



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/10442	
Aircraft Registration	ZU-EFA	Date of Accident	17 April 2024		Time of Accident	1050Z	
Type of Aircraft	Bushbaby 500		Type of Operation		Private (Part 94)		
Pilot-in-command Licence Type	Private Pilot Licence (PPL)		Age	41	Licence Valid	Yes	
Pilot-in-command Flying Experience	Total Flying Hours		142.9	Hours on Type	35.2		
Last Point of Departure	Oudtshoorn Aerodrome (FAOH), Western Cape Province						
Next Point of Intended Landing	Joubertina Private Airstrip, 20nm north-east of Plettenberg Bay Aerodrome (FAPG), Western Cape Province						
Damage to Aircraft	Substantial						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Hillandale Hideaway at Global Positioning System (GPS) determined to be 33°58'55.16"S 023°26'56.44"E, at an elevation of 672 feet							
Meteorological Information	Wind velocity: 350° at 6KT; Temperature: 32°C; Dew Point: 14°C; Visibility: ≥10 km; Cloud: CAVOK; QNH: 1013 hPa						
Number of People On-board	1 + 0	Number of People Injured	0	Number of People Killed	0	Other (On Ground)	0

Synopsis

On Wednesday, 17 April 2024, a pilot on-board a Bushbaby 500 aircraft registered ZU-EFA took off on a private ferry flight from Oudtshoorn Aerodrome (FAOH), Western Cape province, to a private airstrip in Joubertina, 20 nautical miles (nm) north-east of Plettenberg Bay Aerodrome (FAPG), 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 reported that the aircraft climbed to 4 500 feet (ft) above ground level (AGL) after take-off to clear the mountainous terrain on its flight path. He then noticed that the engine temperature indication was higher than normal. As a result, he reduced the rate of climb to compensate for the high outside temperature of approximately 32°C (degree Celsius). During the cruise phase, the engine temperature indication dropped slightly. Approximately 1 hour into the flight and whilst on decent, the cylinder head temperature (CHT) dropped from 140°C to 130°C instead of 120°C. This was followed by gradual engine power loss. The pilot executed a forced landing on a grass-covered field; however, the aircraft landed hard, and the left main gear failed on impact. The pilot was not injured during the accident sequence; the aircraft was substantially damaged. The cause of loss of power was not determined.

Probable Cause/s and/or Contributory Factors

In-flight loss of engine power led to a forced landing which was unsuccessful.

SRP Date	13 May 2025	Publication Date	14 May 2025
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Occurrence Details

Reference Number : CA18/2/3/10442
Occurrence Category : Accident (Category 1)
Type of Operation : Private (Part 94)
Name of Operator : GJ De Villiers
Aircraft Registration : ZU-EFA
Aircraft Make and Model : Bushbaby 500
Nationality : South African
Place : Hillandale Hideaway, 15nm north-east of FAPG
Date and Time : 17 April 2024 at 1050Z
Injuries : None
Damage : Substantial

Purpose of the Investigation

In terms of Regulation 12.03.1 of the Civil Aviation Regulations (CAR) 2011, 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.

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.

Investigation Process

The Accident and Incident Investigations Division (AIID) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence on 17 April 2024 at 1050Z. The occurrence was classified as an accident according to the CAR 2011 Part 12 and the International Civil Aviation Organisation (ICAO) STD Annex 13 definitions. Notifications were sent to the State of Registry, Operator, Design and Manufacturer in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The States did not appoint an accredited representative and/or advisor. The investigator did not dispatch to the accident site for this occurrence.

Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:
Accident — this investigated accident
Aircraft — the Bushbaby 500 involved in this accident
Investigation — the investigation into the circumstances of this accident
Pilot — the pilot involved in this accident
Report — this accident report*
- Photos and figures used in this report were taken from different sources and may have been adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report were limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or addition of text boxes, arrows, or lines.*

Disclaimer

This report is produced without prejudice to the rights of the SACAA, which are reserved.

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
AIID	Accident and Incident Investigations Division
AP	Approved Person
ATF	Authority-to-fly
CHT	Cylinder Head Temperature
C of R	Certificate of Registration
CRS	Certificate of Release to Service
CAR	Civil Aviation Regulations
FAOH	Oudtshoorn Aerodrome
FAPG	Plettenberg Bay Aerodrome
ft	Feet
hPa	Hectopascal
kt	Knots
LSA	Light Sport Aircraft
m	Metres
METAR	Meteorological Aerodrome Report
MHz	Megahertz
POH	Pilot's Operating Handbook
RWY	Runway
RPM	Revolutions per Minute
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
QNH	Altitude Above Mean Sea Level
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

- 1.1.1 On Wednesday, 17 April 2024, a pilot on-board a Bushbaby 500 aircraft with registration ZU-EFA took off on a private ferry flight from Oudtshoorn Aerodrome (FAOH) to a private airstrip in Joubertina, 20 nautical miles (nm) north-east of Plettenberg Bay Aerodrome (FAPG), both in Western Cape 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.
- 1.1.2 The pilot reported that he conducted the pre-flight checks and, thereafter, taxied to Runway 22 (RWY 22) for the run-up checks; he did not find any anomalies. The purpose of the flight was to ferry the aircraft for the 100-hour annual inspection checks. The aircraft's take-off was at 0945Z. The pilot stated that during the initial climb to 4 500 feet (ft) above ground level (AGL) to clear the mountains on the flight path, he noticed that the engine temperature indication was higher than usual. He then kept the rate of climb low whilst monitoring the temperature indication gauge; he thought that the high outside temperature might be a factor.
- 1.1.3 During level flying (cruise phase), the engine temperature indication subsided a little but it was still higher than normal. Whilst on descent, the pilot noticed that the cylinder head temperature (CHT) had decreased from 140°C (degrees Celsius) to 130°C, however, the normal temperature decrease should have been 120°C. At approximately 10nm east of FAPG, the CHT indication increased again to above the normal operating range; this was after an hour into the flight.
- 1.1.4 The pilot then decided to divert to FAPG for an emergency landing, but the engine revolutions per minute (RPM) started to gradually decrease. His attempts to restore the engine power were not successful and, at approximately 2 500 ft AGL in the vicinity of Hillandale Hideaway, he started to look for a suitable landing site on which to execute a forced landing.
- 1.1.5 The pilot identified a grass-covered field amongst trees and initiated a steady glide towards the field with 20 degrees flap setting selected. During final approach, the pilot realised that the landing site was steep but had to commit to the forced landing as there was no power available for an alternate landing site. The aircraft landed hard, and the left main landing gear failed on impact during the landing roll. The propeller struck the ground and left-wing tip contacted the grass surface before the aircraft came to a stop. The pilot was not injured; the aircraft sustained damage to the left main landing gear, propeller and left-wing tip.

1.1.6 The accident occurred during daylight at Hillandale Hideaway, Western Cape province, at Global Positioning System (GPS) co-ordinates determined to be 33°58'55.16"S 023°26'56.44"E, at an elevation of 672 ft.

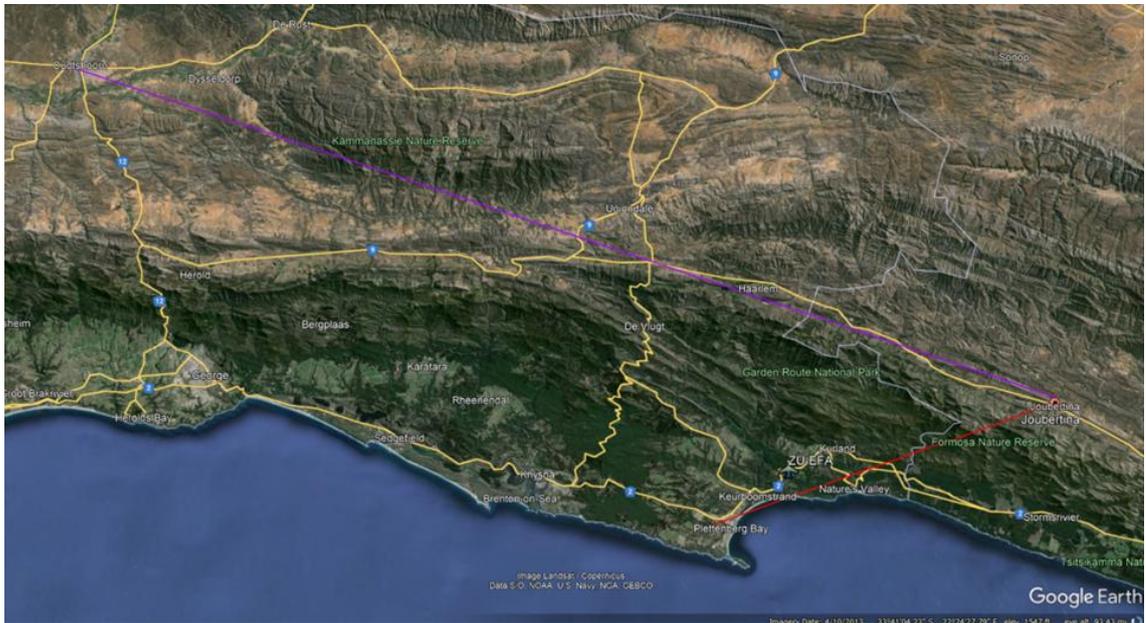


Figure 1: An overview of the planned route and the accident site (red line). (Source: Google Earth)

1.2. Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	-	-	-	-	-
Serious	-	-	-	-	-
Minor	-	-	-	-	-
None	1	-	-	1	-
Total	1	-	-	1	-

Note: Other means people on the ground.

1.3. Damage to Aircraft

1.3.1. The aircraft sustained damage to the left main landing gear, propeller and left-wing tip.



Figure 2 and 3: The damaged left main landing gear and propeller. (Source: Pilot)

1.4. Other Damage

1.4.1. None.

1.5. Personnel Information

Nationality	South African	Gender	Male	Age	41
Licence Type	Private Pilot Licence				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 March 2025				
Restrictions	None				
Previous Accidents	None				

Note: Previous accidents refer to past accidents the pilot was involved in, when relevant to this accident.

Flying Experience:

Total Hours	142.9
Total Past 24 Hours	6.4
Total Past 7 Days	10.5
Total Past 90 Days	16.1
Total on Type Past 90 Days	16.1
Total on Type	35.2

1.5.1 The pilot had a Private Pilot Licence (PPL) that was initially issued on 5 November 2014. The licence was reissued on 5 September 2023 with an expiry date of 31 July 2025. The pilot had

a Class 2 medical certificate that was issued on 27 March 2023 with an expiry date of 31 March 2025 and with no restrictions.

1.6. Aircraft Information (Source: Pilot's Operating Handbook)

1.6.1. *The Kitplanes for Africa (KFA) built Bushbaby is a strut-braced high-wing airplane powered by a Rotax 912 ULS horizontally opposed four-cylinder air and water-cooled 100 horsepower engine. The engine is equipped with a starter and generator for 12-Volt operation. The 12-Volt storage battery supplies current for starting, radio operation and identification lights. The battery is located aft of the firewall on the passenger side of the aircraft. Conventional dual controls are provided which are operable from both left and right seats. The hydraulic brakes (pilot side only) control each wheel separately. The wide tread landing gear with rubber cord shock absorbers and the full swivelling nose wheel provides stability and easy manoeuvring on the ground. The fuel shut-off valves are on the left and right side of the cockpit, above the doors. The instrument panel contains the flight instrument, engine instruments, radio and engine controls.*

Airframe:

Manufacturer/Model	Kitplanes For Africa (KFA)/Bushbaby	
Serial Number	081	
Year of Manufacture	2006	
Total Airframe Hours (At Time of Accident)	506.2	
Last Inspection (Date & Hours)	8 August 2023	466.0
Airframe Hours Since Last Inspection	40.2	
CRS Issue Date	7 August 2023	
ATF (Issue Date & Expiry Date)	2 May 2023	30 April 2024
C of R (Issue Date) (Present Owner)	8 February 2024	
Operating Category	Normal	
Type of Fuel Used	Mogas	
Previous Accidents	None.	

Note: Previous accidents refer to past accidents the aircraft was involved in, when relevant to this accident.

Engine:

Manufacturer/Model	Rotax 912 ULS
Serial Number	5643164
Hours Since New	506.2
Hours Since Overhaul	TBO not reached

Propeller:

Manufacturer/Model	Kiev 3 Blade/ 263
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Serial Number	2631090
Hours Since New	234.8
Hours Since Overhaul	TBO not reached

1.6.2. The aircraft had last undergone an annual 100-hour maintenance inspection on 8 August 2023 at 466.0 hours; it had accrued 40.2 hours before the accident flight.

1.7. Meteorological Information

1.7.1. The weather information below was obtained from the Meteorological Aerodrome Report (METAR) that was issued by the South African Weather Service (SAWS), recorded at FAPG on 17 April 2024 at 1200Z. FAPG is located 15nm north-east of the accident site.

Wind Direction	350°	Wind Speed	06 kt	Visibility	10 km
Temperature	32°C	Cloud Cover	CAVOK	Cloud Base	CAVOK
Dew Point	14°C	QNH	1013 hPa		

1.7.2. The weather was not a contributing factor to this accident.

1.8. Aids to Navigation

1.8.1. The aircraft was equipped with standard navigational equipment as approved by the Regulator (SACAA). There were no records indicating that the navigational equipment was unserviceable prior to the flight.

1.9. Communication

1.9.1. The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight.

1.10. Aerodrome Information

1.10.1 The accident occurred at Hillandale Hideaway, 15nm north-east of FAPG.

Aerodrome Name	Plettenberg Bay Aerodrome (FAPG)
Aerodrome Location	Plettenberg Bay Western Cape
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	34°05'17.00" South, 023°19'43.00" East
Aerodrome Elevation	465 ft
Runway Headings	12/30

Dimensions of Runway Used	1240 x 20 metres
Heading of Runway Used	Not Applicable
Surface of Runway Used	Not Applicable
Approach Facilities	None
Radio Frequency	128.2 MHz

1.11. Flight Recorders

1.11.1. The aircraft was neither equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required by regulation to be fitted to the aircraft type.

1.12. Wreckage and Impact Information

1.12.1. The aircraft landed hard on an upsloping grass-covered field and the left main landing gear failed on impact during the landing roll. The propeller and left-wing tip impacted the grass surface. The aircraft sustained damage to the left main landing gear, propeller and left-wing tip during the accident sequence.



Figure 4: The aircraft after it came to rest. (Source: Pilot)

1.13. Medical and Pathological Information

1.13.1. The pilot was not injured during the accident sequence.

1.14. Fire

1.14.1. There was no evidence of a pre- or post-impact fire.

1.15. Survival Aspects

1.15.1. The accident was considered survivable as there was no damage to the cockpit and cabin area that could have seriously injured the pilot. The pilot had made use of the aircraft's safety harness.

1.16. Tests and Research

1.16.1. The aircraft was recovered and transported by road to an approved person (AP). Upon inspection, the AP noticed that the coolant radiator lacked good airflow because of the manner in which it was installed by the original builder. The crank runout test and the inspection of the reduction gearbox were in good shape and were within limits. The engine run, oil pressure and oil temperature were put on the test bed and were found to be normal; moreover, the coolant temperature was also functioning optimally. The engine reached its full power.

1.16.2. During the re-installing phase of the engine, the AP inspected the water pipes and fittings and established that the coolant pipe fittings to the Rotax-installed carburettor heat system were restricted. This explained the loss of engine power in the descent phase when throttle was applied.



Figures 5 and 6: The layout of the engine cooling system after recovery. (Source: AP)

1.16.3. The AP subsequently repositioned the radiator and re-installed the engine cooling system in accordance with the Kitplane for Africa (KFA) standard installation factory instructions.

KFA 912 UL-ST and ULS-ST/914//915iS – Firewall forward

- Firewall engine mount (slightly different mount to accommodate the airbox)
- Firewall – 0,5mm stainless steel
- Top and Bottom cowls
- Water radiator Naka Duct.
- Landing light composite “tubes” to fit lights in the cowling.
- 5-liter header tank with low fuel warning system.
- Oil cooler bracket
- Water radiator bracket
- Oil cooler
- Water radiator
- Engine mount rubbers with washers, bolts and nuts.
- Battery box (Battery not included)
- Fuel lines from the tanks to the header tank and shut off valve are supplied.
- Boot cowl (fiberglass).

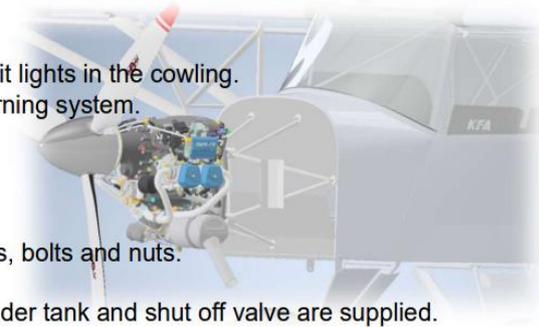


Figure 7: The KFA engine installation guide. (Source:

<http://kitplanesforafrica.co.za/webmoduledata/documents/Kitinformation2020Rev2.pdf>)

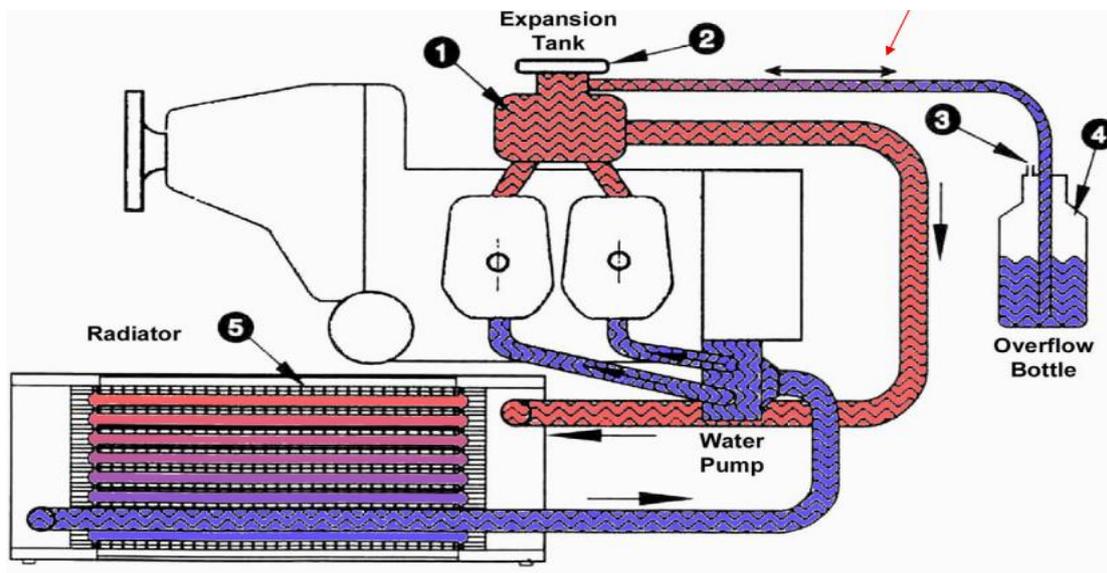


Figure 8: The engine cooling system schematic diagram. (Source: <https://www.rotax-owner.com/pdf/ROAN>)

1.17. Organisational and Management Information

1.17.1. The aircraft was operated privately under the provisions of Part 94 of the CAR 2011 as amended.

1.17.2. The aircraft was maintained by an approved person (AP) who had an AP Certificate that was issued by the Regulator on 24 February 2024 with an expiry date of 25 February 2026.

1.18. Additional Information

1.18.1. None.

1.19. Useful or Effective Investigation Techniques

1.19.1. None.

2. ANALYSIS

2.1. General

From the available evidence, the following analysis was made with respect to this accident. This shall not be read as apportioning blame or liability to any organisation or individual.

2.2. Analysis

2.2.1. The pilot had a Private Pilot Licence (PPL) that was initially issued on 5 November 2014. The licence was reissued on 5 September 2023 with an expiry date of 31 July 2025. The pilot had a Class 2 medical certificate that was issued on 27 March 2023 with an expiry date of 31 March 2025 and with no restriction. The pilot was licensed and had the aircraft endorsed on his licence. He had a total of 142.9 hours of which 35.2 hours were on the aircraft type. The flight was conducted in day light; good weather conditions prevailed on the day of the flight.

2.2.2. During the initial climb, the pilot noticed that the engine temperature indication was higher than normal. He reduced the rate of climb whilst monitoring the temperature indication gauge. The temperature indication subsided a little but increased again approximately after 1 hour into the flight. The pilot elected to divert to FAPG which was 10nm west of the aircraft's position at the time.

2.2.3. The purpose of the flight was to ferry the aircraft for its 100-hour periodic check. According to the records, the aircraft was maintained in accordance with the Regulations. The aircraft was airworthy at the time of the flight. However, according to the AP observations, the engine cooling system was not installed in accordance with the aircraft manufacturer (KFA) standard installation factory instructions. This led to a restriction in the cooling system which caused a

higher-than-normal engine operating temperature and the subsequent engine power loss.

2.2.4. This prompted the pilot to execute a forced landing on the closest available field, which was Hillandale Hideaway, approximately 15nm south-east of FAPG. The aircraft landed hard on the upsloping field and sustained substantial damage.

3. CONCLUSION

3.1. General

From the available evidence, the following findings, causes and contributing factors were made with respect to this accident. These shall not be read as apportioning blame or liability to any organisation or individual.

To serve the objective of this investigation, the following sections are included in the conclusion heading:

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.
- **Causes** — are actions, omissions, events, conditions, or a combination thereof, which led to this accident.
- **Contributing factors** — are actions, omissions, events, conditions or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident occurring, or would have mitigated the severity of the consequences of the accident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil, or criminal liability.

3.2. Findings

3.2.1. The pilot had a Private Pilot Licence (PPL) that was issued on 5 November 2014. The licence was reissued on 5 September 2023 with an expiry date of 31 July 2025.

3.2.2. The pilot had a Class 2 aviation medical certificate that was issued on 27 March 2023 with an expiry date of 31 March 2025 and with no restrictions.

3.2.3. The aircraft was maintained by an AP who had an AP Certificate that was issued by the Regulator on 24 February 2024 with an expiry date of 25 February 2026.

3.2.4. The aircraft was issued a Certificate of Registration on 8 February 2024 under the current owner. The aircraft's Authority-to-fly Certificate was issued on 2 May 2023 with an expiry date of 30 April 2024.

3.2.5 The last annual inspection of the aircraft was conducted on 8 August 2023 at 466.0 hours; it was flown a further 40.2 hours since the said inspection. The aircraft was issued a Certificate of Release to Service (CRS) on 7 August 2023 with an expiry date of 8 August 2024 or at 566.0 airframe hours, whichever occurs first.

3.2.6 The flight was conducted under VFR and under the provisions of Part 94 of the CAR 2011 as amended.

3.2.7 The aircraft had a high engine temperature indication, followed by a loss of engine power during the cruise phase of the flight. After the pilot had tried to restore engine power to no avail, he was prompted to execute a forced landing on a field at Hillandale Hideaway. The aircraft landed hard, and the left main landing gear failed during the landing roll.

3.3. Probable Cause/s

3.3.1. In-flight loss of engine power led to a forced landing which was unsuccessful.

3.4. Contributory Factor/s

3.4.1. Improper installation of the engine cooling system.

4. SAFETY RECOMMENDATIONS

4.1. General

The safety recommendations listed in this report are proposed according to paragraph 6.8 of Annex 13 to the Convention on International Civil Aviation and are based on the conclusions listed in heading 3 of this report. The AIID expects that all safety issues identified by the investigation are addressed by the receiving States and organisations.

4.2. Safety Recommendation/s

4.2.1. None.

5. APPENDICES

5.1. None.

This report is issued by:

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