annual inspection.

5. Examination of the flight folio and the defects report showed no outstanding defects that required rectification to the aircraft's landing gear system before the accident flight. The aircraft logbooks and maintenance history documents were reviewed, and they were found to be in order. All applicable Service Instructions (SI), Service Bulletins (SB) and Airworthiness Directives (ADs) were complied with. The last maintenance on the aircraft was conducted by an approved person (AP) with a valid Approved Person Certificate. The AP was qualified to carry out maintenance on the aircraft type.

6. The aircraft's weight and balance were within limits, therefore, had no bearing to this accident.

7. The runway surface was suitable for use on the day of the flight; therefore, it had no bearing to this accident.

8. Fine weather conditions prevailed at the time of the flight; the weather had no bearing to this accident.

9. The investigation could not be concluded as Part 12.04.4 was contravened.

Probable Cause

The probable cause was likely a landing gear failure; however, this could not be determined due to tampering of evidence.

Contributing Factor

Non-compliance to Part 12.04.4 of the CAR 2011 as amended.

Safety Action(s)

None.

Safety Recommendation

It is recommended to the Director of Civil Aviation (DCA) that enforcement action be considered on the previous and new owners of the aircraft for contravening Part 12.04.4 of the South African CAR 2011 as amended as their actions hindered the investigation into the occurrence of this accident.

About this Report

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.

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

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

Appendix A

Interference with objects and marks at scene of accident

12.04.4 *(1) Subject to the provisions of this Part, no person shall interfere with an aircraft which has been involved in an accident, the wreck or wreckage, a part or component thereof or anything transported therein or any marks resulting from the accident which may be of assistance in an investigation—*

(a) until authorised to do so by the investigator-in-charge;