



LIMITED OCCURRENCE INVESTIGATION REPORT – FINAL
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Reference Number		CA18/2/3/10527									
Classification		Accident		Date		22 November 2024	Time		1300Z		
Type of Operation		Private (Part 91)									
Location											
Place of Departure		Swellendam Grebel Airfield (FASX), Western Cape Province			Place of Intended Landing			Mossel Bay Airfield (FAMO), Western Cape Province			
Place of Occurrence		300m from the threshold of Runway 15 at Swellendam Grebel Airfield (FASX)									
GPS Co-ordinates		Latitude		34°2'25.8" S	Longitude		020°27' 46.2" E	Elevation		536ft	
Aircraft Information											
Registration		ZS-EJE									
Make; Model; S/N		Cessna; C150F (Serial Number: 150-62539)									
Damage to Aircraft		Substantial			Total Aircraft Hours			3 926.8			
Pilot-in-command											
Licence Type		Commercial Pilot Licence (CPL)			Gender		Male		Age	22	
Licence Valid		Yes		Total Hours		255		Total Hours on Type		4.3	
Total Hours 30 Days		29.6			Total Flying on Type Past 90 Days				2.3		
People On-board		1+1	Injuries		0	Fatalities		0	Other (on ground)		0
What Happened											
<p>On Friday afternoon, 22 November 2024, a pilot and a passenger on-board a Cessna 150F aircraft with registration ZS-EJE took off on a private flight from Swellendam Grebel Airfield (FASX) to Mosselbay Airfield (FAMO), both in the Western Cape province. Visual meteorological conditions (VMC) by day prevailed at the time of the flight which was conducted under the provisions of Part 91 of the Civil Aviation Regulations (CAR) 2011 as amended.</p> <p>The pilot reported that he conducted a pre-flight inspection of the aircraft, and no anomalies were noted. Thereafter, he started the engine and taxied to the threshold of Runway 33 where the engine run-ups were completed. <i>Runway 33 is an upslope runway.</i> At approximately 1300Z, the aircraft took off, climbed and passed the end of the runway and higher ground; however, it soon encountered a downdraft that pushed it down. The aircraft could not climb out of the downdraft; thus, the pilot conducted a precautionary landing. The aircraft landed within the boundary of the airfield, 300 metres (m) from the end of the runway. After landing, the pilot switched off the master switch and, together with the passenger, disembarked from the aircraft. Both occupants were not injured. The aircraft sustained damage to the right-wing tip and the left aileron. Figure 1 shows the elevation profile of the runway, the higher ground and the accident site.</p>											



Figure 1: Aerial view of the accident site, elevation profile and the direction of flight. (Source: Google Earth)



Figure 2: The damaged right-side wing. (Source: Pilot)

According to the pilot questionnaire, the pilot obtained the weather forecast from the Cape Town weather office.

Wind Direction	270°	Wind Speed	15kts	Visibility	>10km
Temperature	27°C	Cloud Cover	BKN	Cloud Base	3000ft
Dew Point	Unknown	QNH	Unknown		

Witness Statement:

An eyewitness (a local pilot) stated that on the day of the accident flight, the weather was hot with good visibility, and that there was a strong westerly wind. This meant that the aircraft had to take off from Runway 33 which is an upslope runway with the wind at 270°. There was no precipitation before or after the accident. The aircraft was unable to climb to clear the rising terrain towards Swellendam town; therefore, the pilot opted to conduct an emergency landing on rough terrain ahead of his path.

During the accident sequence, both wing tips impacted the ground successively. The propeller, undercarriage and fuselage were not damaged. The occupants exited the aircraft safely; they were not injured.

On hot windy days, there are downdrafts on the extended centreline of Runway 33. The investigator found out that local pilots usually turn left into the wind towards lower ground on the western side of the airfield. The last time the pilot flew to FASX was on 14 November 2023. Therefore, he had used the airfield in the past.

Weight and Balance

Weight	
Empty weight	508.9kg
Pilot	65kg
Passenger	75kg
Baggage	15kg
Fuel	61.4kg (83.3 litres)
Total	725.3kg

Fuel Weight Calculation:

$$\begin{aligned} \text{Weight of fuel} &= \text{volume of fuel} \times \text{density of fuel} \\ &= 83.3\text{L} \times 0.735\text{kg/L} \\ &= 61.4\text{kg} \end{aligned}$$

According to the POH, the maximum take-off weight (MTOW) is 725.8 kilograms (kg). The table above indicates that the aircraft had a total maximum take-off weight (MTOW) of 725.3kg which was within the prescribed limit.

Katabatic Winds (Source: <https://aviationtheoryaustralia.com.au/blog/f/mastering-katabatic-and-anabatic-winds-in-aviation>)

Katabatic winds are a type of local wind that form when there is a significant elevation change, typically in mountainous or coastal areas. They can make it difficult for a pilot to control the aircraft's direction and speed. They can also degrade the aircraft's performance and make it more challenging to take-off and land. Katabatic winds can cause sudden changes in wind direction and speed near the ground, making take-offs and landings more challenging.

The pilot reported that after passing the end of the runway, whilst flying over higher ground, the aircraft flew into a downdraft, which pushed it down. There was no thunderstorm activity in the vicinity at the time.

Findings

1. The pilot had a Commercial Pilot Licence (CPL) that was initially issued on 22 May 2024 with an expiry date of 31 March 2025. The aircraft type was endorsed on his licence. The pilot had 255 total flying hours of which 4.3 hours were on the aircraft type. The pilot had last flown the aircraft type on 21 September 2024. The pilot had taken off from FASX previously.
2. The pilot had a Class 1 aviation medical certificate that was issued on 8 April 2024 with an expiry date of 30 April 2025 with no restrictions.
3. The mandatory periodic inspection (MPI) of the aircraft was conducted and certified on 25 October 2024 at 3 733.8 total airframe hours after which a Certificate of Release to Service (CRS) was issued with an expiry date of 24 October 2025 or at 3 833.8 hours, whichever comes first. The aircraft had accrued 59.6 hours since the last MPI.
4. The Certificate of Airworthiness (C of A) was initially issued on 20 August 2008. The latest C of A had an expiry date on 26 July 2025.
5. The Certificate of Registration (C of R) was issued to the present owner on 14 March 2023.
6. The aircraft could not climb out of the downdraft; thus, the pilot conducted a precautionary landing.

Probable Cause(s)

The aircraft could not climb out of the downdraft; thus, the pilot conducted a precautionary landing.

Contributing Factor(s)

None.

Safety Action(s)

None.

Safety Message
None.
About this Report
<p><i>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 desktop 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.</i></p> <p><i>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.</i></p>
Purpose
<p><i>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.</i></p>
Disclaimer
<p><i>This report is produced without prejudice to the rights of the AIID, which are reserved.</i></p>

This report is issued by:

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