SOUTH AFRICAN CIVIL AVIATION AUTHORITY

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

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10283						
Classification	Accident	**Date**	12 April 2023		**Time**	0630Z	
Type of Operation	Training (Part 141)						
Location							
Place of Departure	Ballito Airfield, KwaZulu-Natal Province	Place of Intended Landing	Ballito Airfield, KwaZulu-Natal Province				
Place of Occurrence	On Runway 08 at Ballito Airfield, KwaZulu-Natal Province						
GPS Co-ordinates	Latitude	29° 29'20.05"S	Longitude	31°10'40.98."E		Elevation	235 ft
Aircraft Information							
Registration	ZU-DJR						
Make; Model; S/N	Solo Wings; Windlass Aquilla Trike (Serial Number: WA 1010)						
Damage to Aircraft	Substantial		Total Aircraft Hours	186.6			
Pilot-in-command							
Licence Type	National Pilot Licence (NPL)		Gender	Male	Age	66	
Licence Valid	No	Total Hours	149	Total Hours on Type	128.7		
Total Hours 30 Days	6.8		Total Flying on Type Past 90 Days	6.8			
People On-board	1+0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Wednesday morning, 12 April 2023 at approximately 0400Z, a pilot on-board a Windlass Aquilla Trike with registration ZU-DJR took off on a training flight from Runway 08 at Ballito Airfield in KwaZulu-Natal province with the intention to perform circuit-and-landing exercises at the same airfield in preparation for the renewal of his National Pilot Licence (NPL). Visual meteorological conditions (VMC) by day prevailed at the time of the flight, and the pilot had filed a flight plan. The flight was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

On the morning of 12 April 2023, the pilot's instructor stated that 12 dual circuit training exercises were completed with the pilot which took 0.8 hours (48 minutes) prior to the accident flight. Later, the pilot conducted 10 solo circuits which lasted approximately 0.7 hours (42 minutes), followed by a 30-minute rest. Thereafter, the pilot conducted three uneventful circuit-and-landing exercises whilst flying solo. During the fourth circuit, the approach was unstable when the pilot landed the microlight on the grass-covered Runway 08. The microlight was travelling at a speed of 45 miles per hour (mph) (39 knots [kts]) when the pilot lost directional control and the microlight landed to the left of the runway's centreline. The left main wheel rolled over tall grass on the side of the runway edge, which

was approximately 30 centimetres (cm) in height. This caused the drag on the left side of the microlight.

The pilot decided to conduct a go-around but the microlight veered further to the left and, as a result, the left wing clipped the sugar cane and the microlight spun 180° before it came to a stop in the sugar cane field.

The instructor had witnessed the accident and stated that he was *"standing next to the runway, where he [the pilot] proceeded to do three circuits that were fine. On the 4th landing, the accident occurred. I had a hand-held radio with me and when I could see he was veering left, I asked him to cut the power repeatedly over the radio. However, despite this, he opted to try to go-around, and veered further left, before clipping the left wing into the sugar cane."*

The microlight was substantially damaged during the accident sequence; the pilot was not injured.

Figures 1 and 2: The red arrow shows the Windlass Aquilla Trike at the accident site and the yellow arrow shows the direction of landing (Source: Operator).

Post-accident examination of the Windlass Aquilla Trike indicated the following:

- The microlight had visible damage to the nose landing gear and the right main landing gear. The bowsprit and the drag link on the right undercarriage broke during the accident, and the two propeller blades were damaged.

Figure 3: The bent right bowsprit. (Source: Operator)

Figure 4: The broken bowsprit. (Source: Operator)

Figure 5: The circle shows the long grass. (Source: Operator)

Figure 6: The Ballito Airfield layout. (Source: Google Earth)

- The airfield is privately owned; thus, it is not registered with the Regulator (SACAA).

  It comprises four runways:

  Runway 08/26, which is 500 metres (m) long and 30m wide with grass surface.

  Runway 18/36, which is 300m long and 30m wide with grass surface.

- On the day of the accident, the grass was dry. The runway surface condition was suitable for use, however, the terrain along the runway edge was unsuitable.

- The take-off and landing distance for the microlight is 150m.

- The Windlass Aquila Trike Pilot's Operating Handbook (POH) does not have specific information about the landing procedure and crosswind components for the microlight. The Approved Training Organisation (ATO) has Standard Operating Procedures (SOP). The pilot did not conform to the SOP which presents the following guidelines:

  Approaches always conducted into the wind:

  Standard Landing:

  Landing procedures start on the downwind leg as you fly past the threshold of the runway. This should be at 500ft AGL and at 45 degrees to the threshold the turn to base leg should be commenced. At this point, a gentle gliding descent is conducted. Time should be allowed for a gentle turn onto final approach to line up with the centre of the runway. A normal descent is continued until about 200ft AGL, whereby the bar must be pulled in to increase speed and stability, and to compensate for wind gradient and any gusts. Wings are to be kept level. At about 20ft, or hangar height, the bar is eased out for the round out to slow the aircraft down. Pilots must always look down the runway and not at their feet. As the aircraft slows and just ahead of the wheels touching down, the flare is commenced by easing the bar out. It must be noted that weight will impact the flare (and pressure required to flare). On contact with the ground, directional control must be maintained with a combination of nose wheel steering, as well as wing control (dependant on the airspeed).
  The approach speed on the Aquilla Trikes must be between 50 and 55 mph and reduced in the round out and final flare.

- The weather information below was obtained from the pilot questionnaire.

Wind Direction	030°	Wind Speed	04 kt	Visibility	9999 m
Temperature	22°C	Cloud Cover	Nil	Cloud Base	Nil
Dew Point	unknown	QNH	unknown		

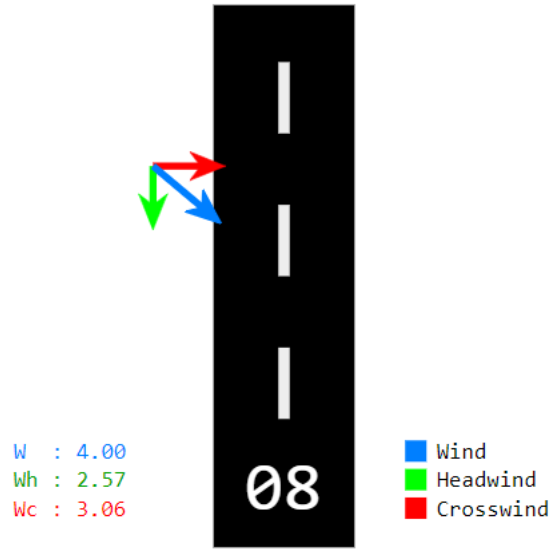

Figure 7: The crosswind component as per the weather report. (Source: https://e6bx.com)

At the time of the accident, the pilot had flown a total of 149 hours, of which 128.7 hours were on the microlight type.

The Regulator's (SACAA) database revealed that the pilot's NPL had expired on 10 December 2012, therefore, the provisions of Part 62.01.9 (2) (a) of the CAR 2011 were not complied with. The Regulation states the following:

Competency

62.01.9 (i) *No holder of a national pilot licence or rating shall exercise the privileges granted by the licence or rating unless such holder maintains competency by complying with the appropriate requirements prescribed in these regulations*.

2 (a) *The holder of a national pilot licence shall undergo a general proficiency check for each category rating he or she may hold no later than 12 months from the initial issue, and thereafter within a period of 24 months of each previous proficiency*.

- The pilot complied with the provisions of Part 62.01.9 of the CAR 2011, with the exception of Part 62.01.9 (3)(c) (i).

3 (c) In *the case where the maintenance of competency has lapsed for more than 60 months he or she shall be required to –*

(i) rewrite the Air Law examination

(ii) *undergo a minimum of three periods of dual training of not less than 1 hour each;*

- *practice a minimum of 5 hours solo flight including 5 take-offs and landings;*

- *undergo a navigation exercise dual or under supervision of 90 minutes or more including one full-stop landing at a point other than departure or final destination; and*
- *pass a general proficiency check, including a general confirmation of knowledge on all theoretical subjects.*

International Air Transport Association (IATA) published an advisory booklet titled Unstable Approaches (2nd Edition, 2016)
https://www.iata.org/contentassets/b6eb2adc248c484192101edd1ed36015/unstable-approaches-2016-2nd-edition.pdf

4.1 What is an Unstabilised Approach?

An unstabilised approach is any approach that does not meet the stabilized approach criteria defined by the operator in its SOPs.

If the stabilised approach criteria are not met or, having been met initially, are subsequently breached, the pilots may correctly initiate a go-around, or they may sometimes continue to land. In the latter case, this may be because they failed to recognize that the approach was unstabilised or alternatively they may have intentionally failed to comply with the stabilized approach policy for emergency or other reasons. In a recent study by IATA, some flight crew were found to be under considerable pressure to continue approaches such as peer pressure, commercial pressure to reduce delays, perceptions about their companies' go-around policies, fatigue, etc.

The continuation of an unstabilised approach to landing, contrary to SOPs, may result in the aircraft touching down too fast, too hard, outside the touchdown zone (long or short), off the runway centreline, in the incorrect attitude or incorrectly configured for landing. These may in turn lead to a 'bounced' landing, aircraft damage, runway excursion or landing short.

An unstabilised approach may have any number of contributing factors (weather, tailwind, fatigue, workload, poor planning, pilot error, ATC interaction, procedures, approach design, etc.), which can be encountered at any stage of the descent, arrival and approach. Effective management process begins in the cruise phase as plans are made and approach briefings delivered.

RECOMMENDATION (9):
4.9.1 Operators to train flight crew to recognize and correct flight parameter deviations before they develop to the extent that a stabilized approach cannot be achieved or maintained. If these corrective actions fail then the only safe solution is a go-around.

Findings

The Pilot

- The pilot was initially issued a National Pilot Licence on 23 July 2007. His last validation was conducted on 11 December 2010 with an expiry date of 10 December 2012. The microlight was endorsed on the pilot's licence. A Class 4 medical certificate was issued to the pilot on 23 December 2022 with an expiry date of 31 December 2025 and with a restriction to wear corrective lenses.

  According to available information, the pilot started training for his licence renewal with the ATO on 23 March 2023.
- Post-accident examination of the pilot's profile at the South African Civil Aviation Authority (SACAA) facility revealed that the pilot's National Pilot Licence expired on 12 April 2012. According to Part 62.01.9 (3) of the Regulation, the pilot is required to fly with the instructor (dual) for a minimum of six (6) hours and solo for a minimum of five (5) hours to renew the licence. A review of the pilot's log book revealed that the pilot had complied with the regulation and had flown and logged approximately 6 hours flight time under instruction (dual). The accident happened after approximately 2 hours of solo flying whilst in the process of acquiring 5 hours (solo) as required by the regulation. The investigation also revealed that the pilot complied with Part 62.01.9 (3c) except number (i) rewrite the Air Law examination. The investigator was informed by the ATO that the Air Law examination was to be completed prior to the pilot application for his licence renewal.

- At the time of the accident, the pilot was training to renew his expired NPL licence and had flown a total of 149 hours, of which 128.7 hours were on the microlight type.

The Microlight

(v) The microlight's Certificate of Registration (C of R) was issued to the current owner on 8 September 2021. The Authority to Fly (ATF) was initially issued on 4 January 2022. The latest ATF was reissued on 12 January 2023 with an expiry date of 31 January 2024.

(vi) According to the microlight's latest Certificate of Release to Service (CRS) and logbooks, the last 100-hour annual inspection was certified on 12 December 2022 at 154 total airframe hours. The latest CRS had an expiry date of 11 December 2023 or at 254 airframe hours, whichever occurs first. The last 25-hour mandatory periodic inspection (MPI) was certified on 30 March 2023 at 178.5 airframe hours. At the time of the accident, the microlight had accumulated 186.6 airframe hours. The microlight was flown a further 8.1 hours since the last MPI.

(vii) The approved person (AP) who certified the last MPI was appropriately certificated to carry out maintenance on the microlight. The maintenance records indicated that the microlight was maintained in accordance with (IAW) the regulations and approved procedures.

(viii) The pilot reported that there were no mechanical malfunctions with the microlight that would have precluded normal operation.

(ix) The investigation concluded that the microlight was airworthy prior to the accident.

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

(xi) The ATO was issued a Declared Training Organisation Certificate (DTOC) on 1 March 2023 with an expiry date of 28 February 2024.

(xii) According to the investigation, the microlight was unstable on approach and the pilot landed to the left of the runway's centreline and lost directional control. Subsequently, the microlight veered off to left of the runway.

Probable Cause

The microlight was unstable on approach and landed off-centre, followed by loss of directional control.

Contributing Factors

None.

Safety Action(s)

The ATO stated that as a mitigation measure, it will ensure that all are briefed and monitored through training to land on the centre of the runway, this will be a point of discussion and will be communicated to all pilots.

The investigating team believes that the intervention by the ATO should be that during training, instructors must emphasise to all pilots the importance to opt to go-around timeously in the event that the microlight is unstable on approach for landing.

Safety Messages

(1) Pilots are advised to always be vigilant during the critical phases of flight, such as take-offs and landings, and to also make timeous decisions to go-around.

(2) The ATOs are reminded to follow Regulations and SOPs.

(3) It is advised that the ATO and the instructors include in their course material and during training the importance of timeously conducting a go-around in the event that the microlight is unstable on approach for landing.

(4) Instructors are advised to recognise and correct flight parameter deviations before they develop. If this measure fails, then they are to advise a go-around to pilots.

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 desktop inquiries to bring awareness of potential safety issues to the industry in respect of this occurrence, as well as 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 apportion blame or liability.

Disclaimer

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