PRELIMINARY ACCIDENT REPORT

Accident and Incident Investigations Division

Accident
- Preliminary Report -
AIID Ref No: CA18/2/3/10192

Figure 1: The Cessna 175B aircraft, ZS-CPO. (Source: Passenger on aircraft)

Description:

On Sunday afternoon, 17 July 2022, a pilot and three passengers on-board a Cessna 175B aircraft with registration ZS-CPO took off on a commercial flight from Weltevrede Aerodrome (unlicensed aerodrome), near Stanford town with the intention to sightsee around the area. The pilot elected to take-off in an easterly direction. Shortly after rotation, the stall warning horn sounded, whereafter, the aircraft suddenly banked to the left (towards the mountainous terrain). The pilot attempted to push the nose down to gain speed but the aircraft collided with power lines and crashed on the neighbouring farm after plunging through several pine trees.

Occurrence Details

Reference number	**:** CA18/2/3/10192
Name of the owner	**:** Zulu Uniform Aviation CC
Type of operation	**:** Commercial (Part 135)
Manufacturer	**:** Cessna Aircraft Company
Model	**:** 175B
Nationality	**:** South Africa
Registration marking	**:** ZS-CPO
Place	**:** Welgesind Fine Farm, near Stanford, Western Cape Province
Date	**:** 17 July 2022
Time	**:** 1306Z

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 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****.*

Any person who has information concerning this accident should contact the Accident and Investigations Division (AIID) on AIIDinbox@caa.co.za

Investigation Process:

The Accident and Incident Investigations Division (AIID) was informed of the accident on 17 July 2022 involving a Cessna 175B that occurred on a farm near the town of Stanford. The AIID appointed an investigator-in-charge (IIC) and will lead the investigation and issue the final report.

The information contained in this preliminary report is derived from the factual information gathered during the on-going investigation into the occurrence. Later, an interim report or the final report may contain altered information in case new evidence is found during the on-going investigation that require changes to the information depicted in this report.

The AIID reports are made available to the public at:
http://www.caa.co.za/Pages/Accidents%20and%20Incidents/Aircraft-accident-reports.aspx

Notes:

1. *Whenever the following words are mentioned in this report, they shall mean the following:*

    - *Accident – this investigated accident*
    - *Aircraft – the Cessna 175B 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 obtained from different sources and may be adjusted from the original for the sole purpose of improving clarity of the report. Modifications to images used in this report are limited to cropping, magnification, file compression; or enhancement of colour, brightness, contrast; or the addition of text boxes, arrows or lines.*

Disclaimer:

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Abbreviation	Description
AGL	Above Ground Level
AIID	Accident and Incident Investigations Division
AMSL	Above Mean Sea Level
AOC	Air Operating Certificate
AWS	Automatic Weather Station
˚C	Degrees Celsius
CAR	Civil Aviation Regulations
CAVOK	Cloud and Visibility OK
CPL	Commercial Pilot Licence
CSU	Constant Speed Unit
CVR	Cockpit Voice Recorder
DFE	Designated Flight Examiner
DNC	Day Natural Colour
FDR	Flight Data Recorder
ft	Feet
GPS	Global Positioning System
hPa	Hectopascal
ICAO	International Civil Aviation Organisation
IIC	Investigator-in-charge
kts	Knots
kVA	Kilovolt-ampere
m	Metre
METAR	Meteorological Aerodrome Report
MHz	Megahertz
MPI	Mandatory Periodic Inspection
MTOW	Maximum Take-off Weight
MSG	MeteoSat Second Generation
MTW	Mountain Wave Turbulence
nm	Nautical Miles
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
TBO	Time Between Overhaul
UTC	Co-ordinated Universal Time
VFR	Visual Flight Rules
VHF	Very High Frequency
Z	Zulu (Term for Universal Coordinated Time – Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1 History of Flight

1.1.1 On Sunday morning, 17 July 2022, a Cessna 175B aircraft with registration ZS-CPO was refuelled with 20 litres of Avgas at Weltevrede Aerodrome, according to an entry in the aircraft's flight folio. At 0630Z, the pilot accompanied by two passengers took off from the aerodrome on a commercial flight and, later, returned to the aerodrome after a 30-minute flight. The flight was conducted under the provisions of Part 135 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.1.2 Upon their return to the aerodrome, the aircraft was refuelled again with 20 litres of Avgas, which was also recorded in the flight folio. According to the pilot, there was a total of 40 litres of fuel on-board the aircraft.

1.1.3 Regarding booking of the flight (by the three passenger), the following were noted:

1.1.3.1 The three passengers had obtained the operator's contact details from the internet;

1.1.3.2 They had enquired about the availability and cost of a 30-minute sightseeing flight online;

1.1.3.3 They obtained directions to the Weltevrede Aerodrome via a pin location sent via WhatsApp;

1.1.3.4 The operator's office is a shed with a table in it where he had his laptop;

1.1.3.5 The administrative tasks were performed by the pilot; and (the pilot) had enquired about the passenger's weight. One of the passengers completed a form whereafter he entered their names and weights. The passengers then took some photographs of the aircraft;

1.1.3.6 The pilot informed the passengers that payment would be made at the conclusion of the flight; and

1.1.3.7 There were no indemnity forms or tickets issued.

1.1.4 At 1255Z, the pilot requested the passengers to board the aircraft. One of the passengers was seated next to the pilot on the right front seat whilst the other two passengers were seated at the back. The pilot assisted the passenger next to him with her seat belt and, after everyone had fastened their seat belts, he handed each passenger a headset. The pilot then started the aircraft and taxied from the apron to the runway, which is downhill. According to the passengers, the windsock indicated some wind from the south (which was from their right when they were standing at the threshold of the runway before take-off).

1.1.5 The pilot then commenced with the take-off, which was captured on video (cellular phone) by one of the passengers who was seated at the back. After rolling for some distance, the pilot commenced with the lift-off. Shortly after the wheels left the runway surface, a loud alarm (stall warning) sounded, however, the pilot opted to continue with the take-off. Thereafter, the aircraft inclined sharply and veered off to the left; whereafter it rolled further to the left. Seconds later, the left wing, which was pointing downwards, struck the power lines and a blue flashlight was seen from inside the aircraft. Impact with the wires considerably slowed down the aircraft and it rotated to the left and impacted the trees on its right-side before crashing on the ground in an upright right wing-low attitude.

1.1.6 Fuel spewed from the left wing into the cabin, drenching the occupants on the left-side as the left door was ripped off during impact. All four occupants managed to evacuate the aircraft unassisted. The farmer and his wife quickly came to assist the occupants. The passenger who was seated next to the pilot had a cut to her head and was bleeding profusely. The farmer's wife took her to the farmhouse where she attended to her wound. The passenger who was seated behind the pilot also had a cut to his right cheek, just below his eye. All three passengers had bruises on their legs; and the passenger who was seated next to the pilot had more bruises on her right arm and shoulder. The pilot brought them a first aid kit that was in the aircraft. Approximately 20 minutes after the accident, three ambulances arrived at the scene as well as the police, a fire truck. The medics attended to the passenger who was seated next to the pilot and was transported to hospital in Hermanus by ambulance. The other two passengers drove to the hospital in their own vehicle where they also received medical attention. All passengers were discharged at approximately 1700Z on the same day.

1.1.7 According to the pilot, the accident flight was the second flight of the day. The first flight was at 0630Z, when the pilot and the two passengers departed Runway 11 at Weltevrede Aerodrome (Stanford Hills) on a whale-watching flight. The pilot was then informed that there would be another flight at 1300Z with three passengers. This was confirmed by an application on his cellular phone called Teamup. The passengers arrived at the aerodrome approximately 20 minutes before the flight. The pilot had then compiled the weight and balance sheet electronically (on his laptop) by asking each of the passengers their physical weights. Apart from their cellular phones, none of the passengers had any baggage or cameras with them. Thereafter, they boarded the aircraft with two passengers seated at the back seat and one passenger next to the pilot on the front right seat.

1.1.8 Before taxiing from the hangar to the runway, the pilot assessed the wind by looking at the windsock, which indicated the wind to be light and variable. He then taxied to the threshold of Runway 11 for take-off, which was the same runway he used for his earlier

flight of the day. He selected one notch of wing flaps (10°) for the take-off. During the engine power checks, all parameters read normal. The variable propeller (VP) was cycled three times and no anomalies were noted.

1.1.9 According to the pilot, he commenced with the take-off roll and the aircraft rotated at approximately 65 to 70 miles per hour (mph). He recalled the airspeed to be between 70 and 80mph and then the stall warning sounded. The pilot recalled the throttle to be fully forward, with the engine delivering maximum power.

1.1.10 Thereafter, the aircraft suddenly banked to the left (this was not as a result of the pilot's input). The pilot then recalled pushing the nose down to gain speed, but because the aircraft had banked to the left and up the slope towards the mountainous terrain, there was no height available. The pilot remembered seeing the power lines in front of his path but was unable to take any evasive action as the aircraft was too slow at that stage and any control input most probably would have aggravated the situation. The propeller then severed the power lines before the aircraft impacted several pine trees. It came to rest approximately 70m from a farmstead and 80m to the left of the runway centreline in an upright position facing north.

1.1.11 The pilot then assisted the passenger next to him by loosening her safety harness (lap strap). The passenger had suffered a laceration to her head. She was initially attended to at the scene by the farmer's wife. The pilot was not injured during the accident.

1.1.12 The pilot stated that he was the last person out of the aircraft as he had to secure the aircraft first by turning the fuel selector lever to the off position, pulling the mixture lever and switching off the magnetos and the master switch.

1.1.13 The accident occurred during daylight on the neighbouring farm of Weltevrede Aerodrome at Global Positioning System (GPS) co-ordinates determined to be 33°40'10.31" South 019°25'35.73" East at an elevation of 148 feet (ft).

Figure 2: The accident site is indicated by the yellow pin – ZS-CPO. (Source: Google Earth)

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Total On-board	Other
Fatal	-	-	-	-	-
Serious	-	-	-	-	-
Minor	-	-	3	3	-
None	1	-	-	1	-
Total	**1**	**-**	**3**	**4**	**-**

1.3 Damage to Aircraft

1.3.1 The aircraft was substantially damaged during the accident sequence.

Figure 3: The aircraft as it came to rest.

1.4 Other Damage

1.4.1 An 11 kilovolt-ampere (kVA) power line (consisting of three lines) was severed during impact, which caused a power outage in the area.

1.4.2 Minor damage was caused to the surrounding vegetation when the aircraft plunged through several pine trees.

1.5 Personnel Information

1.5.1 Pilot-in-command (PIC)

Nationality	South African	Gender	Male	Age	21
Licence Type	Commercial Pilot Licence				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Night				
Medical Expiry Date	30 June 2023 (Class 1)				
Restrictions	None				
Previous Accidents	None				

According to the pilot's logbook, he started flying on 15 January 2020 and, on 30 November 2020, he obtained his Private Pilot Licence (PPL). During this period, he had flown 64.0 hours. On 5 November 2021, he flew his revalidation flight test for his PPL and logged a total of 97.7 flight hours.

On 9 March 2022, his pilot's logbook was endorsed after he had completed his differences training on the Cessna 172. According to his logbook, he had flown 4.1 hours on the aircraft type during this period. On the same day, his familiarisation training on the Cessna 175 aircraft type was also endorsed on his logbook.

On 20 June 2022, the pilot performed his commercial pilot initial skills test as per Part 61.05.4 of the CAR 2011 with a Designated Flight Examiner (DFE) who found him proficient. The DFE had, accordingly, signed off the endorsement on the pilot's logbook and he was issued a commercial pilot licence.

Flying Experience:

Total Hours	206.9
Total Past 90 Days	77.9
Total on Type Past 90 Days	61.1
Total on Type	81.1

1.6 Aircraft Information

1.6.1 Aircraft description

The Cessna 175 is a four-seat light aircraft built by Cessna and designed for flight training, air taxi and personal use. The Cessna 175 family of aircraft comprises all-metal, unpressurised, single-engine, piston-powered with high-mounted wings and fixed tricycle landing gear. The aircraft has two access doors.

Airframe:

Manufacturer	Cessna Aircraft Corporation	
Model	175B	
Serial Number	175-56911	
Year of Manufacture	1961	
Total Airframe Hours (at time of the accident)	5 291.6	
Last Maintenance Inspection (hours & date)	5 285.8	9 July 2022
Hours Since Last Inspection	5.8	
C of A (issue date)	8 July 2010	

C of A (expiry date)	31 July 2023
C of R (issue date) (Present Owner)	8 July 2016
MTOW	2 350 lbs (1 066kg)
Type of fuel used	Avgas
Operating Category	Standard Normal (Aeroplane)

Engine:

Type	Lycoming O-360-A1A
Serial Number	L-29653-36A
Hours Since New	544.2
Hours Since Overhaul	5.8

According to available information, an engine change was performed on this aircraft and was signed out during the last maintenance inspection, dated 9 July 2022. A new engine logbook was opened for the engine as per the details in the table above.

In addition, the Lycoming O-360-A1A engine with serial number L-29653-36A was transported to South Africa from Botswana and was overhauled at an approved engine maintenance facility in 2012. This included both magnetos, the carburettor and the constant speed unit (CSU). After overhaul, the engine was returned to the owner in Botswana.

The same engine was delivered to another approved engine maintenance facility in South Africa and was subjected to an inspection and repairs in accordance with Overhaul Manual 60294-7-14, dated July 2011 and SSP1776-5-PT1, dated April 2020 at an approved engine maintenance facility. The engine left the facility on 26 February 2022.

Both magnetos, the carburettor and the constant speed unit (CSU) that were fitted to this engine (same components that were fitted to the engine in 2012) were also overhauled and were found to be still at the engine maintenance facility post this accident.

According to the engine logbook (new logbook that was opened) entry dated 9 July 2022, the engine was installed in the accident aircraft, however the two magnetos, the carburettor and the CSU that were installed in the engine were “loaner” units. On page 40 of the engine logbook, an entry in this regard is recorded. There was no traceability for these components that were fitted to the engine at the time of the accident. *The Civil Aviation Regulations (CAR) 2011 Part 43.02.5 read together with the South African Civil Aviation Technical Standards (SA-CATS) 43.02.5 requires the recording of the part number, serial number and traceability of the components. (See Appendix 1 - copy of page 40 of the engine logbook.)*

According to available information gathered during the preliminary phase of the investigation, the aircraft's Certificate of Airworthiness (CoA) was not valid at the time of the accident flight. *The Civil Aviation Regulations (CAR) 2011 Part 21.08.12(2)(b) states that the aircraft's Certificate of Airworthiness would be rendered invalid if the aircraft is not maintained in accordance with the requirements stipulated in the CAR 2011 Part 43. (See Appendix 2 – extract from the CAR 2011*.)

Propeller:

Type	Hartzell HC-C2YK-1BF/F7666A
Serial Number	NS2190B
Hours Since New	728.6
Hours Since Overhaul	178.6

1.6.2 Weight and Balance

Item	Weight (lbs)	Arm (inches)	Moment
Aircraft empty weight	1 522.6	40.13	61 101.9
Engine Oil (10 Quarts)	12.4	32.3	400.0
Pilot (70 kg)	154	35.8	5 513.2
Front seat passenger (100 kg)	220	35.8	7 876.0
Rear seat passengers (85 kg x 2)	375	70	26 250.0
Baggage (First aid kit)	5	82	410.0
Empty weight	**2 289.0**	**44.4**	**101 551.1**
Fuel (40 litres)	63.2	48.0	3 034
Total weight before starting up	**2 352.2**	**44.5**	**104 585.1**

The aircraft's maximum take-off weight (MTOW) is 2 350 pounds (lbs), according to the Pilot's Operating Handbook (POH).

*NOTE: The information entered in the weight and balance table was received from the pilot/operator, except for the 5 lbs that were added for the first aid kit that was on-board the aircraft. The first aid kit was removed from the aircraft by the pilot and was used to treat the passenger who suffered a head injury on site. It could not be determined if there was any other baggage/documentation on-board the aircraft as everything was removed from the wreckage, including the document folder, by the time the investigator arrived (on site).

1.7 Meteorological Information

1.7.1 An official weather report was obtained from the South African Weather Service (SAWS). At 1305Z on 17 July 2022, the Hermanus Automatic Weather Station (AWS) observed the following surface weather variables:

Wind Direction	303.7°	Wind Speed	12 knots	Wind Gust	33 knots
Temperature	23.5°C	Cloud Cover	Nil	Cloud Base	CAVOK
Visibility	9999m	QNH	1013hPa		

1.7.2 Satellite image

The Day Natural Colour (DNC) satellite imagery of the MeteoSat Second Generation (MSG) indicated the presence of severe mountain wave turbulence (MTW) over the south-western parts of South Africa, including the area of accident between 1300Z and 1315Z, encompassing the time of accident at 1306Z. The wave-like formation of clouds as seen on the satellite images is the physical evidence of the occurrence of MTW, due to strong north-westerly (NW) winds close to the W-E mountain range over the south-western parts of the country. The strong NW winds are intercepted at a perpendicular or acute angle to this mountain range, thus, turbulence. These wave-like cloud formation occur downwind the mountain range over a stable layer for a considerable distance, reaching the south-west coast and offshore. Farther away from the mountain range, these wave-like formations are referred to as gravity waves. The satellite image at 1300Z (Figure 4) indicate the occurrence of MTW in the south-west, including the area of accident (see blue circle). The MTW wave-like phenomena is a tell-tale signal of strong winds close to the mountain range, intercepted at a perpendicular angle.

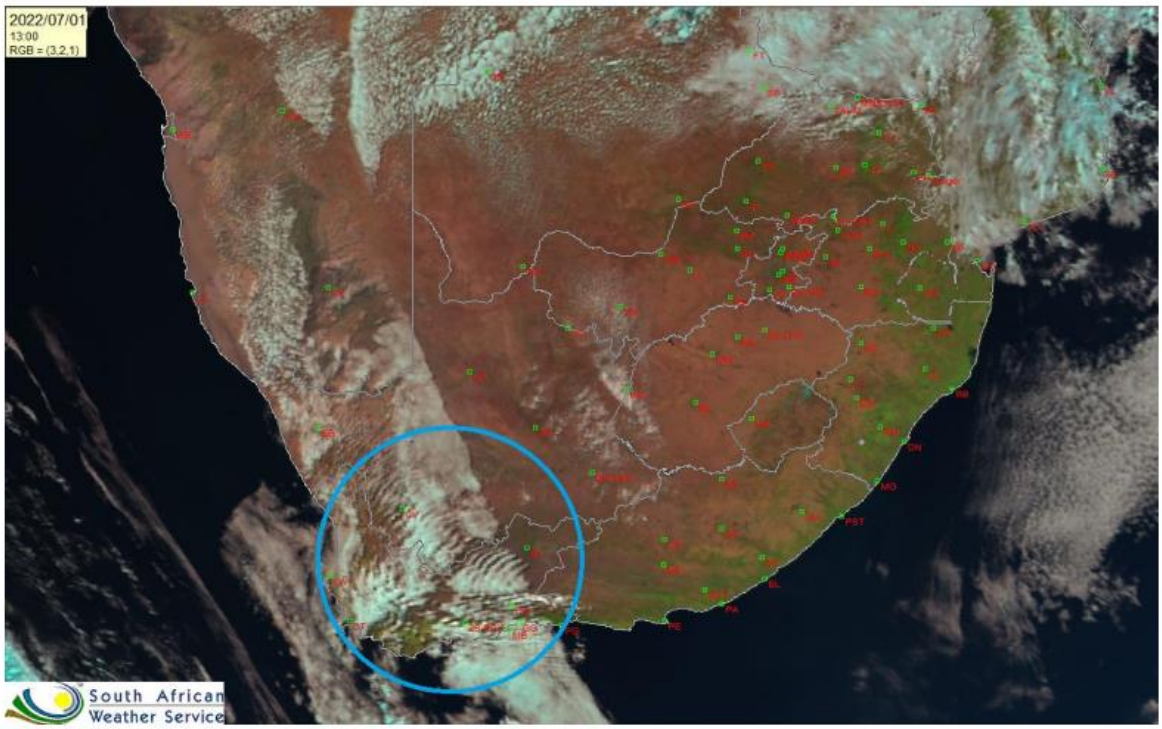


Figure 4: The Day Natural Colours satellite imagery at 1300Z on 17 July 2022. (Source: SAWS)

1.7.3 Query Nautical Height (QNH) Chart Analysis

A very strong pressure gradient force was present in the south-western parts of the country as indicated in the QNH chart analysis valid for 1200Z (Figure 5). The pressure gradient force is a result of the presence of high pressure over the central interior and low pressure offshore the west coast of the country, which resulted in strong geostrophic winds. As such, strong geostrophic NW winds were to be expected over this region, including the area of the accident (see blue circle in Figure 5). These are the winds responsible for the MTW as observed by the satellite images as well as surface observation of the Hermanus Automatic Weather Station (AWS), and Cape Town International Airport (FACT) and George Aerodrome (FAGG) meteorological aerodrome reports (METARs) in and around the time of the accident. These strong winds on their own were likely a hazard for moderate to severe turbulence.

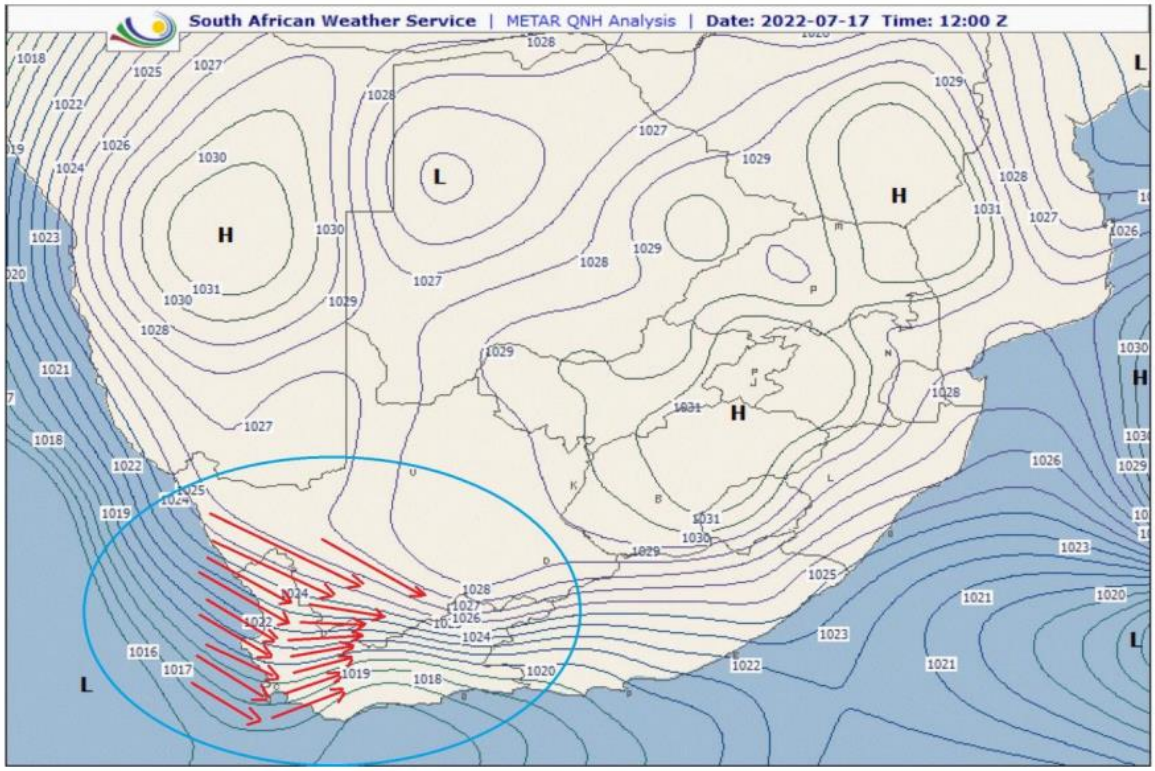


Figure 5: The QNH chart analysis valid for 17 July 2022 at 1200Z. (Source: SAWS)

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 that indicated the navigation system was unserviceable prior to the flight.

1.9 Communication

1.9.1 The aircraft was equipped with standard communication equipment as approved by the Regulator. There were no records that indicated the communication system was unserviceable prior to the flight.

1.10 Aerodrome Information

1.10.1 The aerodrome utilised for these commercial flights is Weltevrede Aerodrome, which is an unlicensed aerodrome located on a private property.

1.10.2 The aerodrome has a single runway – Runway 11 – which was used for take-off on the day of the accident flight. The runway is 500m long and 8m wide, and has an uneven gravel surface.

1.10.3 During the on-site investigation, only one windsock was observed at this aerodrome.

Aerodrome Location	2km north-east of the town of Stanford
Aerodrome Status	Unlicensed
Aerodrome GPS coordinates	34°25’36.66” South 019°28’21.36” East
Aerodrome Elevation	118ft
Runway Designations	11/29
Runway Dimensions	500m x 8m
Runway Used	11
Surface of Runway Used	Gravel
Approach Facilities	None

*NOTE: No documented evidence could be found of the actual runway orientation. The information entered in the table above was received from the operator.

Figure 6: Aerial view of the runway taken from an easterly direction. (Source: AAS drone footage)

Figure 7: Aerial view of the runway taken from a westerly direction. (Source: AAS drone footage)

Figure 8: A photograph of the runway taken looking in a westerly direction.

Figure 9: Runway 11 view taken facing the approach path.

1.11 Flight Recorders

1.11.1 This aircraft was neither equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), nor was it required in accordance with the regulations.

1.12 Wreckage and Impact Information

1.12.1 After take-off from Runway 11, the aircraft banked to the left and collided with power lines, approximately 80m to the left of the runway centreline. After the aircraft collided with the power lines, it veered off to the left, then the right wing and the right-side of the fuselage impacted several pine trees, whereafter, ground impact followed. The aircraft came to rest in an upright, right wing-low attitude on the neighbouring farm facing a northerly direction, which was approximately 90° from the direction of take-off. The nose wheel, the right main gear strut assembly and the left door broke off during impact. The entire empennage was severed and was found on the left-side of the fuselage (looking from the aft) as seen in Figure 12. The cockpit/cabin area remained intact. Substantial damage was caused to both wings. The left wing tank had ruptured and fuel leaked from the tank and onto the occupants who were seated on the left-side of the aircraft (see Figure 13).

Figure 10: The runway, power lines and wreckage. (Source: AAS drone footage)

Figure 11: Damage on the leading edge of the right wing following impact with the trees.

Figure 12: A view from the aft position of the aircraft.

Figure 13: Fuel leaking from the ruptured left-wing tank. (Source: Passenger)

Figure 14: The left-wing was severely deformed during the impact sequence.

1.13 Medical and Pathological Information

1.13.1 Not applicable.

1.14 Fire

1.14.1 The fire services from the local authority responded swiftly to the accident scene as the power lines that were severed had set some vegetation (dry leaves and small branches) alight.

1.14.2 The farm owner had a water tanker (pulled by a tractor) that he positioned close to the wreckage in case of a fire erupting.

1.14.3 Although fuel was leaking from the left-wing tank, there was no evidence of fire on the wreckage.

1.15 Survival Aspects

1.15.1 The accident was survivable as the cockpit/cabin area remained intact and all the occupants were secured by the aircraft-equipped safety harnesses.

1.16 Tests and Research

1.16.1 To be discussed in the final report if any.

1.17 Organisational and Management Information

1.17.1 This was a commercial flight conducted under the provisions of Part 135 of the CAR 2011 as amended. The operator was issued an Air Operating Certificate (AOC) on 22 September 2021 with an expiry date of 30 September 2022.

1.17.2 The last maintenance inspection that was carried out on this aircraft prior to the accident flight was certified on 9 July 2022 at 5 285.8 airframe hours. A further 5.8 hours were flown with the aircraft since the inspection.

1.17.3 The aircraft was maintained by the SACAA-approved aircraft maintenance organisation (AMO). The AMO approval certificate was issued by the Regulator on 4 September 2021 with an expiry date of 30 September 2022.

1.18 Additional Information

1.18.1 To be discussed in the final report.

1.19 Useful or Effective Investigation Techniques

1.19.1 To be discussed in the final report.

2. Findings

2.1 General

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

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

- **Findings —** are statements of all significant conditions, events or circumstances in this accident. The findings are significant steps in this incident sequence, but they are not always causal or indicate deficiencies.

2.2 Findings

Although the investigation is on-going, the following provisional findings were made:

The pilot

2.2.1 The pilot was issued a Commercial Pilot Licence (CPL). According to his logbook, he had flown a total of 206.9 hours, of which 81.1 hours were on the aircraft type at the time of the accident.

2.2.2 The pilot had a valid Class 1 aviation medical certificate that was issued on 8 June 2022 with an expiry date of 30 June 2023.

2.2.3 The pilot was not injured during the accident sequence.

The aircraft

2.2.4 The aircraft was issued a Certificate of Airworthiness (CoA) on 18 July 2005 with an expiry date of 31 July 2023; however, it was found that the CoA was invalid at the time of the accident. The part number, serial number and traceability of the components (See Appendix 1) were not recorded; therefore, the aircraft was not maintained in accordance with the requirements stipulated in the South African Civil Aviation Regulations (CAR) 2011 Part 43, Subpart 43.02.5 read together with the South African Technical Standards (SA-CATS) 43.02.5 (see Appendix 2).

2.2.5 The aircraft was issued a Certificate of Registration on 9 June 2005.

2.2.6 The last maintenance inspection carried out on the aircraft prior to the accident flight was certified on 9 July 2022 at 5 285.0 airframe hours. The aircraft had accumulated a further 5.8 airframe hours since the said inspection.

2.2.7 A Certificate of Release to Service was issued on 9 July 2022 with an expiry date of 9 July 2023 or at a total of 5 385.8 hours of flight time, whichever occurs first.

2.2.8 The engine that was fitted to this aircraft was subjected to an inspection and repair in accordance with Overhaul Manual 60294-7-14, dated July 2011 and SSP1776-5-PT1, dated April 2020 at an approved engine maintenance facility.

2.2.9 The two magnetos, the carburettor and the CSU that were fitted to the engine at the time of the accident were loaned units.

Air Operating Certificate (AOC)

2.2.10 The operator was in possession of an AOC that was issued by the Regulator on 22 September 2021 with an expiry date of 30 September 2022.

2.2.11 According to the passengers, they were not issued with tickets prior to the flight. They were requested to complete a form with their names and respective weights recorded.

Passengers

2.2.12 The passenger who was seated on the right front seat suffered a laceration to her head and injuries to her right arm and shoulder. She was transported to the hospital in Hermanus by ambulance.

2.2.13 The passenger who was seated at the back right-side seat had some scratches and bruises to his legs and a cracked rib on his right-side.

2.2.14 The passenger who was seated behind the pilot had some scratches and bruises to his legs and a cut to his right cheek, below the eye.

Environment

2.2.15 According to the pilot, the wind was light and variable when he taxied from the hangar for the flight; he had opted for Runway 08 for take-off, which was the same runway he used during his earlier flight of the day.

2.2.16 Weather information received from the SAWS indicated that the Hermanus Automatic Weather Station captured the prevailing wind at 1305Z to be blowing from the north-west at 12 knots gusting 33 knots.

Aerodrome

2.2.17 The aerodrome that was used for these commercial flights was an unlicensed aerodrome located on a private property.

2.2.18 The runway is 500m long and 8m wide with an uneven/bumpy surface.

2.2.19 The aerodrome was surrounded by hazards such as high trees, especially on the approach for Runway 11, and power lines crossing the approach path of Runway 29.

3. On-going Investigation

3.1 The AIID investigation is on-going and will include all other aspects of this accident which may or may not have safety implications.

4. Safety Recommendations

4.1 None.

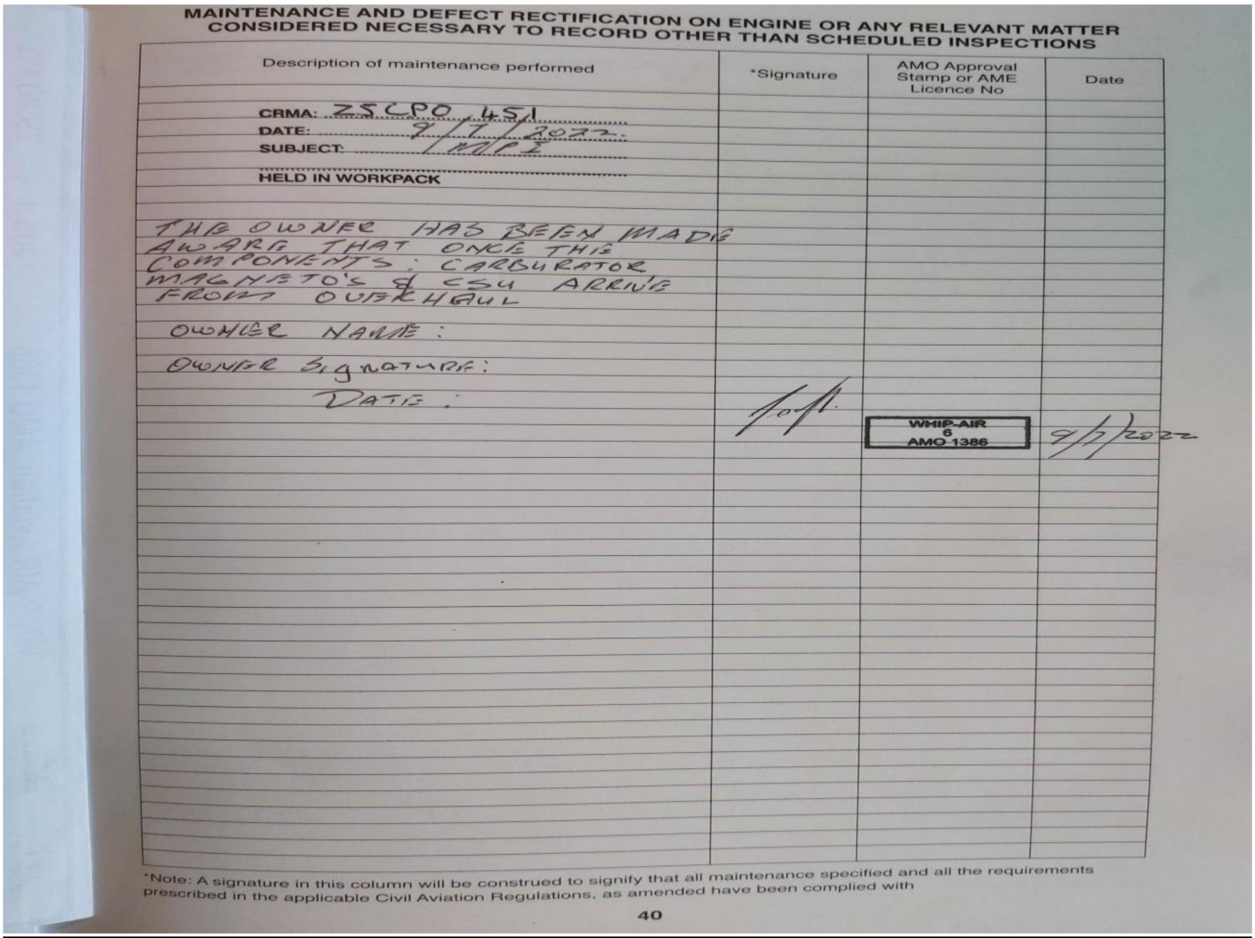
5. Appendices

5.1 Appendix 1: Copy of the logbook

5.2 Appendix 2: Extract from the SA Civil Aviation Regulations (2011) and SA Civil Aviation Technical Standards (SA-CATS)

This report is issued by:
Accident and Incident Investigation Division
South African Civil Aviation Authority
Republic of South Africa

Appendix 1: Copy of the logbook (page 40)



MAINTENANCE AND DEFECT RECTIFICATION ON ENGINE OR ANY RELEVANT MATTER CONSIDERED NECESSARY TO RECORD OTHER THAN SCHEDULED INSPECTIONS

Description of maintenance performed	*Signature	AMO Approval Stamp or AME Licence No	Date
CRMA: ZSCPO 451			
DATE: 9/7/2022			
SUBJECT: 1 MPI			
HELD IN WORKPACK			
THE OWNER HAS BEEN MADE AWARE THAT ONCE THIS COMPONENTS: CARBURATOR MAGNETO'S & CSU ARRIVE FROM OVERHAUL			
OWNER NAME:			
OWNER SIGNATURE:			
DATE:	[signature]	WHIP-AIR 6 AMO 1386	9/7/2022

*Note: A signature in this column will be construed to signify that all maintenance specified and all the requirements prescribed in the applicable Civil Aviation Regulations, as amended have been complied with

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Appendix 2: Extract from the SA Civil Aviation Regulations (2011) and SA Civil Aviation Technical Standards (SA-CATS)

21.08.12 Period of validity

(1) A certificate of airworthiness shall, subject to sub-regulation (2), be valid for a period of 12 months or until it is surrendered by the holder thereof, or is suspended by an authorised officer, inspector or authorised person, or cancelled by the Director.

(2) Notwithstanding the provisions of sub-regulation (1), a certificate of airworthiness shall be rendered invalid if—

(a) the aircraft is removed from a South African aircraft register

(b) **the aircraft is not maintained in accordance with the regulations prescribed in Part 43;**

(c) the certificate of release to service for such aircraft is invalidated by virtue of the provisions of regulation 43.04.3(3); and

(*d*) the aircraft does not comply with the design aspects of the appropriate airworthiness requirements prescribed in this Part.

(3) The holder of a certificate of airworthiness which expires, shall forthwith surrender the certificate to the Director.

(4) The holder of a certificate of airworthiness which is suspended, shall forthwith produce the certificate upon suspension thereof, to the authorised officer, inspector or authorised person concerned for the appropriate endorsement.

(5) The holder of a certificate of airworthiness which is cancelled, shall, within 30 days from the date on which the certificate is cancelled, surrender such certificate to the Director.

43.02.5 Overhaul, repair and substitution of major components

(1) An aircraft, its components and installed equipment shall be overhauled or substituted at such times as stipulated in its approved maintenance programme.

(2) A procedure for reinstating the validity of a certificate of airworthiness deemed suspended when an aircraft is involved in an accident or incident that renders one or more Class I products defective is prescribed in Document SA-CATS 43.

(3) Requirements for the overhaul of components and equipment installed on an aircraft and of engines and propellers are prescribed in Document SA-CATS 43.

(4) (*a*) Where the Director has approved a time between overhaul (TBO) that differs from that recommended or specified by the manufacturer, such TBO shall be specified in the aircraft's approved maintenance programme.

(*b*) Where a manufacturer has not recommended or specified the overhaul of an item at certain times and the Director considers its overhaul at certain intervals necessary in the interest of safety, the Director may prescribe a TBO for such item in the aircraft's approved maintenance programme.

(5) Requirements for the substitution of products, components and parts with new or overhauled items are prescribed in Documents SA-CATS 43.

43.02.5 SA-CATS

5. Substitution of products, components and parts

(1) The substitution of products, components and parts with new items, considered to be desirable or essential by the manufacturer of the product, component or part, or recommended after a specified time in service, must be effected at the times recommended by the manufacturer in its applicable manuals, Service Bulletins, Service Letters, Service Instructions or other similar technical information that refer thereto.

(2) Products, components and parts of which the manufacturer has classified the substitution as essential or mandatory after a specified time in service must be substituted not later than the time prescribed. Where a manufacturer bases the life of an item on factors other than flight times, e.g. number of landings, cycles or calendar periods, such records must be kept in the logbook or other approved recording system in respect of such items to ensure that their expiry dates are not exceeded.

(3) The substitutions shown in Appendix 1 and 2 are those that the Director considers to be mandatory. Such substitutions must be effected not later than the times prescribed.

(4) Any substitution must be recorded, together with the item's serial and part number and its historical record, where applicable. Where the part is being substituted with a used part, the time or cycles in service since new or since overhaul must be recorded. No part may be fitted to an aircraft for which traceable records are not available. It shall be the aircraft maintenance organisation's responsibility to ensure that any part received comes from a reliable source and is serviceable, and that the storage limitations have not been exceeded. Substitutions must be certified by the holders of an appropriately rated licence or authorisation.

(5) In addition to the records prescribed in subsection (4), a separate record of life-limited and TBO items shall be kept in respect of each aircraft to ensure that limitations are not exceeded. This record shall be updated within 48 hours of any item having been overhauled, replaced or substituted.