AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/10381	
Aircraft Registration	ZU-MWG	**Date of Accident**	26 October 2023			**Time of Accident**	1517Z
Type of Aircraft	Speed Canard (SC01 B-160) Veteran			**Type of Operation**		Private (Part 94)	
Pilot-in-command Licence Type	Private Pilot Licence (PPL)			**Age**	76	**Licence Valid**	Yes
Pilot-in-command Flying Experience		**Total Flying Hours**		3 416.9		**Hours on Type**	Unknown
Last Point of Departure	Rand Airport (FAGM), Germiston, Gauteng Province						
Next Point of Intended Landing	Zandspruit Aero Estate Private Airstrip, Hoedspruit, Limpopo Province						
Damage to Aircraft	Destroyed						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Zandspruit Aero Estate private airstrip in Hoedspruit (GPS position: 24˚22'01" South 030˚55'25.93" East) at an elevation of 1700 feet (ft)							
Meteorological Information	Surface wind: 210º/07 kts; temperature: 19.2ºC; dew point: 0.8ºC; Visibility: CAVOK						
Number of People On-board	1 + 0	**Number of People Injured**	0	**Number of People Killed**	1	**Other (On Ground)**	0

Synopsis

On Thursday, 26 October 2023, a pilot on-board a Speed Canard (SC01 B-160) aircraft with registration ZU-MWG was on a private flight from Rand Airport (FAGM) in Germiston, Gauteng Province, to Zandspruit Aero Estate private airstrip in Hoedspruit, Limpopo province. 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.

The flight segment to Zandspruit Aero Estate private airstrip was uneventful. An eyewitness stated that he saw the aircraft flying at a low height as it approached the airstrip. He perceived the pilot to have conducted a runway inspection before he could land. The pilot orientated the aircraft to land on Runway 35. The aircraft landed deep and drifted to the left; it was still rolling at high speed as it neared the end of the runway. Moments later, it impacted a tree and burst into flames. The aircraft was destroyed by impact and fuel-fed fire that erupted. The pilot was fatally injured. The video footage and the witness marks on the tree indicated that the engine was producing a substantial amount of power at the time of impact.

Probable Cause/Contributory Factor

The aircraft landed deep on Runway 35 and the pilot lost control during the landing roll, which caused the aircraft to drift to the left and impact a tree before it burst into flames.

SRP date	10 September 2024	Publication date	13 September 2024

Occurrence Details

Reference Number	**:** CA18/2/3/10258
Occurrence Category	**:** Accident (Category 1)
Type of Operation	**:** Private (Part 94)
Name of Operator	**:** Marcel Theodor Anthonius Johannes Nijdam
Aircraft Registration	**:** ZU-MWG
Aircraft Make and Model	**:** Speed Canard (SC01 B-160) Veteran
Nationality	**:** South African
Place	**:** Left side of Runway 35 at Zandspruit Aero Estate
Date and Time	**:** 26 October 2023 at 1517Z
Injuries	**:** Fatal
Damage	**:** Destroyed

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) was notified of the accident on 26 October 2023 at 1517Z. 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 Design and Manufacturer in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The AIID is leading the investigation as the Republic of South Africa is the State of Occurrence. Investigators had dispatched to the accident site.

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*
   Accident — this investigated accident
   Aircraft — the Speed Canard (SC01 B-160) Veteran 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 various 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
AIID	Accident and Incident Investigations Division
AME	Aircraft Maintenance Engineer
AMO	Aircraft Maintenance Organisation
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CAR	Civil Aviation Regulations
CAVOK	Cloud and Visibility OK
CRS	Certificate of Release to Service
CSU	Constant Speed Unit
CVR	Cockpit Voice Recorder
DNC	Day Natural Colour
FANS	Nelspruit Aerodrome
FDR	Flight Data Recorder
Ft	Feet
GFA	General Flying Area
GPS	Global Positioning System
hPa	Hectopascal
Kt	Knots
M	Metre(s)
METAR	Meteorological Aerodrome Report
MHz	Megahertz
MPI	Mandatory Periodic Inspection
PIC	Pilot-in-command
POH	Pilots Operating Handbook
QNH	Barometric Pressure Adjusted to Sea Level
RWY	Runway
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
TBO	Time Between Overhaul
UTC	Co-ordinated Universal Time
VFR	Visual Flight Rules
VMC	Visual Metrological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Thursday, 26 October 2023, a pilot on-board a Speed Canard SC01 B-160 aircraft with registration ZU-MWG was on a private flight from Rand Airport (FAGM) in Germiston, Gauteng province, with the intention to land at Zandspruit Aero Estate private airstrip in Hoedspruit, Limpopo province. 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.

1.1.2. According to the information obtained from the aircraft maintenance organisation (AMO) based at FAGM where the aircraft was hangared, the pilot of ZU-MWG took off after his spouse who was piloting another aircraft. The duo routed in formation towards the north. Upon their arrival at Zandspruit private airstrip, the spouse's aircraft landed first. A video footage from the Zandspruit Aero Estate manager's office showed the aircraft as it approached the runway oriented 17/35 at a low height, then turned to land on Runway 35. An eyewitness at Zandspruit Aero Estate stated that he saw ZU-MWG aircraft approach Runway 35 at a low height. *The runway length is 1 000 metres (m)*. According to the eyewitness, he perceived the pilot to have conducted the runway inspection before he could land. The aircraft was then observed making a turn to commence with landing on Runway 35. The ZU-MWG aircraft touched down deep, about 250m from the threshold of Runway 35. The aircraft did not slow down; moments later, it drifted to the left of the runway and impacted a tree. A post-impact fire ensued which consumed the aircraft. The pilot was fatally injured.

1.1.3. Another eyewitness whose house is on the approach path of the aircraft outside the airstrip stated that when she heard ZU-MWG aircraft approach, she went outside of her house to observe as she usually does. According to her observation, the pilot's posture was hunched (his shoulders rounded); he appeared not to be sitting upright as expected during this phase of the flight. She noticed this because the pilot normally raises his hand to greet after landing and as he taxies to his hangar.

1.1.4. The accident occurred during daylight on the left side of Runway 35 at the Global Positioning System (GPS) co-ordinates determined to be 24º22'22.2" South 030º55'55.5" East, at an elevation of 1 700 feet (ft).

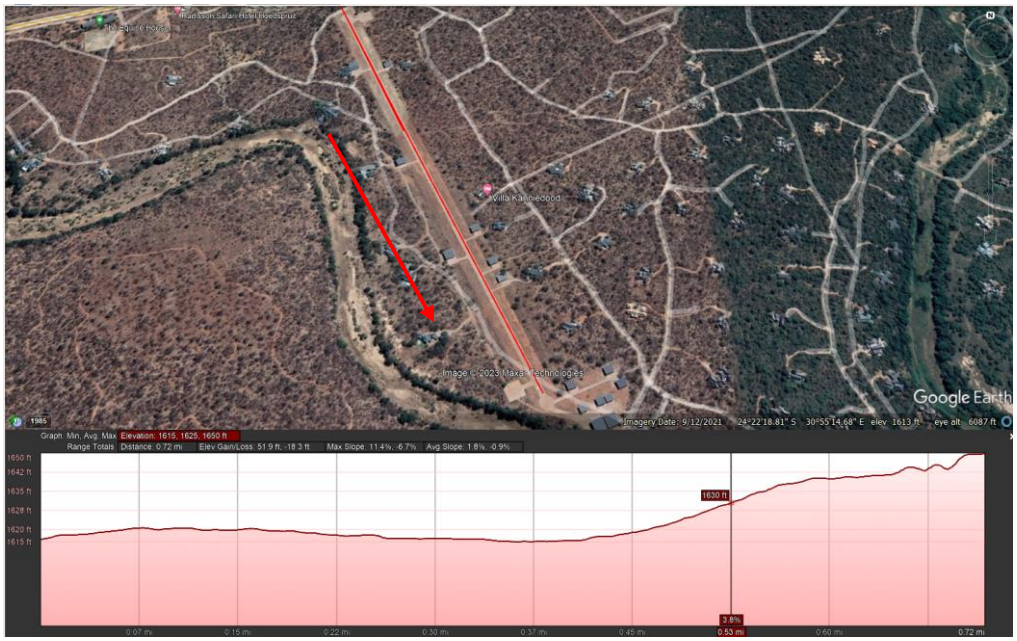

Figure 1: Aerial view of the runway and elevation profile. The red arrow indicates the direction of landing. (Source: Google Earth)

1.2. Injuries to Persons

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

Note: Other means people on the ground.

1.3. Damage to Aircraft

1.3.1. The aircraft was destroyed by impact forces and post fuel-fed fire that erupted.

1.4. Other Damage

1.4.1. None.

1.5 Personnel Information

1.5.1 Pilot

Nationality	Dutch (Netherlander)	Gender	Male	Age	76
Licence Type	Private Pilot Licence (PPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	18 July 2024				
Restrictions	Suitable corrective lenses				
Previous Accidents	None				

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

1.5.2 The pilot was a Netherlands citizen. He had a Private Pilot Licence (PPL) that was issued by the National Aviation Authority of the Netherlands. The South African Civil Aviation Authority (SACAA) initially validated the Netherlands-issued PPL on 14 January 2013 under Part 61 of the Civil Aviation Regulations (CAR). The Regulator reissued the pilot's PPL on 4 May 2021 with an expiry date of 28 April 2026.

1.5.3 According to the SACAA Personnel Licensing Division, validations are valid for 5 years, therefore, the pilot's validation was valid from 4 May 2021 to 28 April 2026 subject to the pilot keeping the aviation medical certificate current. The latest aviation medical certificate was issued on 18 July 2023 with an expiry date of 18 July 2024.

Flying Experience:

Total Hours	3 416.9
Total Past 24 Hours	Unknown
Total Past 7 Days	Unknown
Total Past 90 Days	Unknown
Total on Type Past 90 Days	Unknown
Total on Type	Unknown

Note: The hours on the table above were taken from the pilot's file held at the SACAA. The hours were filed during an application for the PPL renewal that was issued on 4 May 2021 in the logbook dated 29 October 2020.

Approved Person (AP):

Nationality	South African	Gender	Male	Age	36
Licence Type	Approved Person (AP)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Airplanes of Composite Construction and all metal MTOW<5700kg				
Restrictions	None				
Previous Accidents	None				

1.5.4 The approved person (AP) who conducted the last annual inspection of the aircraft prior to the accident flight had an Approved Person Certificate that was issued by the SACAA on 28 September 2022 with an expiry date of 27 September 2024. The AP had the aircraft type endorsed on his certificate.

1.6 Aircraft Information

Flugplatz (Gyroflug MBH) SC01 B-160 (Veteran)

(Source: https://aeropedia.com.au/content/gyroflug-sc-01-speed-canard/*The Gyroflug SC 01*)

Speed Canard is an unconventional sports plane manufactured in Germany in the 1980s and 1990s. Inspired by the Rutan Varieze, the Speed Canard is an all-new design created without input from Rutan. Like the VariEze, the Speed Canard is a canard-configured mid-wing monoplane with wing tip fins that incorporate rudders.

The two-seat tandem cockpit and canopy design were derived from the Grob Twin Astir sailplane, and the nosewheel of the tricycle undercarriage is retractable. Construction throughout is of composite materials, and when the design attained German certification in 1983, it became the first composite canard design to achieve certification anywhere in the world. An interesting feature of the control system is that the twin rudders operate independently, allowing both rudders to be deflected outwards simultaneously, cancelling each other's yaw, but acting as airbrakes.

Figure 2: An example of the SC01 which is similar to the accident aircraft. (Source: https://cdn.plnspttrs.net/40289/ja84ay-private-gyroflug-sc-01b-160-speed-canard_PlanespottersNet_1384691_0860cdcbcb_o.jpg)

Airframe:

Manufacturer/Model	Flugplatz (Gyroflug MBH) / Speed Canard SC01 B-160 (Veteran)	
Serial Number	S40	
Year of Manufacture	1990	
Total Airframe Hours (At Time of Accident)	Unknown	
Last Inspection (Date & Hours)	4 October 2023	1 764.34
Airframe Hours Since Last Inspection	Unknown	
CRS Issue Date	12 October 2023	
Authority To Fly (Issue Date & Expiry Date)	3 August 2022	31 October 2023
C of R (Issue Date) (Present Owner)	21 July 2021	
Operating Category	Private (Part 94)	
Type of Fuel Used	Avgas LL100	
Previous Accidents	None	

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

Engine:

Manufacturer/Model	Lycoming / 0-320-D1A
Serial Number	L-14362-39A
Hours Since New	1 764.34
Hours Since Overhaul	TBO not reached

Propeller:

Manufacturer/Model	McFarlane / MTV-6-C
Serial Number	080807
Hours Since New	1 764.34 at inspection
Hours Since Overhaul	TBO not reached

1.6.1 According to available information, the aircraft was first registered to the present owner on 21 July 2021. The last annual inspection of the aircraft was certified on 4 October 2023 at 1 764.34 airframe hours. On 10 to 12 October 2023, additional maintenance to balance the propeller was conducted, after which the Certificate of Release to Service (CRS) was issued on 12 October 2023 with an expiry date of 12 October 2024 or at 1 864.34 hours, whichever occurs first.

1.7 Meteorological Information

1.7.1 The weather information in the table below was obtained from the South African Weather Service (SAWS) report that was issued for Airforce Base Hoedspruit (FAHS) in Limpopo province on 26 October 2023 at 1517Z. FAHS is located 13.47km east of the accident site.

Wind Direction	070º	Wind Speed	5 knots	Visibility	9999
Temperature	30ºC	Cloud Cover	CAVOK	Cloud Base	CAVOK
Dew Point	16ºC	QNH	1016 hPa		

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigational equipment as approved by the Regulator. There were no recorded defects with the navigational equipment 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 Zandspruit Aero Estate private airstrip is an unmanned, unlicensed airstrip with a single runway oriented 17/35.

Aerodrome Name	Zandspruit Aero Estate
Aerodrome Location	Hoedspruit, Limpopo Province
Aerodrome Status	Unlicensed
Aerodrome Co-ordinates	24º22’22.2” S 030º55’55.5” E
Aerodrome Elevation	1 700ft
Runway Headings	17/35
Runway Dimensions	1 000m X 10 m
Runway Used	Runway 35
Runway Surface	Paved
Approach Facilities	None
Radio Frequency	125.2 MHz

Figure 3: Zandspruit Aero Estate private airstrip.

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 touched down deep, about 250m from the threshold of Runway 35. The flaps were fully extended. During the landing roll, the aircraft drifted to the left and impacted a tree. The fuel tanks ruptured, which caused the fuel to spill. It is likely that the fuel ignited due to the hot engine. The fuel-fed fire ensued and consumed the aircraft.

Figure 4: The wreckage at the accident site.

1.12.2 The witness marks on the tree (close to the propeller blades) indicated that the engine was producing a substantial amount of power at the time of impact. The amount of power the engine was producing cannot be determined. The control cables were examined and nothing abnormal was found.

Figure 5: A tree that was cut by the propeller.

1.13 Medical and Pathological Information

1.13.1 According to the post-mortem report, the cause of death was due to complications of burn injuries as the aircraft had caught fire.

1.13.2 At the time of the release of this report, the results of the toxicology tests were not available. Should the toxicology results have new and substantive evidence, this investigation will be reopened to incorporate the new and substantive information.

1.14 Fire

1.14.1 The aircraft was consumed by the post-impact fuel-fed fire that had erupted.

Figure 6: The wreckage post-accident.

1.15 Survival Aspects

1.15.1 The accident was considered not survivable due to the post-impact fuel-fed fire which compromised the structural integrity of the cockpit and the cabin area of the aircraft.

1.16 Tests and Research

1.16.1 There was a strong smell of fuel at the accident site. However, there was no fuel available for testing. The engine and the propeller were recovered from the accident site and transported to the SACAA-approved engine overhaul facility in Wonderboom Airport (FAWB), Gauteng province, where they were subjected to a teardown inspection in the presence of the investigating team.

Figure 7: The engine and the propeller on a stand.

1.16.2 The propeller was removed from the engine and was dismantled. The bearings on the hubs had sufficient lubricant; also, the seals on the hubs were intact and in good condition. The propeller was put on a test rig, and it operated normally.

Figure 8: The propeller hubs after dismantling.

Figure 9: The propeller hubs and evidence of adequate lubrication on the bearings.

Figure 10: The seals on all three hubs were still intact.

1.16.3 The engine, a Lycoming 0-320-D1A, was subjected to a teardown inspection. The crankcase and the oil sump were found in good condition.

Figure 11: The engine on the engine stand before it was dismantled.

1.16.4 The oil sump contained sufficient oil. The cylinders revealed no damage that could have affected the engine from operating normally. The cylinder heads assembly, valves and rocker arms were intact. All pistons and rings were in good condition. All the connecting rods were found intact and connected at both the big- and small-ends. The plain sleeve bearing sets, main and big end showed no damage or excessive wear. The crankshaft was still in good condition. Nothing abnormal was noted on the engine. There was no evidence that the aircraft was not capable of normal operation at the time of the accident flight.

Figure 12: The pistons and rings were in good condition.

1.17 Organisational and Management Information

1.17.1 The flight was conducted in accordance with the provisions of Part 94 (General Aviation) of the CAR 2011 as amended.

1.17.2 The AP who conducted the last annual inspection of the aircraft had an Approved Person Certificate. The AP was issued the Approved Person Certificate on 28 September 2022 with an expiry date of 27 September 2024. According to the reviewed records, the aircraft type was endorsed on his certificate.

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

Pilot

2.2.1. The pilot was a Netherlands citizen. He had a Private Pilot Licence (PPL) that was issued by the National Aviation Authority of the Netherlands. The licence was initially validated by the SACAA on 14 January 2013 under Part 61 of the Civil Aviation Regulations (CAR). The pilot was then issued a PPL on 14 January 2013. The latest validation was reissued on 4 May 2021 with an expiry date of 28 April 2026. The last available aviation medical certificate was issued on 18 July 2023 with an expiry date of 18 July 2024. The aviation medical certificate was valid at the time of the accident.

Weather

2.2.2 The weather information obtained from the South African Weather Service (SAWS) on 26 October 2023 at 1517Z indicated good weather conditions around the time of the accident. The SAWS weather report was issued for FAHS, which is located about 13.47km east of the accident site.

Aircraft

2.2.3 Post-accident examination of the technical records indicated that the last annual inspection of the aircraft was certified on 4 October 2023 at 1 764.34 airframe hours. The hours at the time of the accident are unknown as the flight folio and the cabin area were consumed by the post-impact fire.

The AP who conducted the last annual inspection of the aircraft had an Approved Person Certificate that was issued on 28 September 2022 with an expiry date of 27 September 2024. The AP had the aircraft type endorsed on his certificate.

The engine was subjected to a tear down examination and nothing abnormal was noted. Examination of the propeller blades indicated that the engine was producing a substantial amount of power at the time of impact. There was no evidence that the aircraft was not capable of normal operation at the time of the accident.

2.2.4 The aircraft landed deep and did not slow down; the pilot lost control of the aircraft and it impacted a tree and, thereafter, burst into flames. The aircraft was destroyed by a post-impact fire which fatally injured the pilot.

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

Pilot

3.2.1. The pilot was a Netherlands citizen. He had a Private Pilot Licence (PPL) that was issued by the National Aviation Authority of the Netherlands. The pilot's licence was initially validated on 14 January 2013 under Part 61 of the South African Civil Aviation Regulations (CAR). The latest renewed licence had an expiry date of 28 April 2026.

3.2.2. The pilot was issued a Class 2 medical certificate on 18 July 2023 with an expiry date of 18 July 2024. The medical certificate was valid at the time of the accident.

3.2.3. According to the post-mortem report, the cause of death was due to complications of burn injuries as the aircraft had caught fire.

Aircraft

3.2.4. The aircraft engine and propeller inspection were conducted; the propeller and engine were found in good condition and showed no indication of pre-accident damage or failure.

3.2.5 The flight folio was destroyed in the post-impact fire.

3.2.6 The AP who conducted the last annual inspection of the aircraft had an Approved Person Certificate. The AP was issued the Approved Person Certificate on 28 September 2022 with an expiry date of 27 September 2024. According to the reviewed records, the aircraft type was endorsed on his certificate, and he was rated on the aircraft type.

3.2.7 The annual inspection was conducted on 4 October 2023. The propeller was balanced on 12 October 2023 at 1764.34 airframe hours. The aircraft was issued a Certificate of Release to Service (CRS) on 12 October 2023 with an expiry date of 12 October 2024 or at 1864.34 hours, whichever occurs first.

3.2.8 The aircraft landed deep and did not slow down; the pilot lost control of the aircraft and it impacted a tree and burst into flames. The aircraft was destroyed by a post-impact fire which fatally injured the pilot.

3.3. Probable Cause

3.3.1 The aircraft was landed deep on Runway 35, and the pilot lost control during the landing roll which caused the aircraft to drift to the left and impact the tree.

3.4. Contributory Factor

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 Message

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