



LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/3/2/1455						
Classification	Serious Incident	Date	20 September 2024	Time	0930Z		
Type of Operation	Private (Part 94)						
Location							
Place of Departure	Old Bisset Farm near Tzaneen (FATZ), Limpopo Province		Place of Intended Landing	Old Bisset Farm near Tzaneen (FATZ), Limpopo Province			
Place of Occurrence	Tzaneen Dam shore at 23°50'9.34" South 030°8'8.52" East co-ordinates, at an elevation of 2 537 ft						
GPS Co-ordinates	Latitude	23° 50' 9.34" S	Longitude	030° 8' 8.52" E	Elevation	2 537 ft	
Aircraft Information							
Registration	ZU-CLX						
Make; Model; S/N	Solo Wings; Windlass Aquilla; (S/N: WA 919)						
Damage to Aircraft	None		Total Aircraft Hours	495.5			
Pilot-in-command							
Licence Type	National Pilot Licence (NPL)		Gender	Male	Age	31	
Licence Valid	Yes	Total Hours	472.7		Total Hours on Type	424.2	
Total Hours 30 days	5.4		Total Flying on Type Past 90 days	16.3			
People On-board	1 + 1	Injuries	0	Fatalities	0	Other (on ground)	0
What Happened							
<p>On Friday morning, 20 September 2024, a pilot and a passenger on-board a Windlass Aquilla aircraft with registration ZU-CLX took off on a private flight from Old Bisset Farm near Tzaneen, Limpopo province, with the intention to land back at the same take-off farm. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 94 of the Civil Aviation Regulations (CAR) 2011 as amended.</p>							

The pilot reported that he conducted pre-flight and run-up checks. The engine performance was normal with all the indications in the green range with no abnormalities noted. The pilot stated that they took off at approximately 0900Z and flew in the vicinity of the Tzaneen Dam. After approximately 30 minutes into the flight at 3000 feet (ft) above ground level (AGL), the engine ran rough and stopped. The pilot stated that he checked the magnetos and attempted to restart the engine but to no avail. He then glided to an open field on the shore of the Tzaneen Dam and executed a forced landing. The aircraft was not damaged, and the occupants were not injured.



Figure 1: The aircraft after landing. (Source: Google Earth)

The aircraft was recovered by road to the owner's facility. The Rotax 582 is a two-stroke, two-cylinder in-line engine. During the post-flight teardown inspection which was conducted by an Approved Person (AP), it was found that the propeller resisted turning by hand. The engine components were found in good condition with oil in the reservoir. However, the No 1 cylinder big-end bearing (Figure 2) on the Rotax 582 motor was damaged. The cause of the bearing failure was attributed to inadequate engine lubrication due to an airlock or blockage in the engine's auto-lube system.

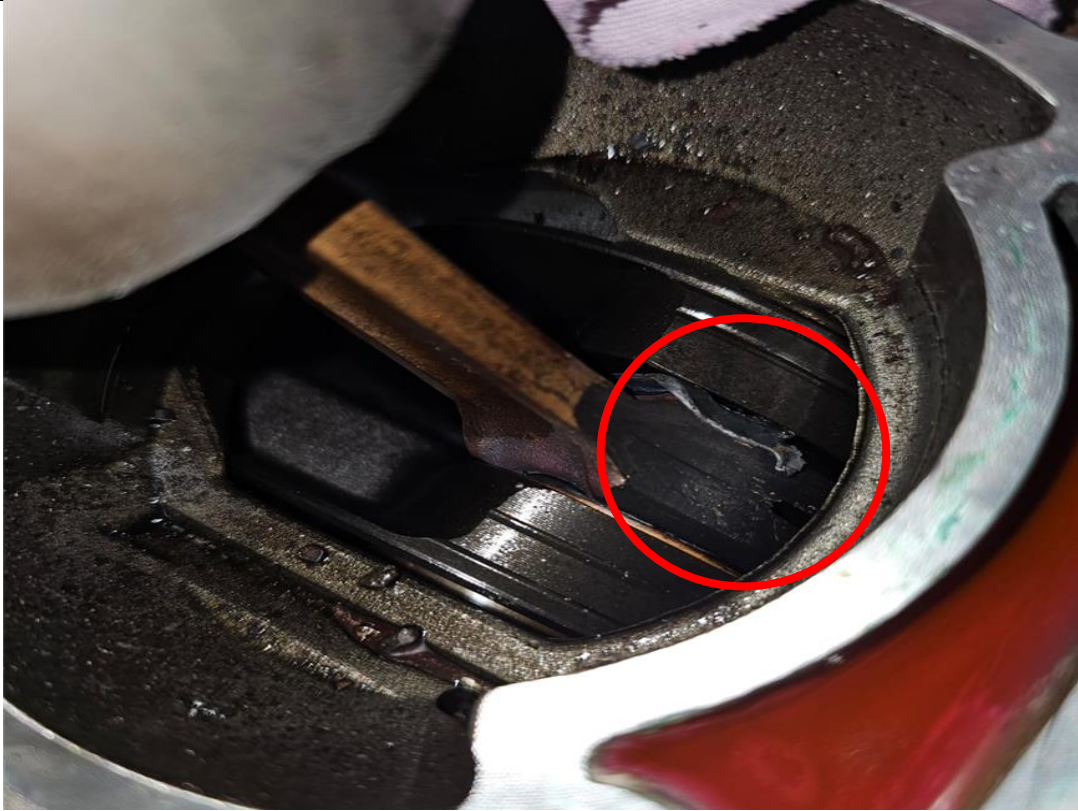


Figure 2: The red circle indicates the failed big-end bearing. (Source: Pilot)

Wind Direction	350	Wind Speed	02 knots	Visibility	9999 m
Temperature	14°C	Cloud Cover	FEW	Cloud Base	3000 ft
Dew Point	08°C	QNH	1025hPa		

The meteorological aerodrome report (METAR) was obtained from the South African Weather Service (SAWS) website, recorded for Tzaneen Aerodrome (FATZ) on 20 September 2024 at 0900Z. FATZ is situated 9 nautical miles (nm) north-west of the accident site. Good weather conditions prevailed at the time of the flight.

Findings

1. Personnel Information

1.1 The pilot had a National Pilot Licence (NPL) that was initially issued by the Regulator (SACAA) on 29 September 2019. The pilot's NPL was reissued on 11 February 2024 with an expiry date of 10 February 2026. The Windlass Aquilla aircraft type was endorsed on his licence.

1.2 The pilot was issued a Class 2 aviation medical certificate on 20 October 2021 with an expiry date of 20 October 2026.

1.3 The pilot was adequately experienced and licensed to conduct the flight.

2. Aircraft Information

2.1 The last annual inspection of the aircraft was conducted and certified on 4 October 2023 at 441.0 airframe hours. The aircraft had accrued 54.5 hours since the last annual inspection.

2.2 The aircraft had a valid Authority-to-fly (ATF) that was initially issued on 30 September 2019. The latest ATF was reissued on 10 October 2023 with an expiry date of 31 October 2024.

2.3 The aircraft's Certificate of Registration (C of R) was issued to the present owner on 9 July 2021. The aircraft was maintained by an approved person (AP) who was issued an AP Certificate by the Regulator on 5 September 2022 with an expiry date of 4 September 2024.

2.4 The aircraft was issued a Certificate of Release to Service (CRS) on 4 October 2023 at 441.0 airframe hours with an expiry date of 30 October 2024 or at 541.0 airframe hours, whichever occurs first.

3. Meteorological Information

3.1 The prevailing wind was not a factor in this accident.

<p>4. <u>Conclusion</u></p> <p>4.1. The aircraft experienced a contained engine failure, whereafter the pilot executed a successful forced landing. Post-incident inspection revealed that the big-end bearing of the No 1 piston cylinder had failed. The failure was attributed to inadequate lubrication likely caused by a blockage or airlock in the auto-lube system.</p>
<p>Probable Cause(s)</p>
<p>The engine failed in-flight as a result of the failure of the big-end bearing of the No.1 piston cylinder due to inadequate lubrication. The pilot subsequently performed a successful forced landing.</p>
<p>Contributing Factor(s)</p>
<p>Inadequate lubrication.</p>
<p>Safety Action(s)</p>
<p>None.</p>
<p>Safety Message and/or Safety Recommendation/s</p>
<p>None.</p>
<p>About this Report</p>
<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>
<p>Purpose</p>
<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>
<p>Disclaimer</p>
<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**