AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/10501	
Aircraft Registration	ZS-BGN	**Date of Accident**		28 September 2024		**Time of Accident**	0815Z
Type of Aircraft	De Havilland DH82A			**Type of Operation**		Private (Part 94)	
Pilot-in-command Licence Type	Private Pilot Licence (PPL)			**Age**	81	**Licence Valid**	Yes
Pilot-in-command Flying Experience	**Total Flying Hours**			6 508		**Hours on Type**	13.5
Last Point of Departure	Heidelburg Airfield (FAHG), Gauteng Province						
Next Point of Intended Landing	Vereeniging Airfield (FAVV), Gauteng Province						
Damage to Aircraft	Substantial						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Dirt road at Global Positioning System co-ordinates: 26°32'49" South 028°14' 18.1" East, at an elevation of 4 846 feet (ft)							
Meteorological Information	Surface wind: 300°/ 9 kt; temperature: 28°C; dew point: 0°C; visibility: CAVOK						
Number of People On-board	1 + 0	**Number of People Injured**	0	**Number of People Killed**	0	**Other (On Ground)**	0

Synopsis

On Saturday morning, 28 September 2024, a pilot on-board a De Havilland DH82A aircraft with registration ZS-BGN took off on a private flight from Heidelburg Airfield (FAHG) in Gauteng province to Vereeniging Airfield (FAVV) 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's engine power reduced significantly approximately 15 minutes into the flight whilst cruising at 6 500 feet (ft). He stated that he conducted the instrument cockpit checks to identify faults so as to recover the engine's functionality by verifying if the fuel selector valve and magnetos were set to the "ON" position, as well as confirmed if the mixture setting was set correctly. After the checks, the pilot realised that engine power recovery was not possible and, thus, began to survey the surrounding area to identify a suitable field on which to conduct a precautionary landing; after identifying a gravel road, he executed a right turn to position the aircraft for a precautionary landing. During the landing roll, the aircraft's main wheels rolled over a ditch and the aircraft flipped over.

The pilot was not injured; he disembarked from the aircraft unassisted. The aircraft sustained substantial damage to the right wing, rudder, fin, propeller (which broke from the aircraft) and engine mount (front part was bent). Post-accident investigation of the engine revealed no abnormalities.

Probable Cause/s and/or Contributory Factors

Unsuccessful precautionary landing after an undetermined reduction in engine power.

SRP Date	10 June 2025	Publication Date	13 June 2025

Occurrence Details

Reference Number	**:** CA18/2/3/10501
Occurrence Category	**:** Accident (Category 1)
Type of Operation	**:** Private (Part 94)
Name of Operator	**:** JA Earle
Aircraft Registration	**:** ZS-BGN
Aircraft Make and Model	**:** De Havilland Aircraft Company, DH-82A
Nationality	**:** South African
Place	**:** Dirt road
Date and Time	**:** 28 September 2024 at 0815Z
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 involving a De Havilland DH82A aircraft which occurred on a dirt road near R42 and R551 on 28 September 2024 at 0815Z. 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. The AIID has appointed an investigator-in-charge to commence with the full investigation. Notification was sent to the State of Operator in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The State did not appoint an accredited representative and/or advisor. The investigator did not dispatch to the accident.

The AIID reports are made available to the public at:
https://www.caa.co.za/industry-information/accidents-and-incidents/

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
   Accident — this investigated accident
   Aircraft — De Havilland DH82A involved *in this accident*
   Investigation — the investigation into the circumstances of this accident
   Pilot — the pilot involved in this accident
   Report — this accident report

2. *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

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
ACCID	Accident and Incident Investigations Division
AGL	Above Ground Level
AIID	Accident and Incident Investigations Division
AP	Approved Person
ATF	Authority-to-fly
CAR	Civil Aviation Regulations
CAVOK	Cloud and Visibility Ok
C of R	Certificate of Registration
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FDR	Flight Data Recorder
FAHG	Heidelburg Airfield
ft	Feet
FAVV	Vereeniging Airfield
GPS	Global Position System
hPa	Hectopascal
kt	Knots
m	Metres
MHz	Megahertz
METAR	Meteorological Aerodrome Report
nm	Nautical Miles
NPL	National Pilot Licence
PIC	Pilot-in-command
POH	Pilot's Operating Handbook
QNH	Barometric Pressure Adjusted to Sea Level
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
UTC	Co-ordinated Universal Time
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 Saturday morning, 28 September 2024, a pilot on-board De Havilland DH82A aircraft with registration ZS-BGN took off on a private flight from Heidelburg Airfield (FAHG) in Gauteng province to Vereeniging Airfield (FAVV) 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.

1.1.2 The pilot reported that approximately 15 minutes into the flight whilst cruising at 6 500 feet (ft), the engine power reduced significantly from 100% to 60% output. The pilot checked the cockpit control panel to identify faults to recover engine power by verifying if the fuel selector valve and magnetos were set to "ON" position, as well as confirming whether the fuel mixture was correctly set. After the checks, the pilot realised that engine power recovery was not possible; he then surveyed the surrounding area to identify a suitable field on which to conduct a precautionary landing. The pilot identified a gravel road, thereafter, he executed a right turn to position the aircraft for landing. During the landing roll, the aircraft's main wheels rolled over a ditch and the aircraft flipped over. The pilot was not injured; he disembarked from the aircraft unassisted. The aircraft sustained substantial damage to the right wing, rudder, fin, propeller and front engine mount (bent).

1.1.3 The accident occurred on the dirt road near the intersection of R42 and R551 at Global Positioning System (GPS) co-ordinates determined to be 26°32'49" South 28°14' 18.1" East, at an elevation of 4 846ft.

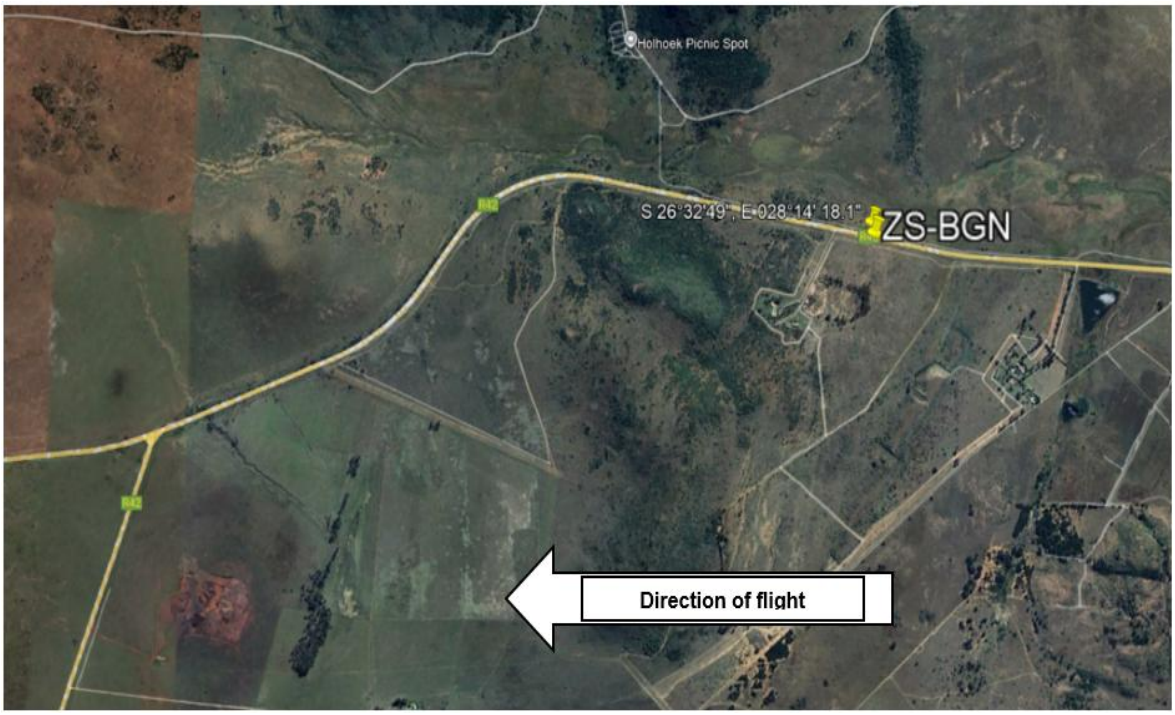

Figure 1: The accident site. (Source: Google Earth)

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's right wing, rudder, fin, propeller and the front engine mount were substantially damaged.

Figure 2: The aircraft post-accident. (Source: Pilot)

1.4. Other Damage

1.4.1. None.

1.5. Personnel Information

1.5.1 Pilot-in-command

Nationality	South African	Gender	Male	Age	81
Licence Type	Private Pilot Licence (PPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Nil				
Medical Expiry Date	28 February 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	6 508
Total Past 24 Hours	0.45
Total Past 7 Days	0.45
Total Past 90 Days	8.6
Total on Type Past 90 Days	13.5
Total on Type	13.5

1.5.2 The pilot had a Private Pilot Licence (PPL) that was issued on 26 July 1974. The latest PPL was reissued on 26 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on the pilot's licence.

1.5.3 The pilot had a Class 2 aviation medical certificate that was issued on 20 February 2024 with an expiry date of 28 February 2025 with no medical restrictions.

1.6 Aircraft Information

1.6.1 Aircraft Description (Source: Pilot's Operating Handbook [POH])

The De Havilland Tiger Moth-D.H.82A is a two-seat biplane. It is powered by the De Havilland Gypsy Major Series 1C Engine. The fuselage is constructed in two parts of steel tubing, covered on the sides and bottom with fabric and a top side of plywood. The front half with the two cockpits and firewall contains longerons and diagonals which are welded with the joints reinforced by gusset plates. Each side is separately jig-welded, drilled and then assembled with bolted cross members. The rear fuselage section is a rigid, jig-welded unit. The front and rear sections are assembled with eight bolts. A canopy of transparent plastic encloses the cockpit, consisting of front and rear sliding sections and a fixed windscreen. The sections can be locked in the open, partly sliding sections may be jettisoned from either inside or outside the cockpits. The De Havilland Gipsy Major 1C is a four-cylinder, air-cooled, inline, naturally aspirated piston engine. It is part of the Gipsy Major family, which was widely used in light aircraft, including the De Havilland Tiger Moth and other trainers.

Key Specifications of the Gipsy Major 1C:

- Configuration: Inline-4, upright
- Cooling: Air-cooled
- Fuel System: Carbureted
- Power Output: Approximately 130–145 horsepower (depending on variant)
- Displacement: Around 6.12 litres

- Fuel Type: Avgas
- Ignition: Magneto ignition

Airframe:

Manufacturer/Model	De Havilland Aircraft Company	
Serial Number	84864	
Year of Manufacture	1941	
Total Airframe Hours (At Time of Accident)	1885	
Last Inspection (Date & Hours)	5 August 2024	1883.55
Hours Since Last Inspection	1.45	
CRS Issue Date	5 August 2024	
ATF (Issue Date & Expiry Date)	19 August 2024	31 August 2025
C of R (Issue Date) (Present Owner)	28 June 1993	
Type of Fuel Used	Avgas	
Operating Category	Private Part 94	
Previous Accidents	None	

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

Engine:

Manufacturer/Model	De Havilland, Gipsy Major 1C
Serial Number	8801
Hours Since New	380
Hours Since Overhaul	TBO not yet reached

Propeller:

Manufacturer/Model	Dunbar DC193-150 LDH 110
Serial Number	1286C
Hours Since New	380
Hours Since Overhaul	TBO not yet reached

1.6.2 The aircraft had a valid Authority-to-fly (ATF) Certificate that was initially issued on 1 April 2019. The latest ATF was renewed on 19 August 2024 with an expiry date of 31 August 2025.

1.6.3 The aircraft's Certificate of Release to Service (CRS) was issued on 5 August 2024 at 1883.55 hours with an expiry date of 4 August 2025 or at 1983.55 hours, whichever comes first.

1.6.4 The pilot had refuelled the aircraft to full capacity with Aviation Gasoline (AVGAS) prior to departure from FAHG. The fuel was checked for contamination by the aircraft maintenance organisation (AMO), and no trace of sediment was found.

1.7 Meteorological Information

1.7.1 The weather information below was obtained from the South African Weather Service (SAWS).

Wind Direction	300°	Wind Speed	9Kt	Visibility	CAVOK
Temperature	28°C	Cloud Cover	None	Cloud Base	None
Dew Point	00°C	QNH	1019		

1.7.2 Carburettor icing was not a factor in 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 on a gravel road near the intersection of R42 and R551 in Gauteng province.

1.11 Flight Recorders

1.11.1 The aircraft was not 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 accident occurred on a gravel road which was uneven and unfavourable to perform a safe landing. The wreckage distribution was fairly localised. The aircraft was found in an inverted attitude. The bottom side of the nose section was damaged which was consistent with the aircraft's impact with the ground (see Figure 2). The propeller was found broken, and the engine mountings were found bent. The right upper wing was damaged during the accident sequence, indicative of impact with a solid surface. The tail fin and rudder were substantially damaged due to the hard impact with the ground during the accident sequence (when the aircraft flipped over).

Figure 3: The aircraft in an inverted position post-accident. (Source: Pilot)

1.13 Medical and Pathological Information

1.13.1 None.

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 survivable as the pilot was properly restrained by the safety belt; the cabin structure was not damaged during the accident sequence.

1.16 Tests and Research

1.16.1 The AMO conducted a post-accident inspection of the engine and could not find any defect or mechanical failure that could have attributed to the reduction of engine power. The engine timing and the magneto timing were correct. A borescope inspection of the engine was conducted; the engine was found in a satisfactory condition. The carburettor was inspected and found to be serviceable. The engine was sufficiently lubricated.

1.17 Organisational and Management Information

1.17.1 The private flight was conducted under the provisions of Part 94 of the CAR 2011 as amended.

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

Man

2.2.1 The pilot had a Private Pilot Licence and a valid medical certificate. The aircraft type was endorsed on the pilot's licence. The engine lost power and the pilot completed the fault-finding procedure to regain full engine power. However, after realising the improbability of his effort to regain engine power, he decided to complete a precautionary landing on the gravel road.

Machine

2.2.2 The approved person (AP) who conducted maintenance of the aircraft had issued the Certificate of Release to Service (CRS) on 5 August 2024 at 1883.55 airframe hours with an expiry date of 4 August 2025 or at 1983.55 airframe hours, whichever comes first. Post-accident investigation revealed no engine abnormalities that could have resulted in a reduction of engine power. The pilot had refuelled the aircraft to full capacity with AVGAS prior to departure from FAHG. The AMO checked the fuel for contamination, and none was found.

Environment

2.2.3 The weather did not contribute to this accident. The weather conditions were not conducive to carburettor icing on the day of the accident.

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 26 July 1974. The licence was reissued on 26 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on his licence and logbook.

3.2.2 The pilot was issued a Class 2 aviation medical certificate on 20 February 2024 with an expiry date of 28 February 2025 with medical restrictions.

3.2.3 The aircraft had a valid Authority-to-fly (ATF) Certificate that was initially issued on 1 April 2019. The ATF was renewed on 19 August 2024 with an expiry date of 31 August 2025.

3.2.4 The pilot had refuelled the aircraft to full capacity with Aviation Gasoline (AVGAS) prior to departure from FAHG. The AMO checked the fuel for contamination, and none was found.

3.3. Probable Cause/s

3.3.1 Unsuccessful precautionary landing following an undetermined reduction of engine power.

3.4. Contributory Factor/s

3.4.1. None.

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