SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/3/2/1478						
Classification	Serious Incident	**Date**	14 May 2025		**Time**	0942Z	
Type of Operation	Private (Part 94)						
Location							
Place of Departure	Wings Park Airfield, East London, Eastern Cape Province	Place of Intended Landing	Wings Park Airfield, East London, Eastern Cape Province				
Place of Occurrence	Wings Park Airfield in East London, Eastern Cape Province						
GPS Co-ordinates	Latitude	32°49′.17″ S	Longitude	27°50′.18″ E	Elevation	1 276ft	
Aircraft Information							
Registration	ZU-FVZ						
Make; Model; S/N	Jabiru Aircraft; J170 (Serial Number: 20)						
Damage to Aircraft	Minor	Total Aircraft Hours	472.5				
Pilot-in-command							
Licence Type	National Pilot Licence (NPL)	Gender	Male	Age	69		
Licence Valid	Yes	Total Hours	1369.2	Total Hours on Type	30.2		
Total Hours 30 Days	12	Total Flying on Type Past 90 Days	23.6				
People On-board	1+1	**Injuries**	0	**Fatalities**	0	**Other (on the ground)**	0

What Happened

On Wednesday morning, 14 May 2025, a pilot and a passenger on-board a Jabiru J170 aircraft with registration ZU-FVZ took off on a private flight from Wings Park Airfield in East London, Eastern Cape province, to Wave Crest in the same province, with the intention to return to the same airfield when the serious incident occurred. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.

The pilot reported that he conducted a pre-flight inspection and no anomalies were found. He further stated that the aircraft had 80 litres (L) of Avgas 100LL fuel. The flight duration was planned to last 2 hours. Upon his return flight to Wings Park Airfield, the pilot joined the left downwind for Runway 09. The approach was stable and the aircraft touched down with the main wheels first, followed by the nose wheel. During taxi at approximately 5 miles per hour (mph), the lower suspension shaft separated from the nose wheel yoke of the nose landing gear. Consequently, the nose pitched down and the propeller blades struck the ground. After the aircraft had stopped, the pilot shut down the engine and vacated the aircraft.

The aircraft sustained minor damage to the propeller and nose gear. No person was injured.

The serious incident occurred during daylight at Global Positioning System (GPS) co-ordinates determined to be 32°49′.17″ South 27°50′.18″ East, at an elevation of 1 276 feet (ft).

Figure 1: Aerial view of Wings Park Airfield and the direction of landing of the aircraft. (Source: Google Earth)

Figure 2: The aircraft at the serious incident site. (Source: Pilot)

Post-serious Incident Investigation:

On the same day, 14 May 2025, the approved person (AP) recovered the aircraft to the South African Civil Aviation Authority-approved facility at Wings Park Airfield in East London. The AP reported that he inspected the engine for damage and found no anomalies. However, upon inspection of the propeller blades, he found that one of the blades was damaged (see Figure 3). He also noted that the bolt connecting the lower suspension shaft to the nose wheel yoke of the nose landing gear (NLG) was missing (see Figure 4), which caused the NLG to collapse. The AP searched the runway for the missing bolt but was unable to locate it.

During a telephonic interview, the pilot indicated to the investigator that the landing proceeded without any abnormalities.

Figure 3: The damaged propeller blade. (Source: Pilot)

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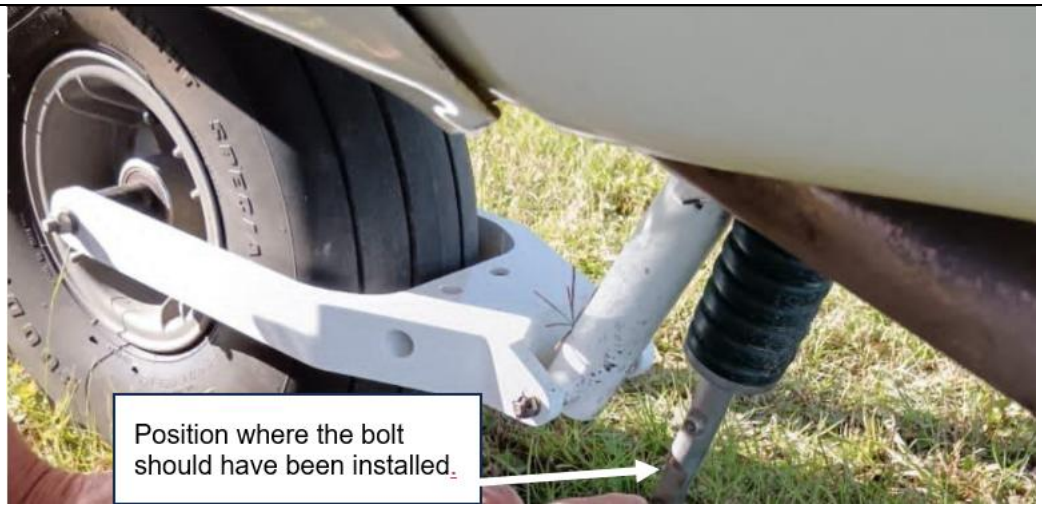


Figure 4: The lower suspension with the missing bolt. (Source: Pilot)

Figure 5: The yellow circles indicate the bolt connecting the lower suspension shaft to the yoke of the nose landing gear.

Note that in the photos above, the nose leg has been removed for clarity. (Source: Jabiru J160/170 Constructors Manual)

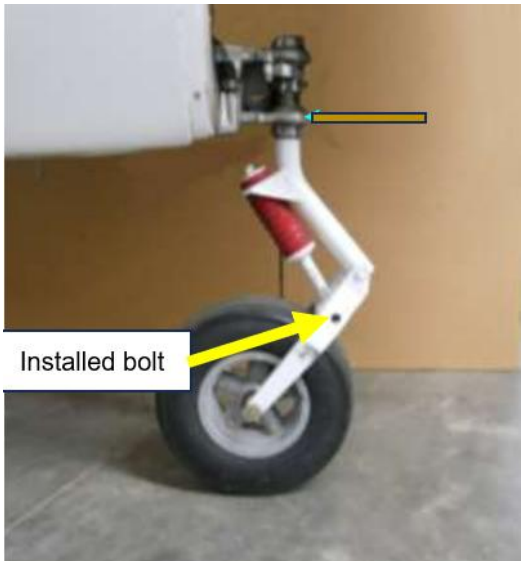
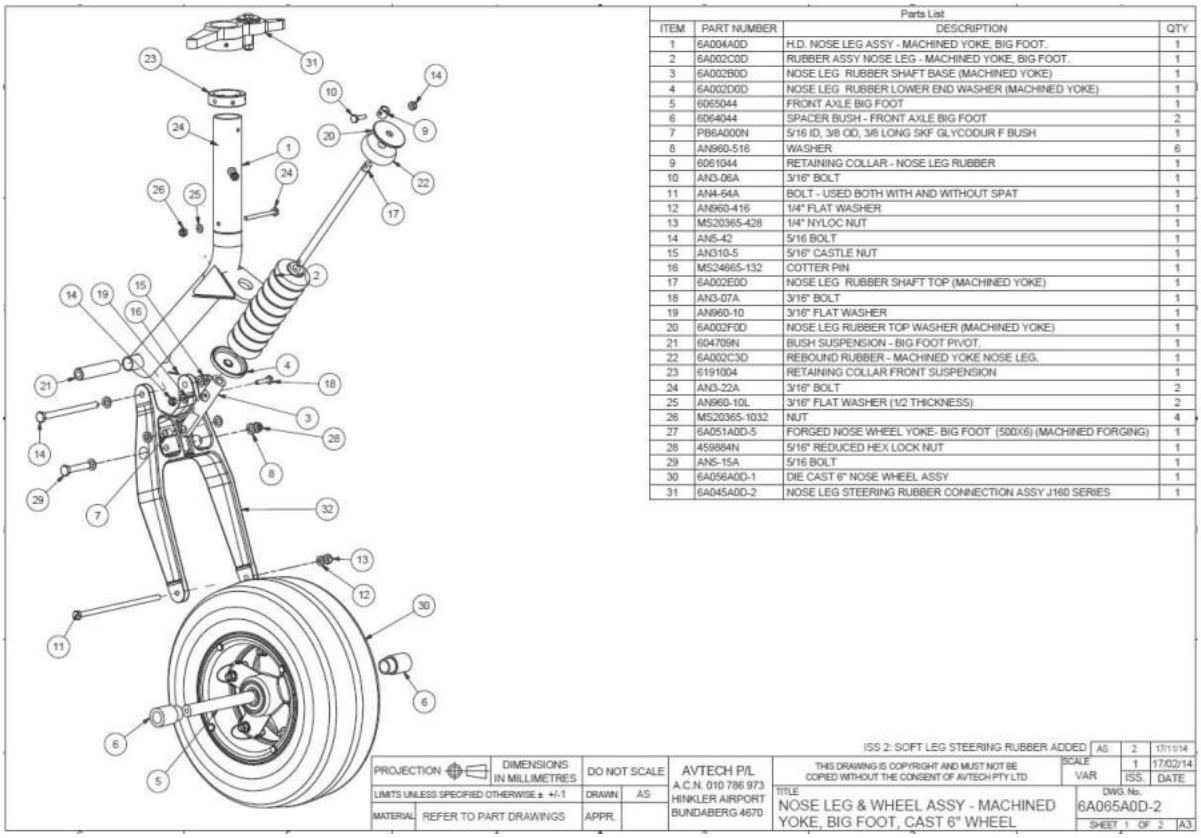


Figure 6: The lower suspension with the installed bolt. (Source: Jabiru J160/170 Constructors Manual)

Jabiru Nose Leg Configuration. (Source: Jabiru J160/170 Constructors Manual*)*

The Jabiru aircraft has a classic trailing link nose leg design. The main rubber and rebound rubber tend to spring like a trampoline and help soften the rebound of the nose wheel. The trailing link landing gear is best for smooth landings.

The geometry and dimensions of this configuration have been carefully calculated to incorporate centre-of-gravity (COG) ranges, inertia and load analysis, including mass.
Using geometry, the trailing link landing gear takes the upward energy of the wheels contacting the runway and dissipate it through a pivot point, forward of the tyre instead of straight up through a strut. An oleo strut connects the horizontal arm to the vertical arm, soften the oscillations and enabling the gear to compress smoothly.



Parts List

ITEM	PART NUMBER	DESCRIPTION	QTY
1	6A004A0D	H.D. NOSE LEG ASSY - MACHINED YOKE, BIG FOOT.	1
2	6A002C0D	RUBBER ASSY NOSE LEG - MACHINED YOKE, BIG FOOT.	1
3	6A002B0D	NOSE LEG RUBBER SHAFT BASE (MACHINED YOKE)	1
4	6A002D0D	NOSE LEG RUBBER LOWER END WASHER (MACHINED YOKE)	1
5	6065044	FRONT AXLE BIG FOOT	1
6	6064044	SPACER BUSH - FRONT AXLE BIG FOOT	2
7	PB6A000N	5/16 ID, 3/8 OD, 3/8 LONG SKF GLYCODUR F BUSH	1
8	AN960-516	WASHER	6
9	6061044	RETAINING COLLAR - NOSE LEG RUBBER	1
10	AN3-06A	3/16" BOLT	1
11	AN4-64A	BOLT - USED BOTH WITH AND WITHOUT SPAT	1
12	AN960-416	1/4" FLAT WASHER	1
13	MS20365-428	1/4" NYLOC NUT	1
14	AN5-42	5/16 BOLT	1
15	AN310-5	5/16" CASTLE NUT	1
16	MS24665-132	COTTER PIN	1
17	6A002E0D	NOSE LEG RUBBER SHAFT TOP (MACHINED YOKE)	1
18	AN3-07A	3/16" BOLT	1
19	AN960-10	3/16" FLAT WASHER	1
20	6A002F0D	NOSE LEG RUBBER TOP WASHER (MACHINED YOKE)	1
21	604709N	BUSH SUSPENSION - BIG FOOT PIVOT.	1
22	6A002C3D	REBOUND RUBBER - MACHINED YOKE NOSE LEG.	1
23	6191004	RETAINING COLLAR FRONT SUSPENSION	1
24	AN3-22A	3/16" BOLT	2
25	AN960-10L	3/16" FLAT WASHER (1/2 THICKNESS)	2
26	MS20365-1032	NUT	4
27	6A051A0D-5	FORGED NOSE WHEEL YOKE- BIG FOOT (500X6) (MACHINED FORGING)	1
28	459884N	5/16" REDUCED HEX LOCK NUT	1
29	AN5-15A	5/16 BOLT	1
30	6A056A0D-1	DIE CAST 6" NOSE WHEEL ASSY	1
31	6A045A0D-2	NOSE LEG STEERING RUBBER CONNECTION ASSY J160 SERIES	1

ISS 2: SOFT LEG STEERING RUBBER ADDED AS 2 17/11/14

PROJECTION | DIMENSIONS IN MILLIMETRES | DO NOT SCALE | AVTECH P/L A.C.N. 010 786 973 HINKLER AIRPORT BUNDABERG 4670

LIMITS UNLESS SPECIFIED OTHERWISE ± +/-1 | DRAWN AS

MATERIAL REFER TO PART DRAWINGS | APPR.

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SCALE VAR | ISS. 1 | DATE 17/02/14

TITLE NOSE LEG & WHEEL ASSY - MACHINED YOKE, BIG FOOT, CAST 6" WHEEL

DWG. No. 6A065A0D-2

SHEET 1 OF 2 A3

Jabiru J170 Constructors Manual

Pre-Paint>Fuselage>Firewall forward>Assemble and fit nose gear

Diagram 1: The nose Leg and wheel assembly. (Source: Jabiru J170 Manual)

The Jabiru Pilot's Operating Handbook specifies that the landing gear bolts must be inspected as part of the pre-flight inspection.

Undercarriage

*Mount bolts .....CHECK SECURE**

The collapse of the nose landing gear was due to the detachment of the bolt that secured the lower suspension shaft to the yoke of the nose landing gear assembly. The absence of the securing bolt rendered the suspension assembly ineffective to transmit loads which led to the nose landing gear collapse during taxi.

Findings

Man

1. The pilot had a National Pilot Licence (NPL) that was initially issued on 9 January 2008. His latest licence validation was conducted on 7 September 2023 after which the licence was issued with an expiry date of 6 September 2025. The aircraft type was endorsed on the pilot's licence.

2. The pilot had a Class 4 aviation medical certificate that was issued on 2 September 2022 with an expiry date of 30 September 2025.

Maintenance

3. The approved person (AP) responsible for maintaining the aircraft had an Approved Person Certificate that was issued on 23 October 2024 with an expiry date of 22 October 2026. At the time of the serious incident, the AP had valid and appropriate certification to perform maintenance on the aircraft in accordance with the regulatory requirements.

Aircraft

4. The aircraft's Certificate of Registration (C of R) was issued to the current owner on 13 November 2024. The Authority-to-fly (ATF) Certificate was initially issued on 11 May 2019. The latest ATF Certificate was issued on 10 June 2024 with an expiry date of 31 May 2025.

5. The last annual inspection of the aircraft was certified on 29 May 2024 at 444.6 total airframe hours. At the time of the serious incident, the aircraft had a total of 472.5 airframe hours. The aircraft was flown a further 27.9 hours since the said inspection.

6. The aircraft was issued a Certificate of Release to Service (CRS) on 29 May 2024 at 444.6 airframe hours with an expiry date of 28 May 2025 or at 544.6 airframe hours, whichever occurs first.

7. The nose landing gear collapsed due to the detachment of the bolt that secured the lower suspension shaft to the yoke of the nose landing gear assembly.

8. The absence of the bolt and nut compromised the structural integrity of the nose landing gear assembly which resulted in its failure.

9. The Jabiru Pilot's Operating Handbook requires the inspection of the landing gear bolts during the pre-flight inspection.

Probable Cause

The nose landing gear collapsed due to the detachment of the bolt that secured the lower suspension shaft to the yoke of the nose landing gear assembly. The loss of the bolt led to a structural failure of the nose gear which resulted in its collapse during taxi.

Contributing Factors

None.

Safety Action(s)

None.

Safety Message and/or Safety Recommendation/s

None.

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