LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10586						
Classification	Accident	**Date**	1 June 2025	**Time**	0855Z		
Type of Operation	Private (Part 94)						
Location							
Place of Departure	Leppan Airfield, Western Cape Province	Place of Intended Landing	Knysna Highway Airfield, Western Cape Province				
Place of Occurrence	Cultivated field near Karatara Town, 23 nautical miles north-east of George Airport (FAGG)						
GPS Co-ordinates	Latitude	33°55' 07.2" S	Longitude	022°50' 00.4" E	Elevation	789 ft	
Aircraft Information							
Registration	ZU-DMU						
Make; Model; S/N	Micro Wings Cubby; Tri Cubby (Serial Number: AK0405)						
Damage to Aircraft	Substantial	Total Aircraft Hours	6.3				
Pilot-in-command							
Licence Type	National Pilot Licence (NPL)	Gender	Male	Age	49		
Licence Valid	Yes	Total Hours	619.8	Total Hours on Type	7.1		
Total Hours 30 Days	4.1	Total Flying on Type Past 90 Days	6.0				
People On-board	1 + 0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Sunday, 1 June 2025 at 0840Z, a pilot on-board a Tri Cubby aircraft with registration ZU-DMU took off on a private flight from Leppan Airfield in Western Cape province to Knysna Highway Airfield in the same province. 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 stated that he conducted the pre-flight checks and confirmed that there were no anomalies with the aircraft. The aircraft had a fuel endurance of 1 hour and 30 minutes at take-off. Approximately 15 minutes into the flight at an altitude of about 1 500 feet (ft) above ground level (AGL), the pilot noticed that the engine was spluttering. He then troubleshot the anomaly by increasing the engine power and switching on the second electric fuel pump, but none of these actions corrected the deviation. Shortly thereafter, the engine stopped.

When the pilot could not restart the engine, he decided to conduct a forced landing on a field near the town of Karatara, which was along the aircraft's flight path; the town was 8.5 nautical miles (nm) from Leppan Airfield. As the aircraft approached the chosen landing site, the pilot realised that it was a cultivated vegetable field with furrows running perpendicular to the aircraft's landing direction. Upon

touch down, the main landing gear collapsed (see Figure 2) and the aircraft nosed over; it rested in an inverted attitude. The aircraft sustained substantial damage to the landing gear, propeller, wings and empennage. The pilot was not injured during the accident sequence.

The accident occurred during daylight at Global Positioning System (GPS) co-ordinates determined to be 33° 55' 07.2" South 022° 50' 0.4" East, at an elevation of 789 ft.

The investigation could not determine how much fuel remained in the tanks as it had leaked out whilst the aircraft was lying in an inverted attitude. The aircraft was recovered to the owner's hangar. During the post-accident inspection, it was determined that the engine ground run could be conducted after fitting the propeller to the aircraft. The engine was started, and it met the normal engine operating parameters.

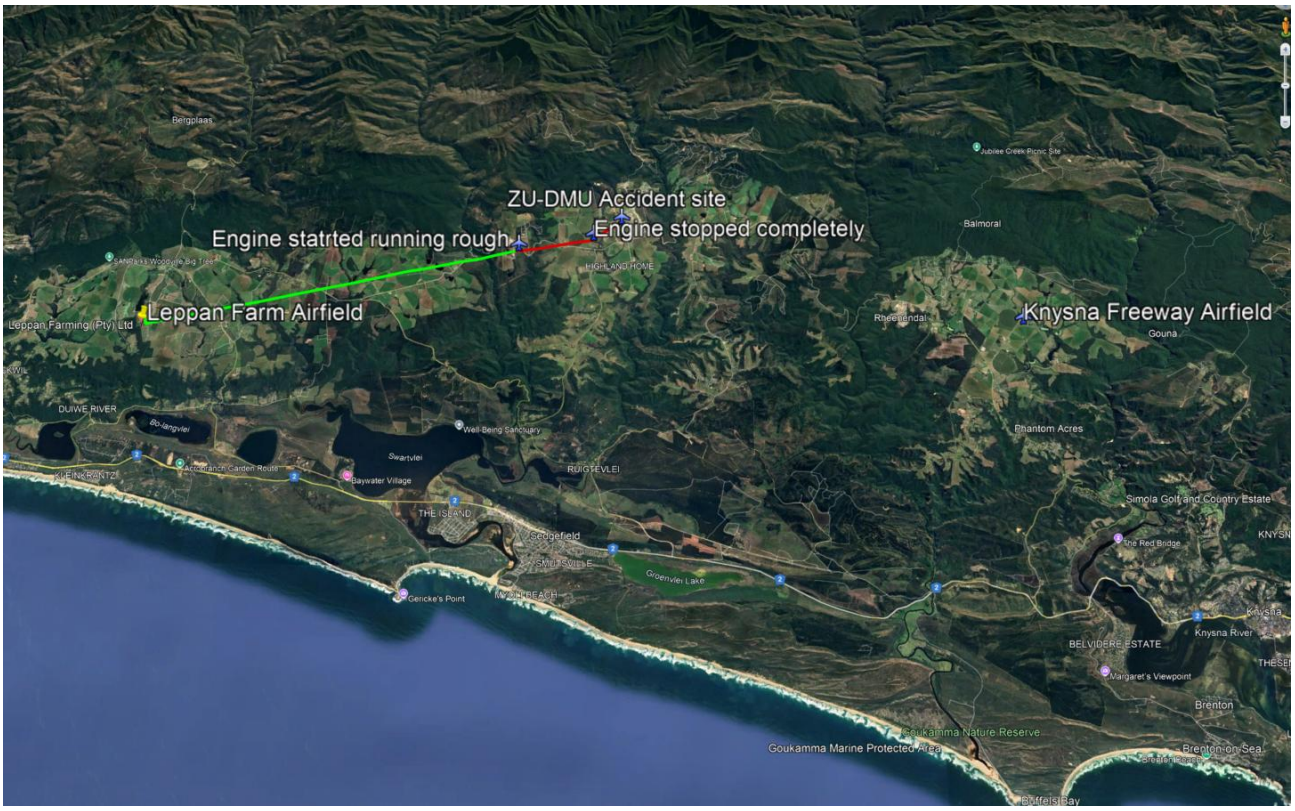

Figure 1: An overview of the approximate flight path and the accident site. (Source: Google Earth)

Figure 2: The aircraft as it came to rest. (Source: Pilot)

Aircraft Fuel System (Source: Pilot's Operating Handbook [POH])

The aircraft is equipped with two fuel tanks, located in each wing. Each tank has a fuel capacity of 45 litres, with 7.5 litres per tank being unusable. The fuel from the respective tanks feeds a header tank under gravity. The header tank, which is in the shape of a triangle (see Figure 3), has a capacity of approximately 5 litres. The header tank is located on the cockpit side of the forward bulkhead in the area above the rudder pedals. Fuel supply to the engine is via the header tank, which has a vent line that feeds back to the fuel tanks. A purge valve is installed at the bottom of the header tank where fuel can be drained by the pilot before each flight to ensure it is free of contamination. The aircraft is fitted with two electric fuel pumps. Both pumps are in the ON position during start, taxi, and take-off phases. Once airborne, one of the fuel pumps is switched off. The fuel passes through a fuel filter to a fuel divider/regulator that feeds fuel to the two carburettors. Each fuel tank has a fuel shut-off valve that is located in the cockpit (see Figure 4). During flight, both shut-off valves are in the open position.

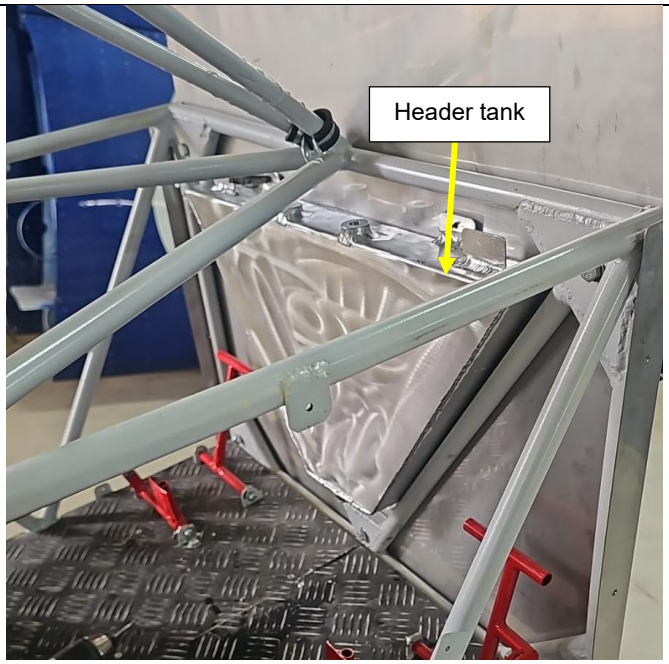

Figure 3: The position of the header fuel tank. (Source: Aircraft owner)

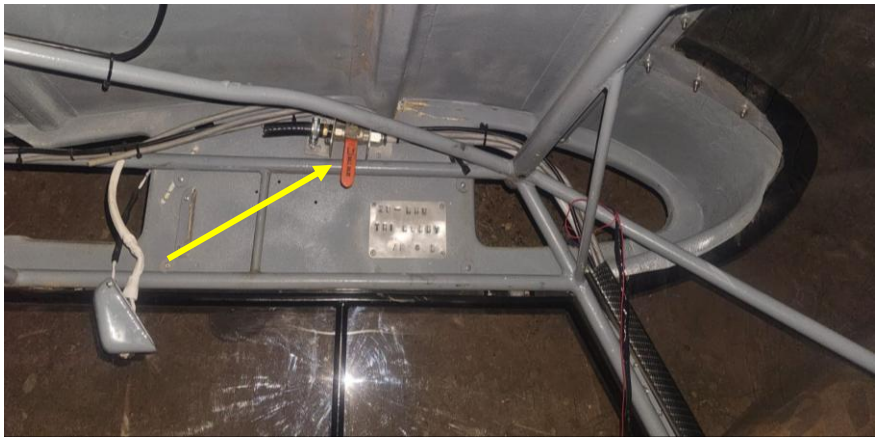

Figure 4: Fuel shut-off valve positioned inside the cockpit. (Source: Aircraft owner)

Aircraft Engine

The aircraft was equipped with a Rotax 912 UL engine, which featured a turbocharger. The engine, Serial Number 4409607, was previously fitted to a Xenon 2 RST gyrocopter; it had accumulated 461.0 hours. The turbocharger that was fitted to the engine was an aftermarket conversion as it was not factory fitted with a turbocharger. The aircraft owner opted to install the engine which produced 90 kilowatts (kW) (122 horsepower), indicated by the yellow arrow in Figure 5. The engine ran on Motor Gasoline (MOGAS) which has a higher water content.

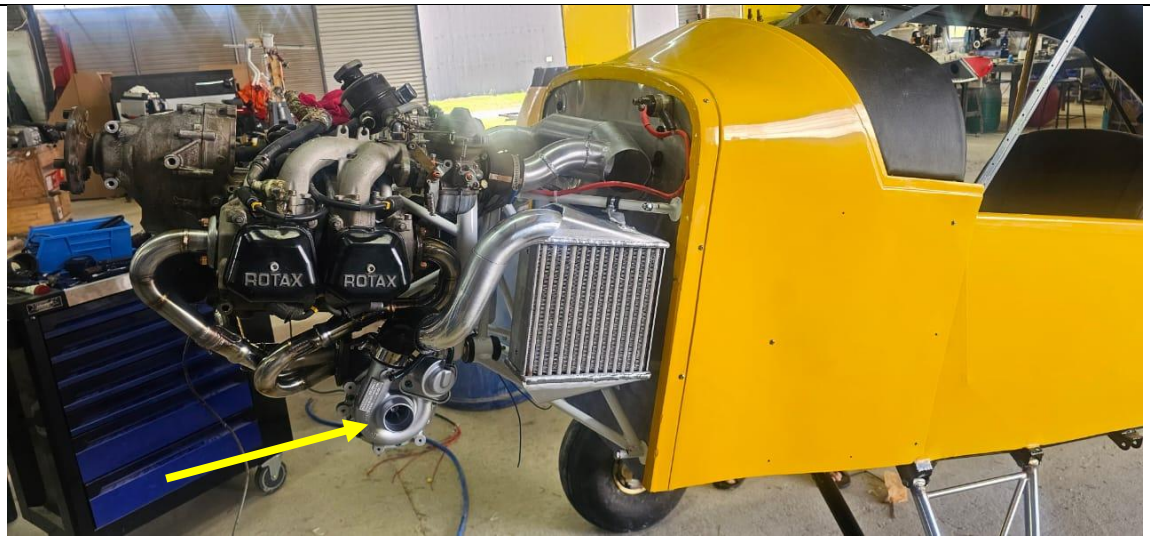

Figure 5: The engine installed in the aircraft. (Source: Aircraft owner)

Pilot's Operating Handbook (POH)

The POH of the aircraft was accepted without any alterations on 27 February 2025 as per the requirements of Part 24.01.4 of the CAR 2011 as amended, read in conjunction with the South African Civil Aviation Technical Standards (SA-CATS) 24.01.4. The 18-page document contained basic information about the aircraft. None of the aircraft systems were discussed in this document, including the carburettor heat, which could be of technical support (quick reference) should pilots encounter a system-related malfunction in-flight. The POH stated that the pilot should not make any excessive manoeuvres with less than 30 litres of fuel on-board.

Meteorological Information

The weather information below was obtained from the meteorological aerodrome report (METAR) that was issued by the South African Weather Service (SAWS), recorded at FAGG on 1 June 2025 at 0830Z. The accident site was 15 nm south-west of FAGG.

Wind Direction	290°	Wind Speed	10 kt	Visibility	10 km
Temperature	16°C	Cloud Cover	FEW	Cloud Base	3 500 ft
Dew Point	10°C	QNH	1024 hPa		

Findings

1. Personnel Information

1.1 The pilot had a National Pilot Licence (NPL) that was initially issued by the Regulator (SACAA) on 16 July 2021. The licence was reissued on 13 January 2024 with an expiry date of 12 January 2026. The aircraft type was endorsed on the pilot's licence.

1.2 The pilot had accumulated a total of 619.8 hours of which 7.1 hours were on the aircraft type. The pilot was issued a Class 2 aviation medical certificate on 2 August 2023 with an expiry date of 31 August 2026.

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

2. Aircraft Information

2.1 The aircraft had accrued 6.3 airframe hours since new at the time of the accident.

2.2 The aircraft had a Rotax 912 UL engine which was fitted with a turbocharger. The engine was previously fitted to a gyrocopter. The engine was purchased by the owner and installed to the aircraft. The engine had accumulated 467.3 hours at the time of the accident.

2.3 The aircraft had a valid Authority-to-fly (ATF) Certificate that was initially issued on 8 May 2025 with an expiry date of 31 May 2026.

2.4 The aircraft's Certificate of Registration (C of R) was issued to the present owner on 4 December 2024.

2.5 The aircraft was maintained by an approved person (AP) with an AP Certificate that was issued by the Regulator (SACAA) on 23 October 2024 with an expiry date of 22 October 2026.

2.6 The aircraft was issued a Certificate of Release to Service (CRS) on 19 December 2024 at 461.0 engine hours with an expiry date of 18 December 2025.

2.7 The engine started and met all normal operating parameters during the post-accident ground run. The engine was fitted with a turbocharger and two carburettors. The turbocharger compresses the intake air before it enters the carburettors. The compressed air temperature is significantly higher than the ambient air temperature. These engines are, therefore, not prone to encountering carburettor icing.

3. Meteorological Information

3.1 The weather conditions were a factor to this accident as the relative humidity was 65%.

4. Conclusion

4.1. The pilot executed a forced landing on a cultivated land following an engine stoppage. The cause of the engine stoppage could not be determined with certainty, but it was probably related to a fuel supply disruption to the engine during the flight. The engine ground run was successfully performed post-recovery.

Probable Cause(s)

The pilot executed a forced landing on cultivated land following an engine stoppage. The cause of the engine stoppage could not be determined with certainty, but it was probably related to a fuel supply disruption to the engine during flight; the engine ground run was successfully performed post-recovery.

Contributing Factor(s)

The possibility of a fuel vapor lock that could have formed in the fuel lines from the main tanks to the header tank could have caused the header tank to run dry and starve the fuel supply to the engine. Hence, the pilot was unable to perform an engine restart in-flight.

Although the actual fuel quantity could not be determined, the aircraft had approximately 30 to 40L of fuel on-board as the pilot indicated a fuel endurance of 1 hour and 30 minutes before take-off. Should the pilot have made any excessive manoeuvres in-flight, it could have contributed to or have caused an inconsistent flow of fuel from the main tanks to the header tank (which contained insufficient fuel) to ensure a constant fuel supply to the engine. Any excessive manoeuvres are prohibited with 30L of fuel or less as per the POH.

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 produced without prejudice to the rights of the AIID, which are reserved.

This report is issued by:

Accident and Incident Investigations Division
South African Civil Aviation Authority
Republic of South Africa