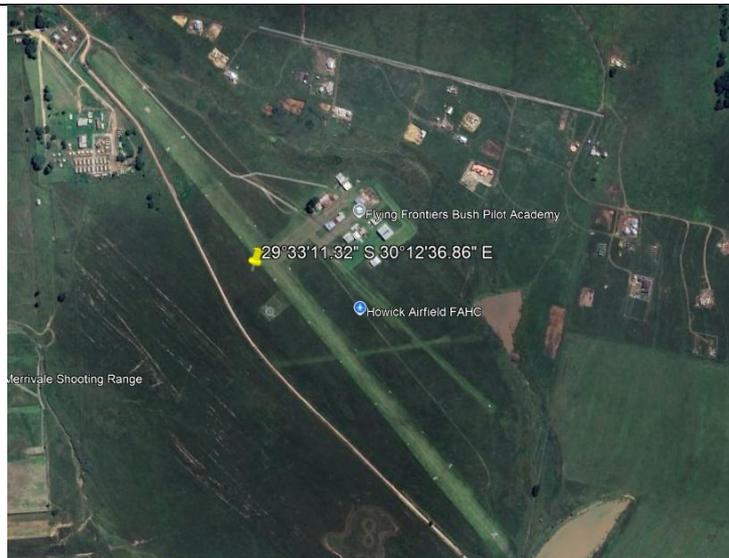


**LIMITED OCCURRENCE INVESTIGATION REPORT**

<b>Reference Number</b>	CA18/2/3/10481						
<b>Classification</b>	Accident	<b>Date</b>	17 August 2024	<b>Time</b>	0810Z		
<b>Type of Operation</b>	Operation of Non-type Certificated Aircraft (Part 94)						
<b>Location</b>							
Place of Departure	Howick Airfield (FAHC), KwaZulu-Natal Province		Place of Intended Landing	Howick Airfield (FAHC), KwaZulu-Natal Province			
Place of Occurrence	On Runway 34 at Howick Airfield (FAHC)						
GPS Co-ordinates	Latitude	29°33'11.32" S	Longitude	30°12'36.86" E	Elevation	3 529 feet	
<b>Aircraft Information</b>							
Registration	ZU-IOU						
Make; Model; S/N	Bushbaby Explorer (Serial Number: 152-02-22exp)						
Damage to Aircraft	Substantial			Total Aircraft Hours	8.3		
<b>Pilot-in-command</b>							
Licence Type	National Pilot Licence (NPL)		Gender	Male		Age	64
Licence Valid	Yes	Total Hours	1300		Total Hours on Type	120	
Total Hours Past 30 Days	2.9		Total Flying Hours on Type Past 90 Days			30	
<b>People On-board</b>	1 + 0	<b>Injuries</b>	0	<b>Fatalities</b>	0	<b>Other (on ground)</b>	0
<b>What Happened</b>							
<p>On Saturday, 17 August 2024, a pilot on-board a Bushbaby Explorer with registration ZU-IOU took off on a proving flight from Howick Airport (FAHC) in KwaZulu-Natal province with the intention to land back at the same airport. 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.</p> <p>According to the pilot, he conducted a pre-flight inspection of the aircraft and did not find anomalies. The aircraft had 80 litres of fuel in the tank. The take-off and the flight were uneventful; however, upon the aircraft's return to the airstrip for a full-stop landing on Runway 16 at 55 knots and with flaps set at 15 degrees, the pilot applied brakes after touchdown and the aircraft ground-looped and veered off to the left of the runway. After the aircraft had come to a stop, the pilot disembarked from it; he then noticed that the left main landing gear wheel had collapsed backward during the accident sequence. He further noticed that the brake calliper attachment bolts had sheared, which caused the calliper to rotate with wheel hub and lock it (the wheel); hence, the subsequent sideways movement of the aircraft towards the left of the runway. This also led to the failure of the left main landing gear (inward collapse); the undercarriage was also damaged. The pilot was not injured.</p>							



**Figure 1:** Aerial view of the accident site. (Source: Google Earth)



**Figure 2:** The aircraft as it came to rest after the accident. (Source: Pilot)

**Aircraft Description (Source: Pilot's Operating Handbook)**

*The Bushbaby Explorer is a non-type certified aircraft designed as a light sport aircraft (LSA) with all metal construction; it is known for its ability to handle rough terrain. The aircraft is equipped with a single engine and high wing.*

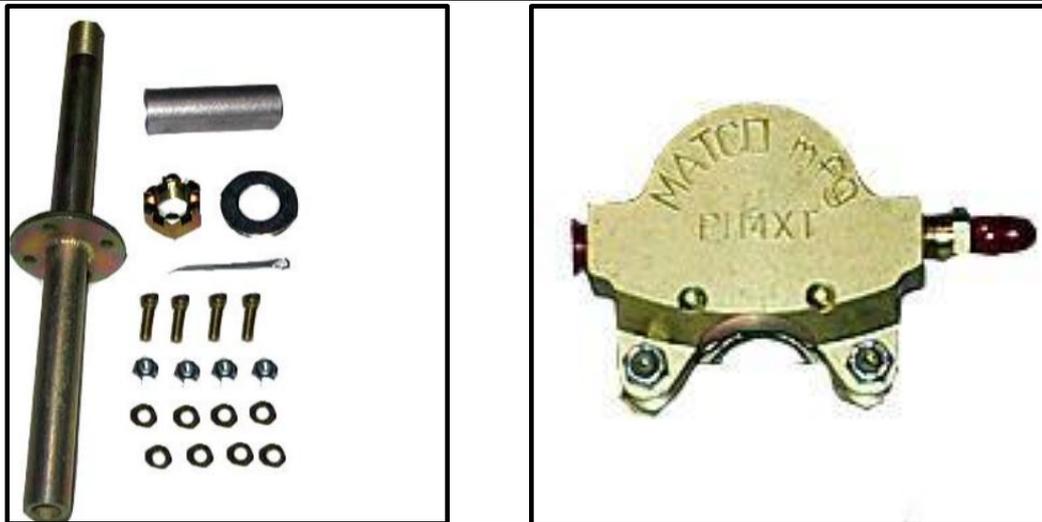
The Landing Gear System (Source: Pilot's Operating Handbook)

*The landing gear configuration is a tri-cycle tail dragger. The main landing gear consists of two wheels located towards the centre-of-gravity's fuselage. A small wheel is mounted to the tail to provide stability during taxiing and take-off on rough surfaces. Each main wheel is fitted with the single calliper braking system.*

Wheel Axle (Source: <https://matcoals.com/product/ul-6-whl-brk-625-gold/>)



**Figure 3:** Landing gear wheel hub assembly and the type of brake calliper that was featured on the aircraft.



**Figure 4:** Main landing gear wheel axel components (left) and the brake calliper assembly (right).

Figure 4 shows the main landing gear wheel axle and its assembly components. According to the pilot's statement, the two brake calliper assembly attachment bolts failed and, thus, rotated with the wheel and locked it. The bolts failure was determined to be due to rust. There was no Service Bulletin released by the manufacturer for this component. The aircraft was also a non-type certified aircraft and was engaged in a proving flight for the acquisition of an Authority-to-fly (ATF) Certificate.

The following regulations is an extract from Civil Aviation Regulations, 2011. Part 24, Airworthiness: Non-type Certificated Aircraft.

**24.01.2 (1)** A non-type certificated aircraft, other than an aircraft classified in regulation [24.01.1 \(2\) \(h\)](#) to [\(l\)](#), may only be considered to be airworthy if that aircraft has—

- (a) been issued with an authority to fly or a proving flight authority or special flight permit, as the case may be in terms of this Part;
- (b) been maintained in accordance with the provisions of Part 44;
- (c) no known condition which could make it unsafe for flight; and
- (d) on board, and in working order, the relevant communication and navigation equipment prescribed in Parts 94 and 96 as applicable for an operation of a particular type of aircraft.

(2) In the case of

(a) amateur built aircraft, only those aircraft, of which the build standard has been submitted to the Director, may be built or imported and flown within the Republic: Provided that—

- (i) before any person commences with the construction of an aircraft, which is intended to be put on the South African Civil Aircraft Register, such person shall apply for a build number.

#### Annual Inspections

**44.01.6 (1)** A non-type certificated aircraft, specified in regulation 24.01.1 (1) and classified in paragraphs (a) to (g) of regulation 24.01.1 (2) shall undergo an annual inspection no later than 365

days since the previous annual inspection, or an inspection equivalent to an annual inspection, was carried out.

(2) The items to be inspected as part of an annual inspection are those listed in Document SA-CATS 44 for the particular type of aircraft, and shall be incorporated in the accepted maintenance schedule

(5) The inspection, prior to the issue of a proving flight authority and the inspection prior to the issue or reissuing of an authority to fly of an amateur-built or production-built aircraft, referred to in regulation 24.02.2 (5) (d), shall be carried out by an appropriately rated approved person who may not be the owner of the aircraft, even if the owner is also an appropriately rated approved person.

## Findings

1. The pilot had a National Pilot Licence (NPL) that was initially issued by the Regulator on 24 February 2017. The latest NPL was reissued on 4 March 2024 with an expiry date of 19 November 2024. The pilot had flown a total of 1300 hours of which 120 hours were acquired on the aircraft type. The pilot had the aircraft type endorsed on his licence.
2. The pilot had a valid Class 4 aviation medical certificate that was issued on 4 March 2024 with an expiry date of 31 July 2027.
3. The current owner of the aircraft was issued a Certificate of Registration (C of R) on 8 April 2019.
4. The aircraft had an Authority-to-fly (ATF) Certificate that was issued by the Regulator on 3 July 2024 with an expiry date of 14 April 2025.
5. The aircraft was issued a Certificate of Release to Service (CRS) on 4 February 2023 with an expiry date of 3 February 2024. There were no defects recorded in the aircraft's flight folio at the time of the flight. The CRS was not valid at the time of the accident.
6. During the landing roll, the brake assembly bolts failed under the load after the brakes were engaged. The investigation revealed that both bolts had corroded over time and, subsequently, fractured due to metal fatigue which was exacerbated by rust. Despite the pilot conducting a standard pre-flight inspection, the deteriorated condition of the bolts was not externally visible (to the pilot) and, thus, was undetected.
7. The aircraft's ATF Certificate was not valid as the required CRS had lapsed on 3 February 2024.

## Probable Cause

The aircraft veered off the runway during the landing roll after which the left main landing gear collapsed due to a failed brake calliper that was caused by a fractured attachment bolt.

<b>Contributing Factor</b>
Improper maintenance.
<b>Safety Action(s)</b>
None.
<b>Safety Message</b>
None.
<b>About this Report</b>
<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 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.</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>
<b>Purpose</b>
<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>
<b>Disclaimer</b>
<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**