



REPUBLIC OF NAMIBIA

MINISTRY OF WORKS AND TRANSPORT

## Directorate of Aircraft Accident and Incident Investigations

Accident Reference: ACCID/11252022/01-04

### Aircraft Accident Investigation Final Report

AIRCRAFT TYPE & REGISTRATION: C182 (ZS-ERO)

RELEASE DATE :

MINISTRY & TRANSPORT	S
Office of the Director	
2024 -05- 24	
Private Bag 13341, Windhoek	
REPUBLIC OF NAMIBIA	



# Aircraft Accident Report

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DESCRIPTION OF OCCURRENCE: Runway excursion and subsequent ground collision with object.

TYPE OF OPERATION: Private.

AIRCRAFT TYPE & REGISTRATION: C182 (ZS-ERO)

LOCATION: GPS: 22° 29' 7.19" S 17° 27' 26.99" E Twyfelfontein Airport

DATE AND TIME: 2022/10/25 14:50UTC



## Foreword

This report presents the factual information, data analysis, conclusions, and safety recommendations reached during the investigation. The purpose of the investigation was to establish the circumstances surrounding this occurrence.

In accordance with the provisions of Annex 13 to the Convention on International Civil Aviation Organization, the accident's analysis, conclusions, and safety recommendations contained therein are intended neither to apportion blame nor to single out any individual or group of individuals. The main objective was to identify the systematic deficiencies and draw lessons, from the occurrence, which might help to prevent accidents and incidents in the future. To this end, many a time, the reader may be interested in whether or not an issue was a direct cause of the accident (that has already taken place), whereas the investigator is mainly concerned with the prevention of future accidents/incidents.

As a result, the usage of this report for any purpose other than (the letter and spirit of Annex 13 and other relevant statutes) prevention of similar occurrences in the future might lead to erroneous interpretations and applications.



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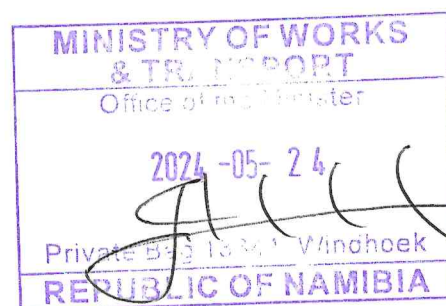
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## ABBREVIATION

AD	-	Airworthiness Directives
AMO	-	Aircraft Maintenance Organization
AME	-	Aircraft Maintenance Engineer
AIP	-	Aeronautical Information Publication
AOC	-	Air Operating Certificate
ATPL	-	Airline Transport Pilot License
CAVOK	-	Cloud and Visibility Ok
CPL	-	Commercial Pilot License
DAAII	-	Directorate of Aircraft Accident and Incident Investigation
ELT	-	Emergency Locator Transmitter
FMS	-	Flight Management System
ICAO	-	International Civil Aviation Organization
NCAA	-	Namibia Civil Aviation Authority
NAMCARs	-	Namibian Civil Aviation Regulations
OLA	-	Over flight and Landing Authorization
PPL	-	Private Pilot License
MPI	-	Mandatory Periodic Inspection
SB	-	Service Bulletins
UTC	-	Universal Time Co-ordinated
VHF	-	Very Higher Frequency







## Ministry of Works and Transport

# DIRECTORATE OF AIRCRAFT ACCIDENT INVESTIGATION

## ACCIDENT REPORT – EXECUTIVE SUMMARY

<b>Aircraft Registration</b>	ZS-ERO	<b>Date of Accident</b>	25 <sup>th</sup> October, 2022	<b>Time of Accident</b>	14:50 UTC
<b>Type of Aircraft</b>	CESSNA 182	<b>Type of Operation</b>	Private		
<b>Pilot- In - command License Type</b>	PPL	<b>Age</b>	71	<b>License Valid</b>	Valid
<b>Pilot-In-command Flying Experience</b>	Total Flying Hours	25000	<b>Hours on Type</b>	49:53	
<b>Last point of departure</b>	Vingerklip				
<b>Next point of intended landing</b>	FYFK-FYTF-FYSM-FYSU-FYLZ				
<b>Location of the accident site with reference to easily defined geographical points (GPS readings if possible)</b>					
GPS: 22° 29' 7.19" S 17° 27' 26.99" E. Twyfelfonein airstrip					
<b>Meteorological Information</b>	Wind Direction: 190 °, Wind speed: 10 kt, Visibility: Clear, Temperature: 25° C Cloud cover: CAVOK, Dew point: unknown				
<b>Number of people on board</b>	1+2	<b>No. of people injured</b>	0	<b>No. of people killed</b>	0
<b>Synopsis</b>					

According to the pilot, on the 25th of October, 2022, a South African registered Cessna 182 aircraft got airborne from Vingerklip on a private flight to Twyfelfontein Airport. The pilot and two passengers were on board the aircraft. This was a private flight conducted under the provisions of Part 91 of the Civil Aviation Regulations.

The pilot further stated that the approach to runway 28 was fine, normal speed around 65 knots (kts). Crosswind approach from the left which was about 10 kts. After a very soft touchdown on centreline, the aircraft drifted to the right edge of the runway. A strong application to the left rudder turned the aircraft to the left, but during the last minute, the right aft fuselage hit a tyre, which was placed alongside the runway edge as marking.

The aircraft came to a stop and everyone disembarked safely however the aircraft sustained substantial damage.

The Directorate of Aircraft Accident and Incident Investigation (DAAII) was NOT Informed about the accident by neither the owner nor the pilot. Three days later after conducting three more flights, another pilot who was at the airfield saw the damaged aircraft and reported it to the Civil Aviation Authority, which then forwarded it to DAAII. An accredited representative from South Africa (state of registry) and Germany (state of pilot's aviation-issued document) assisted in conducting the investigation.

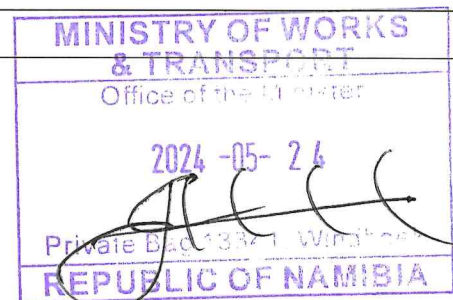
The Minister of Works and Transport Ministry was responsible for the release of the official final accident report.

The Certificate of Airworthiness from SACAA was issue on 21/05/2019 and had an expiry date of 31/05/2023. The last annual inspection was conducted on the 13/9/2022 at 4744.67 hrs. The aircraft had 4803 hours at the time of accident.

**Probable Cause.** Runway excursion and subsequent ground collision with object.

### **Contributing factor (s):**

Crosswind





## AIRCRAFT ACCIDENT REPORT



Name of Owner/Operator : Sway Systems  
Manufacture : Textron Aviation  
Model : C182  
Nationality : South African.  
Registration : ZS-ERO  
Location : Twyfelfontein Airport  
Date : 25th October, 2022 Time: 14:50 UTC

*All times given in this report are in Co-ordinated Universal Time (UTC).*

### Disclaimer:

The report is given without prejudice to the rights of the Directorate of Aircraft Accident and Incidents Investigations, which are reserved.

### Purpose of the Investigations:

In terms of the Namibia Civil Aviation Act (Act No. 6 of 2016) and ICAO Annex 13, this report was compiled in the interest of the promotion of aviation safety and the reduction of risk of aviation accidents or incidents and **not to establish blame or legal liability.**

This report contains facts relating to aircraft accidents or incidents that have been determined at the time of issue. The report may therefore be revised should new and substantive facts are made available to the investigator (s).

### 1. FACTUAL INFORMATION

#### 1.1 History of Flight

- 1.1.1 According to the pilot, on the 25th of October 2022, a South African registered Cessna 182 aircraft got airborne from Vingerklip on a private flight to Twyfelfontein Airport. The aircraft was authorized to fly to routing **FBKE-FYKM-FYLS-FYRU-FYMO-FYTF-FYSM-FYSU-FYLZ-FYSH-FYKT**. The pilot and his two passengers were on board the aircraft.

The pilot stated that the flight was normal and approach into Twyfelfontein with speed around 65 kts. With Crosswind appr. 10 kts from the left. After a very soft touchdown on the centreline, the aircraft drifted to the right edge of the runway. A strong application to the left rudder turned the aircraft to the left, but during the last minute, the right aft fuselage hit a tyre, which was placed alongside the runway edge as marking.

- 1.1.2 The aircraft came to a stop and everyone disembarked.
- 1.1.3 The pilot however did not report the accident as required by the Namibian Civil Aviation Act. He continued to fly with the damaged aircraft for three more flights.
- 1.1.4 Another pilot who was at the Sossusvlei airfield saw the damaged aircraft three days later and reported it to the Namibian Civil Aviation Authority, who then forwarded it to DAAII. The pilot still continued to Luderitz where he encountered technical issues. The regulator immediately stopped the operations and grounded the aircraft.
- 1.1.5 The pilot returned back to Germany before the Investigator could contact him, the owner filled out the occurrence report only on the 02/11/2022 after a lengthy process and coordination with the SACAA.
- 1.1.6 The aerodrome operator at Twyfelfontein Airport was contacted by the investigator with the intention to remove



or mitigate the hazard introduced by the objects. (Tyres on the edge of the runway). The operator presented a comprehensive safety report about the airstrip.

## 1.2 Injuries to person

Injuries	Pilot	Crew	Pass.	Other
Fatal	0	-	-	-
Serious	0	-	-	-
Minor	0	-	-	-
Total	0			

## 1.3 Damage to Aircraft

The aircraft was substantially damaged.



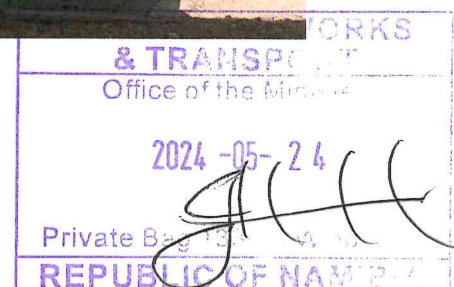
Figure 1: Damage to the lower aft fuselage appr. 1,5 m behind the right door.

## 1.4 Other Damage

1.4.1 There was no other damage.

## 1.5 Personnel Information

Nationality		German			
Licence No	DE FCL 3311001673	Gender	Male	Age	71
Licence valid		Valid	Type Endorsed	Yes	
Type Ratings		SEP (land) IR			
Medical		Valid			





Restrictions	Valid with no restrictions.
Previous Accidents	Unknown

Total Hours	25000
Total Past 90 Days	76
Total on Type Past 90 Days	49.53
Total on Type	75.00

The pilot was a German citizen who was a holder of a Private Pilot License. (PPL) issued by the Republic of Germany as well as a South African validation 2272312018. The validation had an expiry date of 17/05/2026. He previously held an Airline Transport Pilot License (ATPL).

## 1.6 Aircraft Information

### Airframe:

Type	C 182
Manufacture	Textron Aviation
Total Airframe Hours (At time of Accident)	4803
Last MPI (Date & Hours)	2022/9/13
Hours since Last MPI	59
C of Airworthiness	21-05-2019 (Exp 31-05-2023)
Operating Categories	Standard

### Engine:

Type	Continental
Serial No.	132-977-6-R
Hours since New	2806.55

MINISTRY OF WORKS  
& TRANSPORT  
Office of the Minister  
2024-05-24  
Private Bag 15441, Windhoek  
REPUBLIC OF NAMIBIA

The Certificate of Airworthiness from SACAA was issue on 21/05/2019 and had an expiry date of 31/05/2023. The last annual inspection was conducted on the 13/9/2022 at 4744.67 hrs. The aircraft had 4803 hours at the time of accident.

The aircraft's next 50 hours of inspection was due at 4794.75 hours or at the calendar period i.e. 12/09/2023. According to Flight Folio no. 0047, The aircraft entered Namibia with 4795.37 hours The aircraft then flew to another eight destinations accumulating a further 14.7 hours.

## 1.7 Meteorological Information

Wind direction	190°	Wind speed	10kts	Visibilty	9999
Temperature	25°	Cloud cover	CAVOK	Cloud base	Nil
Dew point	Unknown				

## 1.8 Aids to Navigation

- 1.8.1 The aircraft was equipped with standard navigational equipment as approved by the regulator  
There were no records indicating any un-serviceable Ground-based navigation aids.

## 1.9 Communications.

- 1.9.1 The aircraft was equipped with standard communication equipment as approved by the Regulator for the type.  
There were no recorded defects with the communication system prior to the accident flight

## 1.10 Aerodrome Information

Aerodrome Information		
Aerodrome Location	Twyfelfontein	
Runway Dimensions	2200m	13m

Runway Surface	gravel
Approach Facilities	none
Visual aid	none

- 1.10.1 The aerodrome investigations (Twyfelfontein) revealed that the airstrip is approximately 2200m long, 13m wide and has an east-west bearing. The edge markers (tyres) are painted white and are approximately 3m from the edges on each side of the landing strip. The height of the tyres is approximately 280mm, and the tyres are spaced 50m apart along the length on either side of the airstrip.

### 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 the relevant aviation regulations for this type.

### 1.12 Wreckage distribution and Impact Information

- 1.12.1 Damage to the lower aft fuselage approximately 1,5 m behind the right door.

### 1.13 Medical and Pathological Information

- 1.13.1. None

### 1.14 Fire

- 1.14.1. There was no pre- or post-impact fire.

### 1.15 Survival Aspects.

- 1.15.1 This was a survivable accident as impact forces were minimal.

### 1.16 Tests and Research.

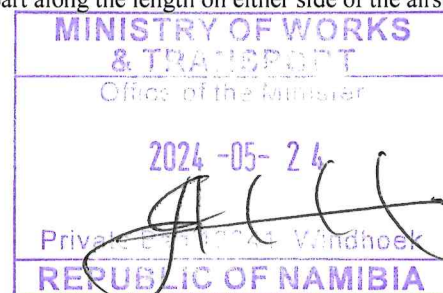
- 1.16.1. None was done and none was required.

### 1.17 Organizational and Management Information.

- 1.17.1. This was a private flight conducted under the provisions of Part 91 of the Civil Aviation Regulations.
- 1.17.2 On 21<sup>st</sup> September 2022 the NCAA issued an Overflight and Landing Authorization (OLA) for **ZS-ERO/EFK/JOE** routing **FBKE-FYKM-FYLS-FYRU-FYMO-FYTF-FYSM-FYSU-FYLZ-FYSH-FYKT-FAUP**. The authorization permit was only valid for the above-mentioned flight/route. Records indicate that the aircraft flew from **FBKE –FYKM-FYNL-FYMO-FYOA-FYFK-FYTF-FYSM-FYSU-FYLZ**.

### 1.18 Additional Information

- 1.18 According to the pilot the accident occurred at Twyfelfontein Airstrip on the 25<sup>th</sup> October 2022. He leased the aircraft from the owner on the 24<sup>th</sup> August 2023.
- 1.19 The Airstrip is approximately 2200m long, 13m wide and has an east-west bearing. The edgemarkers (tyres) are painted white and are approximately 3m from the edges on each side of the landing strip. The height of the tyres is approximately 280mm, and the tyres are spaced 50m apart along the length on either side of the airstrip.



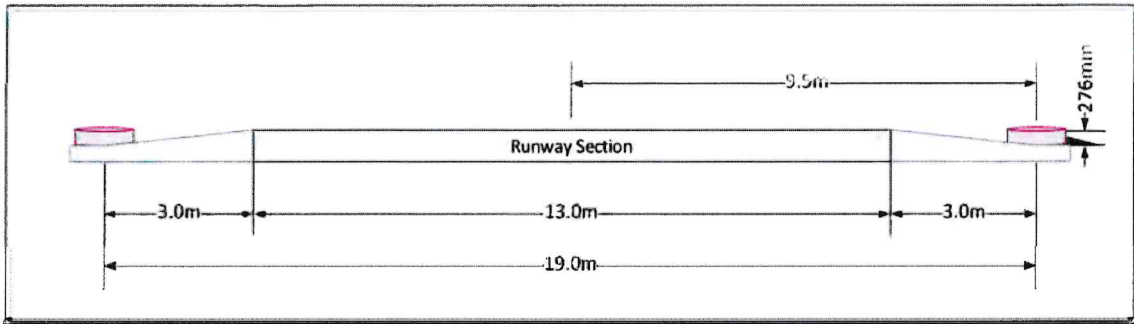


Figure 2. The edge marker tyres. (Aerodrome owner)

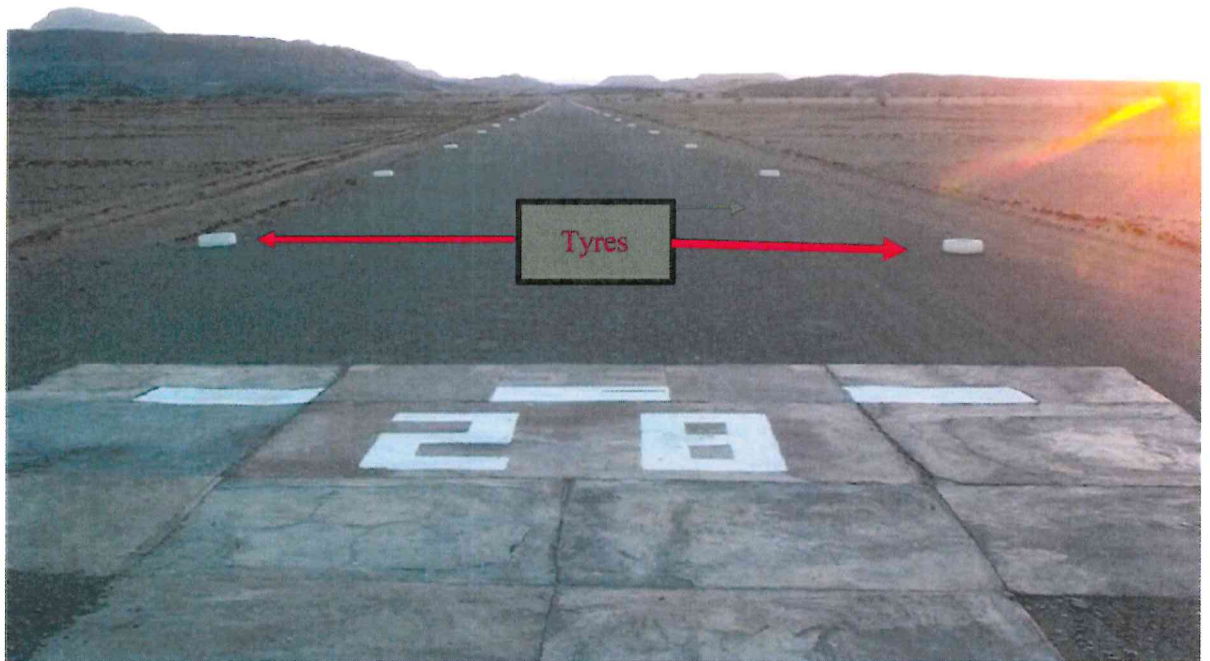
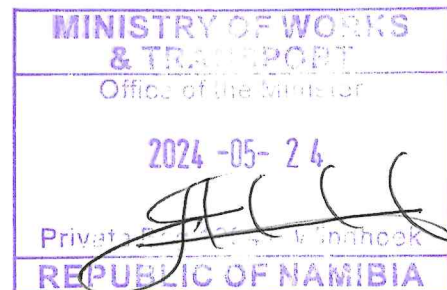


Figure 3. The edge marker tyres along the runway length.. (Aerodrome owner)

#### 1.19 Useful or Effective Investigation Techniques.

1.19.1 Not applicable.





## 2. ANALYSIS

## MACHINE

- 2.1 The records obtained from the flight folio reveal that the flights did not follow the prescribed OLA and landed in different airports and different sequences as authorized. The aircraft flew from **FBKE –FYKM-FYNL-FYMO-FYOA-FYFK-FYTF-FYSM-FYSU-FYLZ** while the authorization given was for **FBKE-FYKM-FYLS-FYRU-FYMO-FYTF-FYSM-FYSU-FYLZ-FYSH-FYKT-FAUP**. The pilot deviated from the approved routing from FYMO TO FYOA due to amount of AVGAS in FYMO not being sufficient.
- 2.2 The aircraft's next 50 hours inspection was due at 4794.75 hours or on 12/09/2023. The Investigations revealed that the aircraft entered Namibia after accumulating 4795.37 airframe hours. After a 4 Hours on the flight to Namibia at FYKM the aircraft then flew another eight destinations accumulating a total of 13 hours beyond the maintenance schedule.

FLIGHT FOLIO AND DEFECT REPORT					(IN TERMS OF AIC 60.9)		NON-PRESSURISED SINGLE & TWIN PISTON ENGINE AIRCRAFT				0047			
Aircraft designation:			C182		75 ERO		Oil Type		W100		Fuel Type		100LL	
Next inspection is a			50HR		Due on		4794.75		Or at		12/09/2023		Airframe flying hours	
Date	Journey		Hobbs/Tach		Flight Duration	Retractions	Landings	Oil Uplift			Fuel Uplift	Pilot's par. and Licence No.		
	From	To	Start	Stop				Single	Left	Right				
14/10/22	FAGC	FAGC	2265.0	2266.6	1.6	4785.98	1	1QT	-	-	72L	0272501123 B.R.		
14/10/22	FAGC	FAGC	2266.6	2268.2	1.6	4785.1	1	-	-	-	-	0272501123 B.R.		
15/10/22	FAGC	FAGC	2268.2	2269.6	1.4	4786.2	6	1QT	-	-	115L	0272501123 B.R.		
15/10/22	FAGC	FAGC	2269.6	2270.7	1.1	4787.06	4	1QT	-	-	-	0272501123 B.R.		
16/10/22	FAGC	FAGC	2270.7	2273.0	2.3	4789.9	1	1QT	-	-	107L	0272501123 B.R.		
17/10/22	FAGC	FAGC	2273.0	2274.3	1.3	4789.9	3	-	-	-	63L	0272501123 B.R.		
19/10/22	FAGC	FAP1	2274.3	2276.0	1.7	4791.43	1	-	-	-	93L	0272312018 R.S.		
19/10/22	FAP1	FAPP	2276.0	2276.5	0.5	4791.74	1	-	-	-	-	0272312018 R.S.		
19/10/22	FAPP	FBKE	2276.5	2280.5	4.0	4795.37	1	-	-	-	-	0272312018 R.S.		
21/10/22	FBKE	TYKH	2280.5	2281.4	0.9	4796.00	1	3	-	-	165L	0272312018 R.S.		
Total carried forward to airframe flying hours														
Date	No.	Defects			Rec. Date		Rectification action					*Signature		Lic. No.

Figure 4 Flight Folio 0047

FLIGHT FOLIO AND DEFECT REPORT				(IN TERMS OF AIC 60.9)		NON-PRESSURISED SINGLE & TWIN PISTON ENGINE AIRCRAFT				0048		
Aircraft designation: C182				ZS GPO		Oil Type W100		Fuel Type 100LL				
Next inspection is a				Due on		Or at		Airframe flying hours				
Date	Journey		Hobbs/Tach		Flight Duration	Retractions	Landings	Oil Uplift			Fuel Uplift	Pilot's par. and Licence No.
	From	To	Start	Stop				Single	Left	Right		
21.10.22	FYKL	FYNL	2281.4	2282.0	0.6	486.61	1	-	-	-	42	0272312018
28.10.	FYNL	FYMO	2282.0	2286.0	4.0	480.18	1	2.05	-	-	79	0272312018
25.10.	FYMO	FYOA	2286.0	2287.0	1.0	481.0	1	-	-	-	135	0272312018
25.10.	FYOA	FYVK	2287.0	2288.8	1.8	480.58	1	-	-	-	-	0272312018
25.10.	FYVK	FYTF	2288.8	2289.5	0.7	480.2	1	-	-	-	-	0272312018
27.10.	FYTF	FYSM	2289.5	2291.4	1.9	480.77	1	-	-	-	-	0272312018
29.10.	FYSM	FYSL	2291.4	2293.1	1.7	480.21	1	2	-	-	188	0272312018
30.10.	FYSU	FY12	2293.1	2294.8	1.7	480.77	1	1	-	-	-	0272312018
31.10.	FY12	FYLL	2294.8	2299.2	0.4	480.90	1	1	-	-	176	0272312018
Total carried forward to airframe flying hours												
Date	No.	Defects	Rec. Date	Rectification action			*Signature	Lic. No.				

Figure 5. Flight Folio 0048

## ENVIROMENT

- 2.3 The aerodrome investigations (Twyfelfontein) revealed that the airstrip is approximately 2200m long, 13m wide and has an east-west bearing. The edge markers (tyres) are painted white and are approximately 3m from the edges on each side of the landing strip. The height of the tyres is approximately 280mm, and the tyres are spaced 50m apart along the length on either side of the airstrip.

The edge markers tyres were lying horizontally at the edge of the runway. The aircraft was drifting to the right edge of the runway, at the last minute the wheel hit the edge marker tyre which flipped and hit the lower aft fuselage and caused the damage.

## 3. CONCLUSION

### 3.1 Findings

- 3.1.1 The aircraft had a valid Certificate of airworthiness issued by the South African Civil Aviation Authority on 21/05/2019 with an expiry date of 31/05/2023. Certificate number ZS-ERO/4.
- 3.1.2 The pilot was a German citizen who was a holder of a Private Pilot License. (PPL) issued by the Republic of Germany as well as a South African validation 2272312018. The validation had an expiry date of 17/05/2026.
- 3.1.3 The accident was not reported to the regulator nor to the investigation authority (DAAII) by either the pilot or the owner. The pilot flew the damaged aircraft with passengers to other destinations.
- 3.1.4 The aircraft was flown 13 hours beyond the maintenance schedule.

### 3.2. Probable Cause


- 3.2. Runway excursion and subsequent ground collision with object (tyre).

### 3.3 Contributing factor

- 3.3. Crosswind

### 4.0. Safety Recommendations: NONE

Compiled by

  
Hafeni Mweshixwa  
Investigator-in-Charge

Date: 23/05/24

Released by:

  
Hon John Mutorwa, MP  
MINISTER: MINISTRY OF WORKS AND TRANSPORT

Date: 24/5/2024

