SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/1431						
Classification	Serious Incident	**Date**	30 September 2023		**Time**	0710Z	
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Morningstar Aerodrome, Western Cape Province	Place of Intended Landing	Morningstar Aerodrome, Western Cape Province				
Place of Occurrence	Morningstar						
GPS Co-ordinates	Latitude	33º45'44.37" S	Longitude	018º32'54.69" E	Elevation	200 ft	
Aircraft Information							
Registration	ZU-AXT						
Make; Model; S/N	Bushbaby Explorer (Serial Number 023)						
Damage to Aircraft	Minor	Total Aircraft Hours	550				
Pilot-in-command							
Licence Type	Airline Transport Pilot Licence (ATPL)	Gender	Male	Age	68		
Licence Valid	Yes	Total Hours	27601	Total Hours on Type	4.2		
Total Hours 30 Days	36.33	Total Flying on Type Past 90 Days	1.33				
People On-board	2+0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Saturday morning, 30 September 2023, an instructor and a student pilot on-board a Bushbaby Explorer with registration ZU-AXT were engaged in circuit training at Morningstar Aerodrome, Western Cape province. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

According to the instructor, the wind was blowing from the north-east at 05 knots (kts); and that they were to use Runway (RWY) 02 for the circuit training. Pre-flight checks were conducted, and no anomalies were noted. During the take-off roll and when the aircraft reached 45 miles per hour (mph), the student pilot rotated but the aircraft drifted to the left of the centreline. The instructor took over the control of the aircraft; at that stage, the left-wing tip scraped the runway. The instructor tried to re-align the aircraft to the centreline, but the right wing also contacted the runway. The instructor eventually aligned the aircraft (got the aircraft under control) and they aborted the take-off. They then landed the aircraft and taxied back to the hangar. The aircraft sustained minor damage to both wing tips. Both occupants were not injured. The student pilot stated in the pilot questionnaire that he did not compensate enough for the left pull which was caused by the torque during take-off.

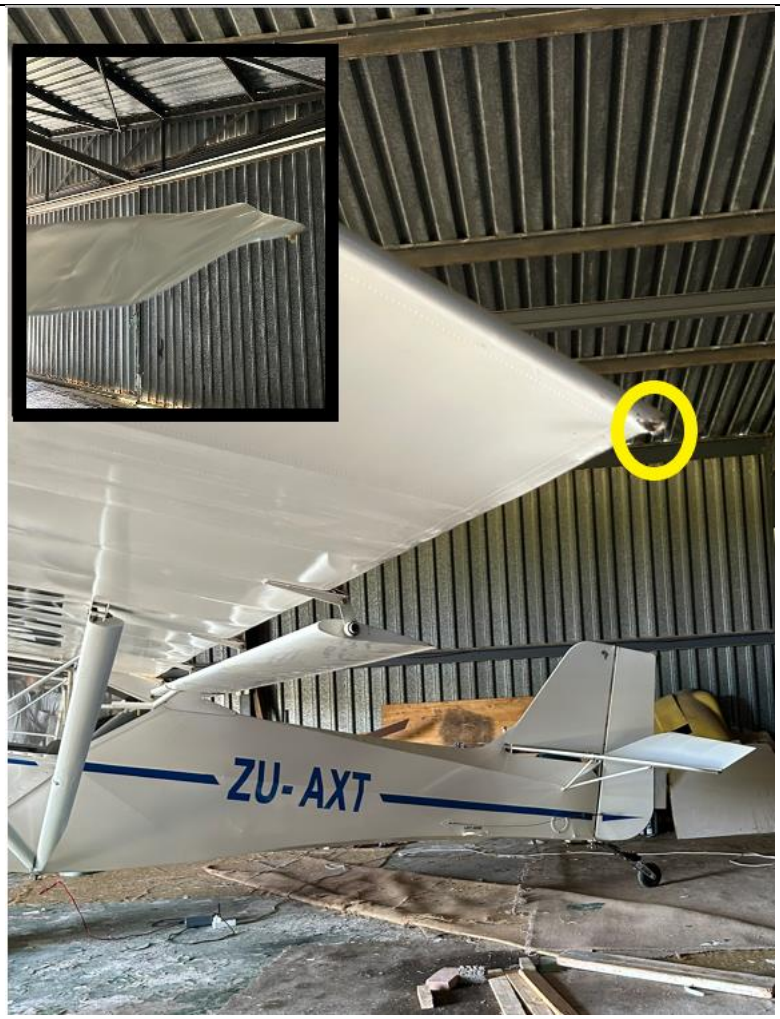

Figure 1: Damage on the left-wing tip. The inset shows the bent right wing tip in an upward direction. (Source: Operator)

SAFE AIRSPEED OPERATIONS (550kg)

Description	Speed
Maximum Crosswind	18 mph
Take-Off Rotate	41 mph
Best Rate of Climb:	
• Flaps 0%	75 mph
• Flaps 10%	65 mph
Cruise Climb	80 mph
Turbulant Air Penetration	80 mph
Landing Approach:	
• Flaps 20% MAUW	60 mph
• Clean MAUW	70 mph
• Clean Solo	65 mph

Figure 2: Operating limitations. (Source: Kitplanes for Africa)

Wind Direction	230º	Wind Speed	10 knots	Visibility	6000 m
Temperature	13ºC	Cloud Cover	OVC	Cloud Base	2000 ft
Dew Point	12ºC	QNH	1017		

Figure 3: Official weather report on the day of the incident. (Source: South African Weather Service)

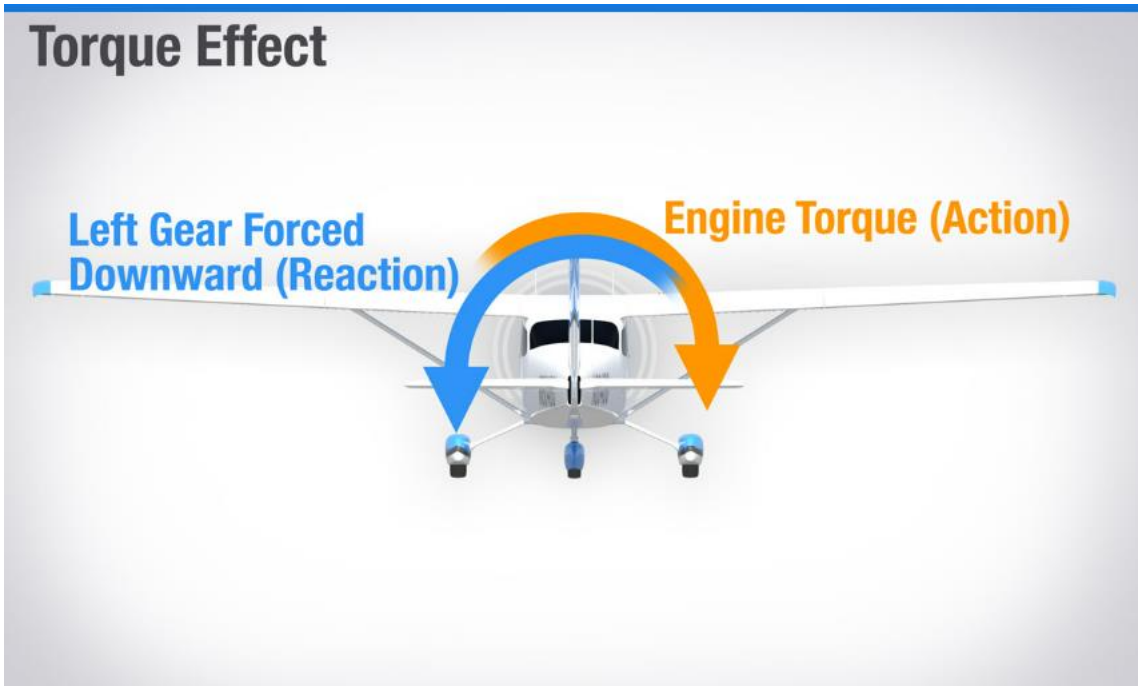

Figure 4: Illustration of the torque effect. (Source: https://www.boldmethod.com)

Torque effect explanation (Source: https://www.boldmethod.com)

Most western aircraft have engines that rotate clockwise when viewed from the cockpit. That is where torque comes into play. As you throttle up your engine for take-off, the right-turning direction of your engine and propeller forces the left side of your airplane down toward the runway. When the left side of the airplane is forced down onto the runway, the left tyre has more friction with the ground than the right tyre, making your aircraft want to turn left.

Findings

1. The instructor was initially issued an Airline Transport Pilot Licence (ATPL) on 5 December 1980. His licence was reissued on 25 September 2023 with an expiry date of 30 November 2024.

2. The instructor's Class 1 medical certificate was issued on 6 June 2023 with an expiry date of 31 December 2023 with limitations.

3. The student pilot was issued a Private Pilot Licence (PPL) on 28 February 2023 with an expiry date of 29 February 2024. The student pilot had 69.6 total flying hours. The student pilot had recently started familiarisation exercise and had 1.6 hours on dual training.

4. The student's pilot's Class 2 medical certificate was issued on 12 November 2021 with an expiry date of 12 November 2023 with limitations.

5. The aircraft's last annual inspection was conducted on 18 September 2023 at 554.2 Hobbs hours, after which a Certificate of Release to Service (CRS) was issued with an expiry date of 17 September 2024 or at 7 Hobbs hours, whichever comes first.

6. The Authority to Fly (ATF) was originally issued on 4 May 2019. The renewed ATF was issued on 11 May 2023 with an expiry date of 31 May 2024.

7. The Certificate of Registration (C of R) was issued to the present owner on 7 October 2022.

8. The official weather report was sourced from South African Weather Service (SAWS) for 23 October 2023. The weather did not contribute to this incident. Morningstar is located 12.67 nautical miles (nm) from Cape Town International Airport. According to the pilot questionnaire form, the wind was blowing north-easterly at 5 knots.

9. The instructor confirmed in the questionnaire that he might have overcorrected when the left wing dropped. There were no reported defects with the aircraft prior to the flight.

10. The student pilot inadvertently allowed the aircraft to drift to the left by not compensating for the torque effect, which resulted in the left wing scraping the runway. The instructor took control of the aircraft and, in an attempt to correct the anomaly, he over corrected which led to the right wing also contacting the runway before he stabilised the aircraft. The aircraft landed safely on the remainder of the runway.

Probable Cause(s)

The student pilot failed to compensate for the torque effect, which resulted in the aircraft drifting to the left and the wing scraping the runway.

Contributing Factor(s)

None.

Safety Action(s)

None.

Safety Message and/or Safety Recommendation/s

Pilots are advised to always be vigilant when operating within critical phases of flight such as take-offs and landings.

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