

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/10375		
Aircraft Registration	ZS-JTW	Date of Accident	11 October 2023		Time of Accident	0430Z	
Type of Aircraft	Piper Pawnee PA-25-260		Type of Operation		Training (Part 141)		
Pilot-in-command Licence Type	Commercial Pilot Licence (CPL)		Age	22	Licence Valid	Yes	
Pilot-in-command Flying Experience	Total Flying Hours		286.6	Hours on Type	20.1		
Last Point of Departure	Kroonstad Airfield (FAKS), Free State Province						
Next Point of Intended Landing	Kroonstad Airfield (FAKS), Free State Province						
Damage to Aircraft	Destroyed						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
On an open field at GPS co-ordinates 27° 40' 15.66" South 027°19' 30" East, elevation 4 582 feet							
Meteorological Information	Surface wind: 020°/ 5 kt; temperature: 19°C; dew point: 12°C; CAVOK						
Number of People On-board	1 + 0	Number of People Injured	0	Number of People Killed	1	Other (On Ground)	0
Synopsis							

On Wednesday afternoon, 11 October 2023 at 0420Z, a pilot on-board a Piper PA-25-260 (Pawnee) aircraft with registration ZS-JTW took off on a training flight (simulated crop-spraying exercises) from Runway (RWY) 07 at Kroonstad Airfield (FAKS) in the Free State province with the intention to land at the same airfield. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

The flight instructor (FI) who was observing the flight stated that the pilot completed the pre-flight inspection before she started the engine and taxied to the asphalt-covered RWY07. The pilot opened the throttle to 2 700 revolutions per minute (RPM) and commenced with the take-off run. The aircraft rotated and climbed to about 300 feet (ft) above ground level (AGL). Later, the aircraft descended, and the pilot commenced with the first simulated spray-run exercise above RWY12 at 6ft AGL. Thereafter, the aircraft climbed to 300ft and turned left to position for RWY30 for the second simulated spray run. During the left turn, the aircraft disappeared from the FI's line of sight and, moments later, the FI heard a loud bang and saw black smoke. The FI got into his vehicle and drove towards the area where the smoke was originating. Upon reaching the area, he found that the aircraft had crashed and was on fire. He alerted the fire services and the South African Police Service (SAPS) personnel. The aircraft was destroyed by the post-impact fire, and the pilot was fatally injured. Examination of the engine after the accident indicated no defects that would have affected its performance.

Probable Cause/s and/or Contributory Factors			
The aircraft impacted the ground after a stall whilst the pilot attempted to recover from an uncoordinated left turn.			
SRP Date	11 March 2025	Publication Date	12 March 2025

Occurrence Details

Reference Number : CA18/2/3/10375
Occurrence Category : Accident
Type of Operation : Training (Part 141)
Name of Operator : Fantini Flying School
Aircraft Registration : ZS-JTW
Aircraft Make and Model : Piper PA-25-260 (Pawnee)
Nationality : South African
Registration : ZS-JTW
Place : Kroonstad Airfield (FAKS), Free State Province
Date and Time : 11 October 2023 at 0430Z
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) of the South African Civil Aviation Authority (SACAA) was notified of the occurrence on 11 October 2023 at 0430Z. 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. Notification was sent to the State of Registry, Operator, Design and Manufacturer in accordance with the CAR 2011 Part 12 and the ICAO Annex 13 Chapter 4. The States did not appoint an accredited representative and/or advisor. The investigators were dispatched to the accident site.

Notes:

- Whenever the following words are mentioned in this report, they shall mean the following:*
Accident — this investigated accident
Aircraft — the Piper Pawnee, PA-25-260 involved in this accident
Investigation — the investigation into the circumstances of this accident
Pilot — the pilot involved in this accident
Report — this accident report

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Disclaimer

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Abbreviation	Description
°	Degrees
°C	Degrees Celsius
ACCID	Accident and Incident Investigations Division
ADM	Aeronautical Decision Making
AGL	Above Ground Level
AIID	Accident and Incident Investigations Division
AMO	Aircraft Maintenance Organisation
CAR	Civil Aviation Regulations
CAVOK	Cloud and Visibility Ok
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CPL	Commercial Pilot Licence
CRS	Certificate of Release to Service
CVR	Cockpit Voice Recorder
FDR	Flight Data Recorder
ft	Feet
GPS	Global Position System
hPa	Hectopascal
kts	Knots
m	Metres
METAR	Meteorological Aerodrome Report
PIC	Pilot-in-command
POH	Pilot's Operating Handbook
QNH	Barometric Pressure Adjusted to Sea Level
RWY	Runway
SACAA	South African Civil Aviation Authority
SAWS	South African Weather Service
UTC	Co-ordinated Universal Time
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
Z	Zulu (Term for Universal Co-ordinated Time - Zero Hours Greenwich)

1. FACTUAL INFORMATION

1.1. History of Flight

1.1.1. On Wednesday, 11 October 2023 at 0420Z, a pilot with Commercial Pilot Licence (CPL) on-board a Piper PA-25-260 (Pawnee) aircraft registered ZS-JTW was engaged in a training flight (simulated crop-spraying exercises) at Kroonstad Airfield (FAKS) in the Free State province with the intention to land at the same airfield. Visual meteorological conditions (VMC) prevailed at the time of the flight which was conducted under the provisions of Part 141 of the Civil Aviation Regulations (CAR) 2011 as amended.

1.1.2. The flight instructor (FI) who was observing the training flight from the ground stated that the pilot completed the pre-flight and run-up checks before taxiing to RWY07. During the flight sequence, the instructor and the pilot maintained two-way communication. The aircraft lined up and took off from the asphalt-covered RWY07 before it climbed to 300 feet (ft) above ground level (AGL). The pilot turned right to fly over the grass-covered RWY12 with the intention to inspect it as it was to be used for the spray-run exercises; the aircraft was approximately 300ft above ground level (AGL). Thereafter, the aircraft descended to 6ft AGL and the pilot completed the first spray run on RWY12. At the end of RWY12, she climbed to 300ft and turned left to position for RWY30 for the second simulated spray run.

1.1.3. According to the instructor, the pilot was slow to complete the 45-degree turn; the aircraft disappeared from his line of sight, and he did not see the aircraft in a wings level position. Thereafter, he heard a loud bang which was followed by smoke, about 10 seconds later. The instructor got into his vehicle and drove towards the area where the smoke was originating. Upon arriving at the site, the instructor found that the aircraft had crashed and was on fire.

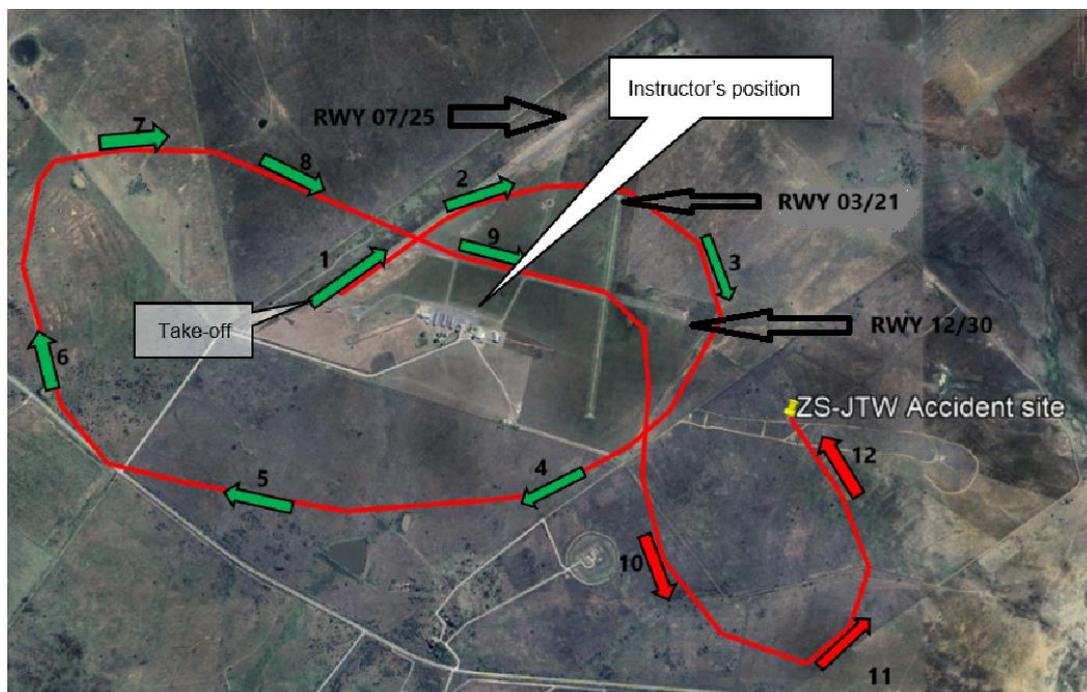


Figure 1: Aerial view of the accident site. The labelled arrows show the direction of flight.

1.1.4. The instructor alerted the fire services and the South African Police Service (SAPS) personnel who swiftly responded to the accident scene. The aircraft was destroyed by impact and post-impact fire. The pilot was fatally injured.

1.1.5 The accident occurred during daytime on an open field at Global Positioning System (GPS) co-ordinates determined to be 27°40'15.66" South 027°19'30" East, at a field elevation of 4 582 ft.

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 the post-impact fire.



Figure 2: The wreckage in an upright position after the accident.

1.4 Other Damage

1.4.1 None.

1.5 Personnel Information

Nationality	South African	Gender	Female	Age	22
Licence Type	Commercial Pilot Licence (CPL)				
Licence Valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating				
Medical Expiry Date	30 September 2024				
Restrictions	None				
Previous Accidents	None				

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

Flying Experience:

Total Hours	286.6
Total Past 24 Hours	2
Total Past 7 Days	5
Total Past 90 Days	14.8
Total on Type Past 90 Days	14.8
Total on Type	20.1

- 1.5.1 The pilot had a Commercial Pilot Licence (CPL) that was initially issued by the Regulator (SACAA) on 6 October 2022. The pilot was issued a Class 1 medical certificate on 14 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on her licence.
- 1.5.2 The flight was a simulated crop-spraying training exercise which was conducted at the aerodrome. The CAR Part 61 requires 30 hours training before the issuance of the agricultural rating to the pilot.

The training comprised the following:

- 5 hours dual training [C172]
- 5 hours conversion training inclusive of AG Navigation GPS (PA25)
- 5 hours agricultural training with empty aircraft (PA25)
- 5 hours agricultural training with water loads (PA25)
- 5 hours of agricultural Nav GPS training (PA25)
- 5 hours solo consolidation training (PA25)

- 1.5.3 At the time of the flight, the pilot had completed a total of 25 hours of the above training, with only 5 hours remaining for solo consolidation training. The pilot would have also required an additional 9 hours to obtain the agricultural rating to meet the minimum requirements as stipulated in the CAR Part 61.

1.6 Aircraft Information

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

The PA-25-260 aircraft is powered by a Lycoming O-540-G1A5 engine rated at 260 horsepower (HP) at 2700 revolutions per minute (RPM). The engine has a compression ratio of 8.50:1 and requires 100/130 minimum octane aviation grade fuel. Exhaust gases are carried through a single muffler system constructed of heavy gauge stainless steel and directed over-board at the right of the cowl. The muffler shroud provides a source at the right of the cowl. The muffler shroud provides a source of heat for the cabin interior, whilst carburettor heat is furnished by a separate shroud located on the right exhaust stack. The carburettor air filter is of dry pleated-paper type which features very efficient filtering action with negligible separate shroud located on the right exhaust stack. The carburettor air filter is of the dry pleated-paper type which features very efficient filtering action with negligible restriction to carburettor inlet flow. The standard propeller on the PA-25-260 is a McCauley B2D34C16/84HF-0 constant speed propeller. The fuselage frame is constructed of steel tubes, welded to form a rigid structure. Highly stressed members are made of 4130 chrome-moly steel, others are of 1025 steel.



Figure 3: The ZS-JTW prior to the accident. (Source: Google)

Airframe:

Manufacturer/Model	Piper Aircraft Corporation/Piper Pawnee	
Serial Number	25-7556020	
Year of Manufacture	19 January 1976	
Total Airframe Hours (At Time of Accident)	4 495.2	
Last Inspection (Date & Hours)	1 August 2023	4 452.58
Airframe Hours Since Last Inspection	42.62	
CRS Issue Date	1 August 2023	
ATF (Issue Date & Expiry Date)	20 September 2020	30 September 2024
C of R (Issue Date) (Present Owner)	10 March 2022	
Operating Category	Standard Normal Category	
Type of Fuel Used	Aviation Gasoline	
Previous Accidents	6 February 2014, CA18/2/3/9287: Failure to maintain flying speed which resulted in a stall and the subsequent crash due to thunderstorm at night.	

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

Engine:

Manufacturer/Model	Lycoming / 0-540-B2C5
Serial Number	L-5543-40
Part Number	0-540-B2C5
Hours Since New	731.73
Hours Since Overhaul	TBO

Propeller:

Manufacturer/Model	McCauley.1A200/FA8452
Serial Number	QA025
Part Number	1A200
Hours Since New	4297.77
Hours Since Overhaul	142.18

- 1.6.2 The aircraft had a valid Certificate of Airworthiness (C of A) that was issued by the Regulator (SACCA) on 20 September 2020 with an expiry date of 30 September 2024.
- 1.6.3 The mandatory periodic inspection (MPI) of the aircraft was conducted on 1 August 2023 at 4 452.58 total airframe hours. The Certificate of Release to Service (CRS) was issued on 1 August 2023 at 4 452.58 airframe hours with an expiry date of 31 July 2024 or at 4 552.58 airframe hours, whichever comes first.

1.7 Meteorological Information

1.7.1 The weather information below was obtained from the Meteorological Aerodrome Report (METAR) that was issued by the South African Weather Service (SAWS), recorded at FAKS on 11 October 2023 at 0420Z.

Wind Direction	020°	Wind Speed	5 kt	Visibility	CAVOK
Temperature	19°C	Cloud Cover	None	Cloud Base	None
Dew Point	12°C	QNH	1021 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 records indicating that the navigational equipment was unserviceable prior to the flight.

1.9 Communication

1.9.1 The aircraft was equipped with a standard communication system as approved by the Regulator. There were no recorded defects with the communication system prior to the flight.

1.10 Aerodrome Information

Aerodrome Name	Kroonstad, Free State Province
Aerodrome Location	Kroonstad Airfield (FAKS)
Aerodrome Status	Licensed (Unmanned)
Aerodrome GPS coordinates	27°40'15.66" South 027° 19'29.30" East
Aerodrome Elevation	4 582 ft
Runway Headings	07/25; 12/30 and 03/21
Dimensions of Runway Used	07/25: 1775 m X 14 m, 12/30: 1200 m X 30 m, 03/21: 900 m X 30 m
Heading of Runway Used	07
Surface of Runway Used	Tar on RWY 07/25, and Grass on RWY 12/30 & 03/21
Approach Facilities	Nil
Radio Frequency	122.4 MHz

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 wreckage was located 545 metres (m) from the threshold of RWY30; it faced a heading of 270° magnetic. The main landing gear impacted the ground approximately 10m from the first impact point and skidded approximately 5m before it stopped next to a tree. Post-impact fuel-fed-fire erupted thereafter.
- 1.12.2 When the aircraft impacted the ground, the main landing gear and the crop-spraying system broke off. One of the propeller blades was found curled backwards but still attached to the engine. The second propeller blade's tip had also curled backwards but was severed from the engine; it was found near the wreckage. The engine, including the two magnetos, was substantially damaged towards the rear section as a result of the fire. The auxiliary tanks on both wing tips were not damaged; they were found empty. The cables of the control columns were relatively intact. A continuity test was conducted on-site, and all the control cables moved freely.



Figures 4 and 5: The left and right landing gears at the accident site.



Figure 6: The propeller blade tip was located on the left side of the engine.



Figure 7: The aircraft as it came to rest in an upright position.

1.13 Medical and Pathological Information

1.13.1 The post-mortem was not available at the time of compiling this report. Should it contain substantive impact on this report at the time of its release, the evidence will be considered new and will necessitate the reopening of this investigation.

1.14 Fire

1.14.1 A post-impact fire erupted and destroyed the aircraft.

1.15 Survival Aspects

1.15.1 The accident was considered not survivable due to the high-impact forces and the post-impact fire that erupted and engulfed the aircraft. The pilot was fatally injured.

1.16 Tests and Research

1.16.1 Post-accident, the external inspection of the engine was conducted on site by the investigators, and it revealed that the oil cooler was damaged due to impact. The carburettor bowl was found in good condition. The mixture lever was set to normal, and the throttle was

not at full power. The starter motor moved freely when examined, and all the spark plugs were in good condition. The damage sustained by the propeller blades (Figure 8) indicated that the propeller was producing power at the time of impact.

- 1.16.2 A shock load inspection was conducted by a qualified aircraft maintenance organisation (AMO) at an engine overhaul facility. According to the technical report, the engine was inspected and dismantled. The damage found was attributed to the accident and fire damage. There was no indication of the internal failure of the engine. The carburettor was dismantled, and the epoxy float was found cracked as a result of the accident. Both magnetos were found damaged. The technical report did not reveal any engine-related failure before the accident.



Figure 8: The bent propellers. The engine was producing power at the time of impact.

1.17 Organisational and Management Information

- 1.17.1 The flight was conducted in accordance with the provisions of Part 141 of the CAR 2011 as amended. The training school had a valid Approved Training Organisation (ATO) Certificate that was issued on 9 March 2021 with an expiry date of 31 August 2026.
- 1.17.2 The ATO was approved to conduct the agricultural ratings from 1 January 2011. The ATO had the Agricultural, Forestry and Fishery Certificate of Registration that was issued on 15 August 2023 with an expiry date of 30 July 2026.
- 1.17.3 The AMO which conducted maintenance of the aircraft had an AMO Certificate that was issued by the Regulator on 1 August 2023 with an expiry date of 31 July 2024.
- 1.17.4 The operator had a valid Air Operating Certificate (AOC) that was issued on 30 September 2022 with an expiry date of 30 September 2023. The AOC was extended for a further 30 days.

1.18 Additional Information

1.18.1 The aircraft was operated within its limits; it did not exceed the maximum all-up weight of 2 900 lb (pounds). The aircraft's take-off weight was 2 773.47 lb.

Weight and Balance

	Weight	Arm	Moment
Basic empty weight	1637.47lb	86.67	141919.5249
Pilot	170lb	135.0	22950.0
Oil 1.5lb/qt (12qt)	18lb	30	540
Fuel	38 USG x 6	63	14364
Hopper	120 USG x 6	93	66960
Total	2773.47	89	246733.5249

1.19 Useful or Effective Investigation Techniques

1.19.1 The following information is an extract from the Airplane Flying Handbook (FAA-H-8083-3C)

The aerodynamic effects of the uncoordinated, cross-control stall can surprise the unwary pilot because this stall can occur with very little warning and can be deadly if it occurs close to the ground. The nose may pitch down, the bank angle may suddenly change, and the airplane may continue to roll to an inverted orientation, which is usually the beginning of a spin. It is therefore essential for the pilot to follow the stall recovery procedure by reducing the angle-of-attack (AOA) until the stall warning has been eliminated, then roll wings level using ailerons, and coordinate with rudder inputs before the airplane enters a spiral or spin. A cross-control stall occurs when the critical AOA is exceeded with aileron pressure applied in one direction and rudder pressure in the opposite direction, causing uncoordinated flight. A skidding cross-control stall is most likely to occur in the traffic pattern during a poorly planned and executed base-to-final approach turn. There may be an unrecognized tailwind component and higher groundspeed on the base leg, which causes the pilot to turn late or with inadequate bank. The airplane overshoots the runway centreline, and the pilot attempts to correct by increasing the bank angle, increasing back elevator pressure, and applying excess rudder in the direction of the turn (i.e., inside or bottom rudder pressure) to bring the nose around further to align it with the runway. The difference in lift between the inside and outside wing will increase, resulting in an unwanted increase in bank angle. At the same time, the nose of the airplane slices downward through the horizon. The natural reaction to this may be for the pilot to pull back on the elevator control, increasing the AOA toward critical. Should a stall be encountered with these inputs, the airplane may rapidly enter a spin.

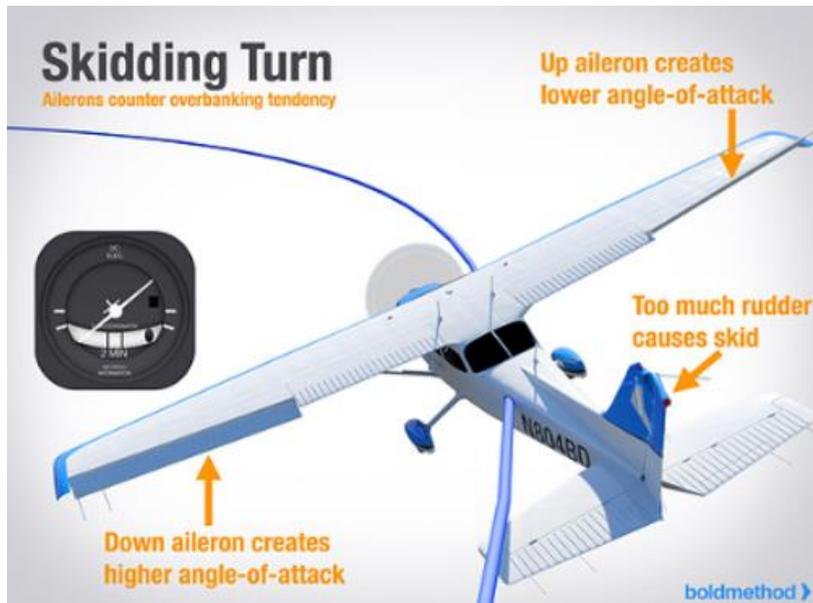


Figure 9: Pilot’s reaction during a left turn – skidding turn. (Source: <https://forums.flightsimulator.com>)

Skidding in a Turn

The pilot’s reaction should be left rudder and right stick (left aileron is down – more drag; right aileron is up – no drag), the result is a roll and loss of height.

Stall Recovery Template	
1. Wing leveler or autopilot	1. Disconnect
2. a) Pitch nose-down b) Trim nose-down pitch	2. a) Apply until impending stall indications are eliminated b) As needed
3. Bank	3. Wings Level
4. Thrust/Power	4. As needed
5. Speed brakes/spoilers	5. Retract
6. Return to the desired flight path	

Figure 10: Summarised stall recovery template. (Source: FAA-H-8083-3C)

1.19.2 Carburettor Icing Chart

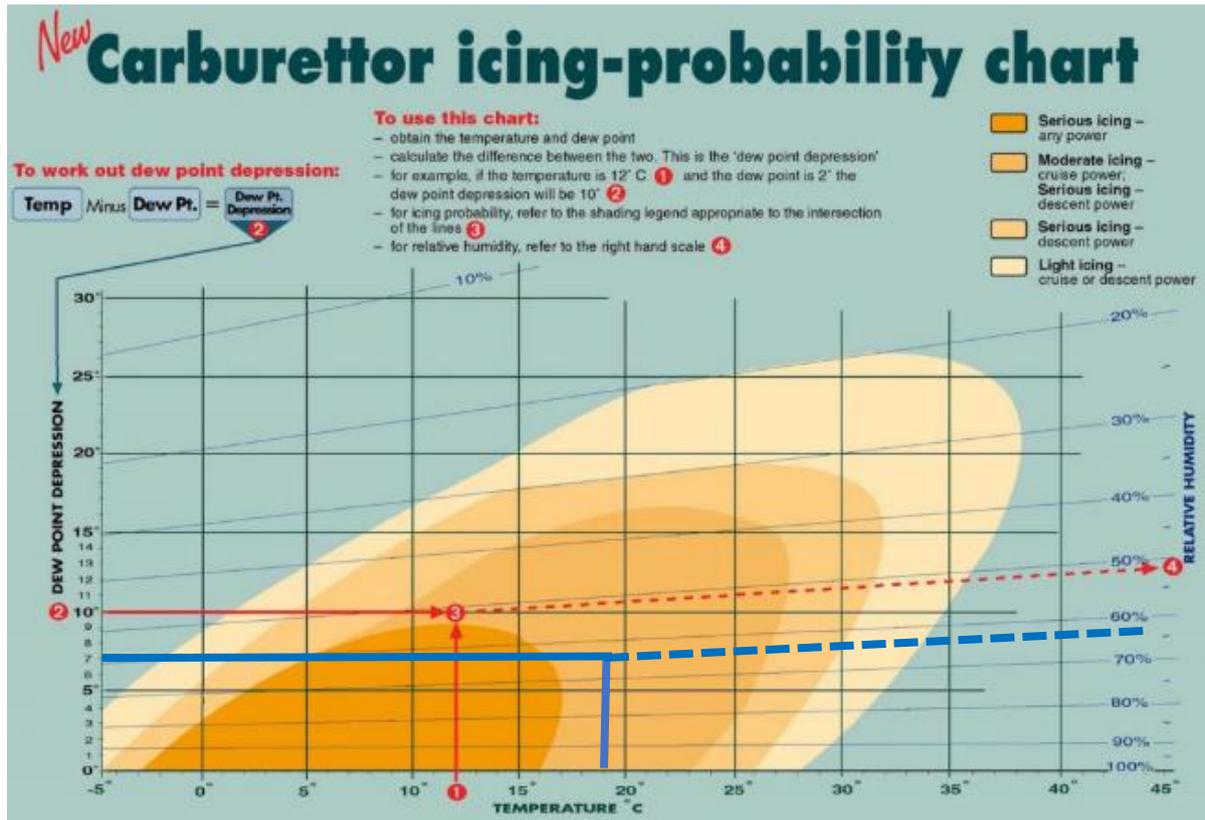


Figure 11: Carburettor icing chart.

1.19.3 The above carburettor icing chart indicates the dew point depreciation of 7°C. A temperature of 19°C gives a relative humidity of 62% and a moderate icing probability at descent power setting. As per the training syllabus, spray runs are conducted at 2500 rpm.

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 had a Commercial Pilot Licence (CPL) that was issued by the Regulator on 6 October 2022 with an expiry date of 31 October 2024. The pilot had a Class 1 medical certificate that was issued on 14 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on the pilot's licence.

Machine

- 2.2.2 The latest annual inspection maintenance of the aircraft was conducted on 1 August 2023. The AMO which conducted the inspection had issued the aircraft's Certificate of Release to Service (CRS) on 1 August 2023 at 4452.58 airframe hours with an expiry date of 18 May 2024 or at 4552.38 airframe hours, whichever comes first. The AMO had an AMO Certificate that was issued by the Regulator on 14 September 2023 with an expiry date of 30 September 2024.

Post-accident Inspection

- 2.2.3 The starter motor moved freely when examined, and all the spark plugs were in good condition. The damage sustained by the propeller blades indicated that the engine was producing power during the impact sequence. One of the propeller blades was found curled backwards and still attached to the engine. The second propeller blade's tip was severed and was found near the wreckage. The engine sustained major damage towards the rear section, including the two magnetos, because of the fire.

Mission

- 2.2.4 When the pilot started the crop-spraying training, she had 261 hours of flight time and a CPL qualification. The regulation requires a total of 300 hours flight time for the pilot to be issued an agricultural rating. The pilot completed 5 hours dual training on how to fly a low circuit at 300ft AGL and simulation of a spray run at 6ft AGL. The training was completed using a Cessna 172 aircraft. Once the instructor was satisfied with the simulation, the pilot progressed to conversion training on a Piper PA25 which is a single seater aircraft. The pilot's training included flying without a load of water on-board as well as with varying load weights of water to understand the shifting centre of gravity. The advanced stage training consisted of using an agricultural navigation (AG Nav) GPS. The last stage of training was solo consolidation which comprised using different loads and following the AG Nav to complete training and hours required for the issuance of the agricultural rating.
- 2.2.5 On the day of the accident, the pilot took off from RWY07 and followed the sequence reflected in Figure 1. She climbed to 300ft AGL. At arrow number 8, the pilot descended to 6ft AGL to commence a spray run and was communicating with the instructor. During this sequence, the aircraft was at 2500 rpm as per the training. Towards the end of the runway, the aircraft should climb and complete a teardrop turn to the left at 300ft AGL and, thereafter, proceed to commence descent once in line with RWY30.
- 2.2.6 According to the instructor, the pilot was slow in making the 45-degree turn, and the aircraft disappeared from his line of sight. The instructor did not see the aircraft in a wings level position. He then heard a loud bang which was followed by smoke, 10 seconds later. It is likely that during the left turn, the pilot did not apply co-ordinated controls which likely resulted in the aircraft skidding. *In a skid turn, the outer wing generates more lift than the inner wing. If the pilot tries to use aileron input to raise the inner wing, the elevator deflection would increase the angle-of-attack on the inner wing and cause it to stall. During the stall, recovery would have required that the pilot pushes the elevator forward which would result in loss of height. At a low altitude, the pilot would not have been able to recover, and impact would be inevitable.* The aircraft impacted the ground with the undercarriage first and came to rest in a level

position, which suggests that it is possible the pilot recovered to a wings level position prior to impact.

2.2.7 Carburettor icing was a low possibility as the exercise is conducted at high-power setting.

2.2.8 The pilot was fatally injured, and the aircraft was destroyed.

3. CONCLUSION

3.1. General

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

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

- **Findings** — are statements of all significant conditions, events, or circumstances in this accident. The findings are significant steps in this accident sequence, but they are not always causal or indicate deficiencies.
- **Causes** — are actions, omissions, events, conditions, or a combination thereof, which led to this accident.
- **Contributing factors** — are actions, omissions, events, conditions or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident occurring, or would have mitigated the severity of the consequences of the accident. The identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil, or criminal liability.

3.2. Findings

3.2.1 The pilot had a Commercial Pilot Licence (CPL) that was issued by the Regulator on 6 October 2022 with an expiry date of 31 October 2024.

3.2.2 The pilot had a Class 1 medical certificate that was issued on 14 September 2023 with an expiry date of 30 September 2024. The aircraft type was endorsed on the pilot's licence.

3.2.3 An applicant for an agricultural rating must have acquired the experience that includes no less than 300 hours of flight time, which must include flight experience of at least 30 hours in the case of aeroplanes and 10 hours in the case of helicopters in aerial application under supervision. The pilot would have had 291 hours of flight time when she completed her 30-hour agricultural rating training. She would have still required an additional 9 hours to obtain the Ag Nav rating to meet the minimum requirements as stipulated in the CAR.

3.2.4 The aircraft was issued the Certificate of Registration (C of R) on 10 March 2022.

3.2.5 The aircraft had a valid Certificate of Airworthiness (C of A) that was issued on 20 September 2020 with an expiry date of 30 September 2024.

- 3.2.6 The approved training organisation (ATO) (training school) had the Agricultural, Forestry and Fishery Certificate of Registration that was issued on 15 August 2023 with an expiry date of 30 July 2026.
- 3.2.7 The training school had a valid ATO Certificate that was issued on 9 March 2021 with an expiry date of 31 August 2026.
- 3.2.8 The operator had a valid Air Operating Certificate (AOC) that was issued on 30 September 2022 with an expiry date of 30 September 2023 (the AOC was extended for a further 30 days).
- 3.2.9 The latest annual inspection maintenance of the aircraft was conducted on 1 August 2023. The AMO that conducted the inspection had issued the aircraft's Certificate of Release to Service (CRS) on 1 August 2023 at 4452.58 airframe hours with an expiry date of 31 July 2024 or at 4552.38 airframe hours, whichever comes first.
- 3.2.10 The AMO had an AMO Certificate that was issued by the Regulator on 14 September 2023 with an expiry date of 30 September 2024.
- 3.2.11 The flight was conducted in accordance with the provisions of Part 141 of the CAR 2011 as amended.
- 3.2.12 The weather did not play a role in this accident.

3.3. Probable Cause/s

- 3.3.1 The aircraft impacted the ground after a stall whilst the pilot attempted to recover from an uncoordinated left turn.

3.4. Contributory Factor/s

- 3.4.1 None.

4. SAFETY RECOMMENDATIONS

4.1. General

The safety recommendations listed in this report are proposed according to paragraph 6.8 of Annex 13 to the Convention on International Civil Aviation and are based on the conclusions listed in heading 3 of this report. The AIID expects that all safety issues identified by the investigation are addressed by the receiving States and organisations.

4.2. Safety Recommendation/s

- 4.2.1. None.

5. APPENDICES

5.1. None.

This report is issued by:

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