SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Accident and Incident Investigations Division** Form Number: CA 12-57

LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL

Reference Number	CA18/2/3/10521						
Classification	Accident	**Date**	30 October 2024		**Time**	1500Z	
Type of Operation	Private (Part 91)						
Location							
Place of Departure	Cape Winelands Airport (FAWN), Western Cape Province	Place of Intended Landing	Cape Town International Airport (FACT), Western Cape Province				
Place of Occurrence	Symphony Nature Reserve at GPS: 33°57´19.48´´ S 18°37´13.96´´elevation 169ft						
GPS Co-ordinates	Latitude	33°57´19” S	Longitude	018°37’13” E	Elevation	169ft	
Aircraft Information							
Registration	ZS-DVY						
Make; Model; S/N	Cessna Aircraft Company; C172E (Serial Number: 172-51654)						
Damage to Aircraft	Substantial		Total Aircraft Hours	5 045.67			
Pilot-in-command							
Licence Type	Commercial Pilot Licence (CPL)		Gender	Female	Age	20	
Licence Valid	Yes	Total Hours	410	Total Hours on Type	35.9		
Total Hours 30 Days	69.5		Total Flying on Type Past 90 Days	35.9			
People On-board	1+0	**Injuries**	0	**Fatalities**	0	**Other (on ground)**	0

What Happened

On Wednesday afternoon, 30 October 2024, a pilot on-board a Cessna 172E aircraft with registration ZS-DVY took off on a private flight from Cape Winelands Airport (FAWN) to Cape Town International Airport (FACT), both located in the Western Cape province. The flight was conducted under visual meteorological conditions (VMC) by day and under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.

The pilot stated that the intention was to ferry the aircraft from FAWN to FACT after a mandatory periodic inspection (MPI). She conducted a pre-flight inspection, including draining the fuel to check for contamination. The take-off from FAWN and the flight to FACT were uneventful. Upon entering the FACT airspace, the pilot communicated her intentions to the FACT air traffic control (ATC) officer on very high frequency (VHF) 118.1-Megahertz (MHz) and received clearance to join the circuit and orbit to the right on the left downwind for Runway 19 to make way for traffic that was ahead. The pilot complied. After about 20 minutes whilst orbiting, the engine lost power from 2300 revolutions per minute (RPM) to 1000 rpm before it stopped. As a result, the aircraft began to lose height.

The pilot declared a Mayday to the FACT ATC and, thereafter, initiated a glide. The ATC prioritised the aircraft and directed the pilot to report final approach number one. The pilot advised the ATC that the aircraft would not make it to FACT, adding that she would land on an open field. The pilot conducted the fault-finding procedure whilst steering the aircraft to the identified open field; she also made attempts to restart the engine but without success. Upon reaching the identified field, she extended the flaps to full and touched down on the grass-covered and uneven surface. As a result, the landing gear collapsed during the landing roll and the propeller struck the ground. After the aircraft had come to a stop, the pilot turned off the master switch and exited the aircraft. The aircraft sustained damage to the nose gear strut and the propeller. The pilot was not injured.

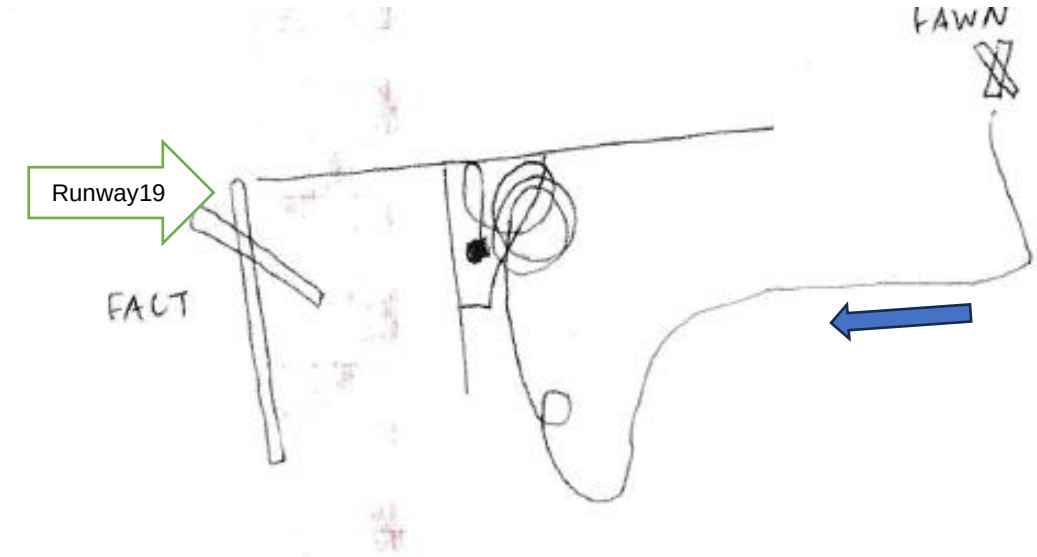


Figure 1: A depiction of the sketched sequence of events. The blue arrow shows the direction of flight (Source: Pilot)

Figure 2: The aircraft after the accident. (Source: Operator)

Figure 3: The bent propeller blade. (Source: Operator)

The following meteorological aerodrome report (METAR) was issued by the South African Weather Service (SAWS) for the Cape Town Weather Station on 30 October 2024 at 1500Z:

Wind Direction	180°	Wind Speed	19kts	Visibility	>10km
Temperature	22°C	Cloud Cover	None	Cloud Base	Clear
Dew Point	13°C	QNH	1019 hPa		

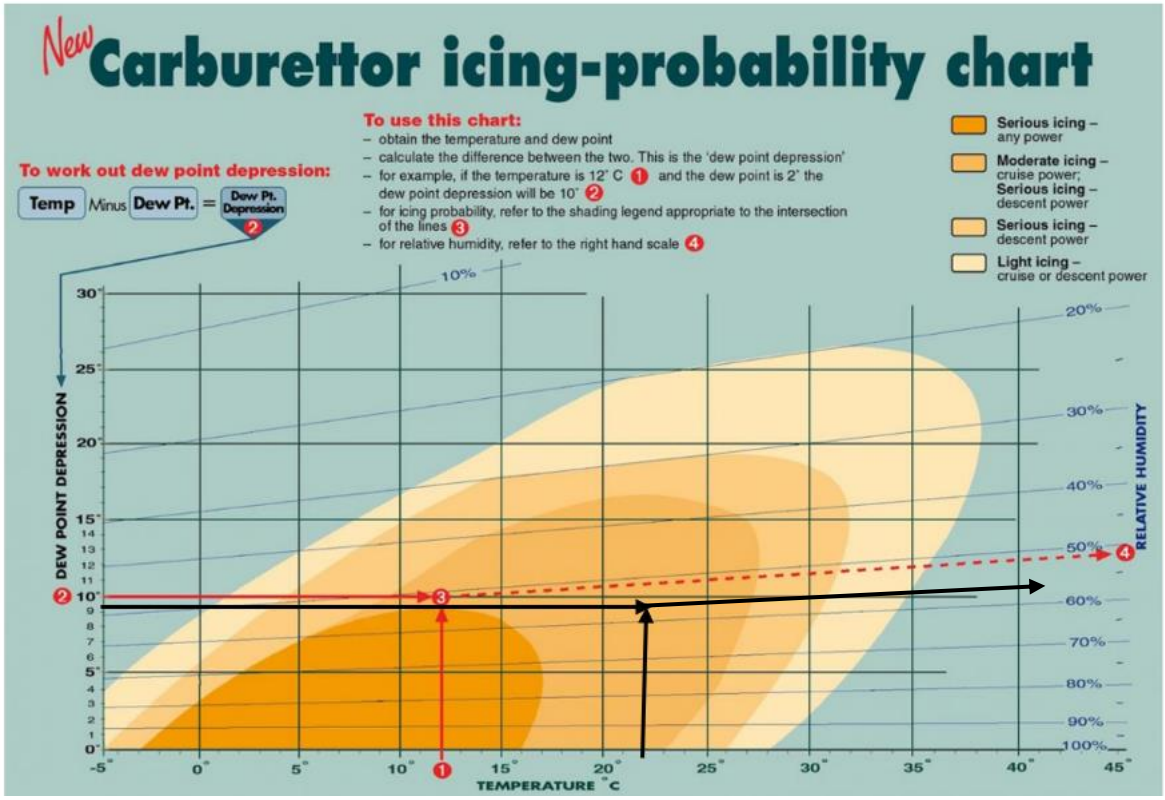
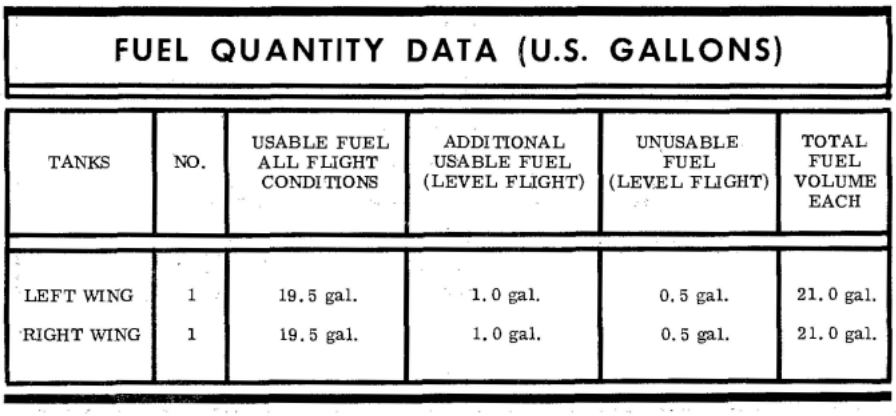


Figure 4: Carburettor icing probability calculations.

The temperature at the time of the accident was 22°C and the dewpoint was 13°C; therefore, the dew point depression was 9°C. The relative humidity was approximately 57%. The carburettor icing probability chart shows a possibility of moderate icing at cruise power or serious icing at descent power based on the temperature and dew point reported at the time of the accident. The aircrfat was orbiting when the engine lost power and stopped.

The aircraft maintenance engineer (AME) who conducted the MPI stated that the aircraft was flown to FAWN on 29 October 2024 and the MPI was perfomed on 30 October 2024.

After the accident, the aircraft was recovered to the aircraft maintenance organisation (AMO) at FACT for further investigation. Approximately 60 litres (L) of fuel was drained from the tanks (45L or 12 US gallons from the right tank and 15L or 4 US gallons from the left tank). The drained fuel was of the correct type (Avgas 100LL). On 31 October 2024, engineers rated on the aircraft type performed the engine test run and it met all the test parameters in accordance with (IAW) the operator's manual. The AMO personnel could not establish the cause of engine power loss.



FUEL QUANTITY DATA (U.S. GALLONS)

TANKS	NO.	USABLE FUEL ALL FLIGHT CONDITIONS	ADDITIONAL USABLE FUEL (LEVEL FLIGHT)	UNUSABLE FUEL (LEVEL FLIGHT)	TOTAL FUEL VOLUME EACH
LEFT WING	1	19.5 gal.	1.0 gal.	0.5 gal.	21.0 gal.
RIGHT WING	1	19.5 gal.	1.0 gal.	0.5 gal.	21.0 gal.

Figure 5: Fuel quantity data. (Source: Cessna 172 Pilot Operating Handbook)

Findings

1. The pilot was initially issued a Commercial Pilot Licence (CPL) on 30 June 2024 with an expiry date of 31 March 2025.

2. The pilot was issued a Class 1 aviation medical certificate on 8 April 2024 with an expiry date of 30 April 2025 with no restrictions.

3. The last MPI of the aircraft was conducted and certified on 30 October 2024 at 5 043.8 total airframe hours after which a Certificate of Release to Service (CRS) was issued with an expiry date of 29 October 2025 or at 5 134.30 hours, whichever comes first. The aircraft had accrued 1.87 hours since the said maintenance.

4. The pilot was ferrying the aircraft from FAWN to FACT. There was no fuel uplifted after the MPI.

4. The Certificate of Airworthiness (C of A) was initially issued on 1 September 2009. The latest C of A had an expiry date of 3 July 2025.

5. The Certificate of Registration (C of R) was issued to the present owner on 20 January 2023.

6. After the accident, there was approximately 60L of fuel left in the fuel tanks (45L or 12 US gallons in the right tank and 15L or 4 US gallons in the left tank); therefore, there was enough fuel for the flight.

7. The carburettor icing probability chart indicated a possibility of moderate icing at cruise power or serious icing at descent power settings based on the temperature and dew point reported at the time of the flight.

8. It is probable that the engine lost power and stopped because of carburettor icing whilst orbiting in the vicinity of FACT.

Probable Cause(s)

Engine power loss and stoppage whilst orbiting in the vicinity of FACT airspace which led to the pilot executing an unsuccessful forced landing.

Contributing Factor(s)

None.

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 issued by:

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