



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/3/2/8576	
Aircraft Registration	ZS-PCM	Date of Accident	1 November 2008		Time of Accident	0900Z
Type of Aircraft	Cessna 208B		Type of Operation		Charter	
Pilot-in-command Licence Type		Commercial	Age	21	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	1371.1		Hours on Type	390
Last point of departure		Wonderboom Aerodrome (FAWB) - Gauteng				
Next point of intended landing		Njala Lodge – Limpopo				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
GPS position S 24° 23.41' E027° 53.56'						
Meteorological Information		According to the pilot, fine weather conditions prevailed at the time of the accident. The wind was 090/5-20 kts and the temperature was approximately 30°C with no cloud cover.				
Number of people on board	1+5	No. of people injured	1	No. of people killed	0	
Synopsis						
<p>On 1 November 2008 the pilot, accompanied by 5 passengers, departed from Wonderboom aerodrome to Njala Lodge in the Limpopo Province on a chartered flight.</p> <p>The coordinates used by the pilot were insufficient for the purpose and resulted in him landing on an incorrect aerodrome</p> <p>During the take-off from the incorrect runway, the pilot apparently failed to do a proper assessment of the wind conditions and the result was an aborted take-off as the aircraft failed to gain height.</p> <p>During the landing following the aborted take-off, the aircraft collided with a huge rock, a telephone pole and the associated telephone wires and a 4 ft wire fence.</p> <p>The aircraft sustained substantial damage during the accident sequence and stopped a mere 5 metres from high tension wires across the dirt road.</p> <p>The pilot held a valid, unrestricted medical certificate as a commercial pilot in South Africa.</p> <p>According to available information, the aircraft was correctly maintained.</p> <p>The operator was in possession of a valid Part 135 Operating Certificate and the passengers were issued with tickets prior to the flight.</p>						
Probable Cause						
<p>The pilot failed to carry out a proper assessment of the wind conditions. The aircraft failed to gain height as a result of a possible down draft and collided with obstacles on the ground after landing.</p> <p>The pilot failed to maintain directional control after take-off, resulting in a landing on the left side of the runway after aborting the take-off.</p>						
IARC Date				Release Date		

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	-	-	1	-
Minor	-	-	-	-
None	1	-	4	-

1.3 Damage to Aircraft

1.3.1 During the accident sequence the aircraft collided with a huge rock, a telephone pole and the associated telephone wires and a 4 ft wire fence.

1.3.2 The aircraft sustained substantial damage to the left-hand main landing gear, propeller, nose landing and both wings as a result of the collision and the ensuing fire.

1.4 Other Damage

1.4.1 Some minor damage was caused to the immediate vegetation as a result of the ensuing fire.

1.4.2 In addition to the above, some minor damage was caused to the wire fence surrounding the landing strip area and also to the telephone wires and pole.

1.5 Personnel Information

Nationality	South African				
Licence	*****	Gender	Male	Age	21
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Instrument (13 December 2007 – 20 December 2008) Instructor Gr iii (11 November 2007 – 10 June 2008)				
Medical Expiry Date	31 December 2008				
Restrictions	None				

The pilot held a valid, unrestricted Medical Certificate as a Commercial Pilot in South Africa, which expired on 31 December 2008.

1.5.1 Flying Experience:

Total Hours	1371.1
Total Past 90 Days	173.7
Total on Type Past 90 Days	101.9
Total on Type	390

1.6 Aircraft Information

Airframe:

Type	Cessna	
Serial #	208B-0851	
Manufacturer	Cessna Aircraft corporation	
Year of Manufacture	2000	
Total Airframe Hours (At time of Accident)	2659.5	
Last MPI(Date & Hours)	1 October 2008	2593.5
Hours since Last MPI	66.3	
C of A (Issue date)	7 May 2004	
C of R (Issue Date)	5 April 2004	
Operating Categories	Standard	

Engine:

Type	Pratt & Whitney PT6-114A
Ser #	PCE 0806
Hours since New	2659.5
Hours since Overhaul	TBO not yet reached

Propeller:

Type	McCauley 3GFRC334C703
Ser #	001275
Hours since New	2659.5
Hours since Overhaul (5 September 2005)	1771.2

1.7 Meteorological Information

Wind direction	090°	Wind speed	5 – 20 Kts	Visibility	>10 km
Temperature	30°C	Cloud cover	Nil	Cloud base	N/A
Dew point	Unknown				

According to the pilot, the wind direction during take-off was 010° and variable.

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigational equipment. No defects were reported or recorded prior, during or after the flight.

1.9 Communications

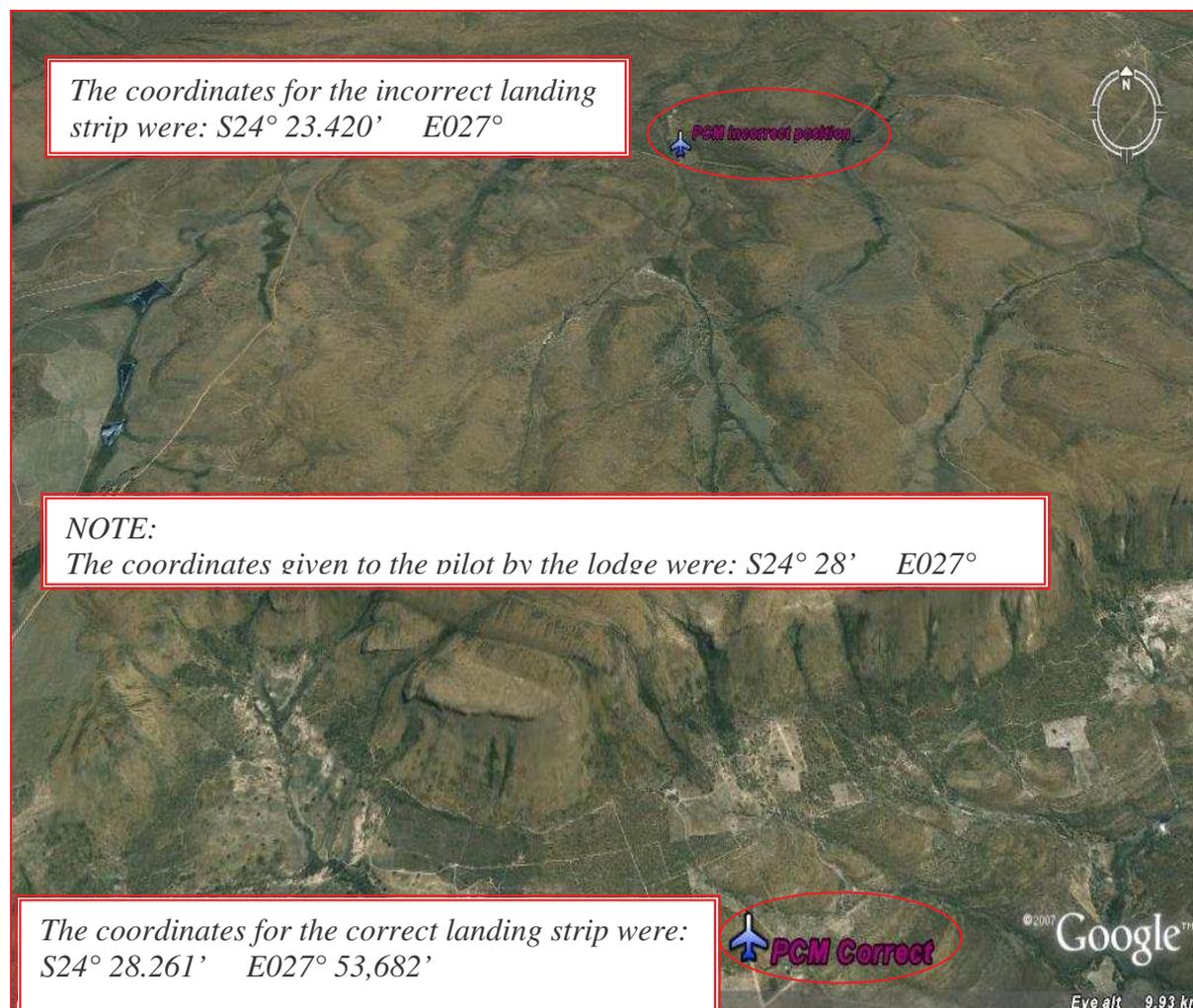
1.9.1 The aircraft was equipped with standard communication equipment. No defects were reported or recorded prior, during or after the flight.

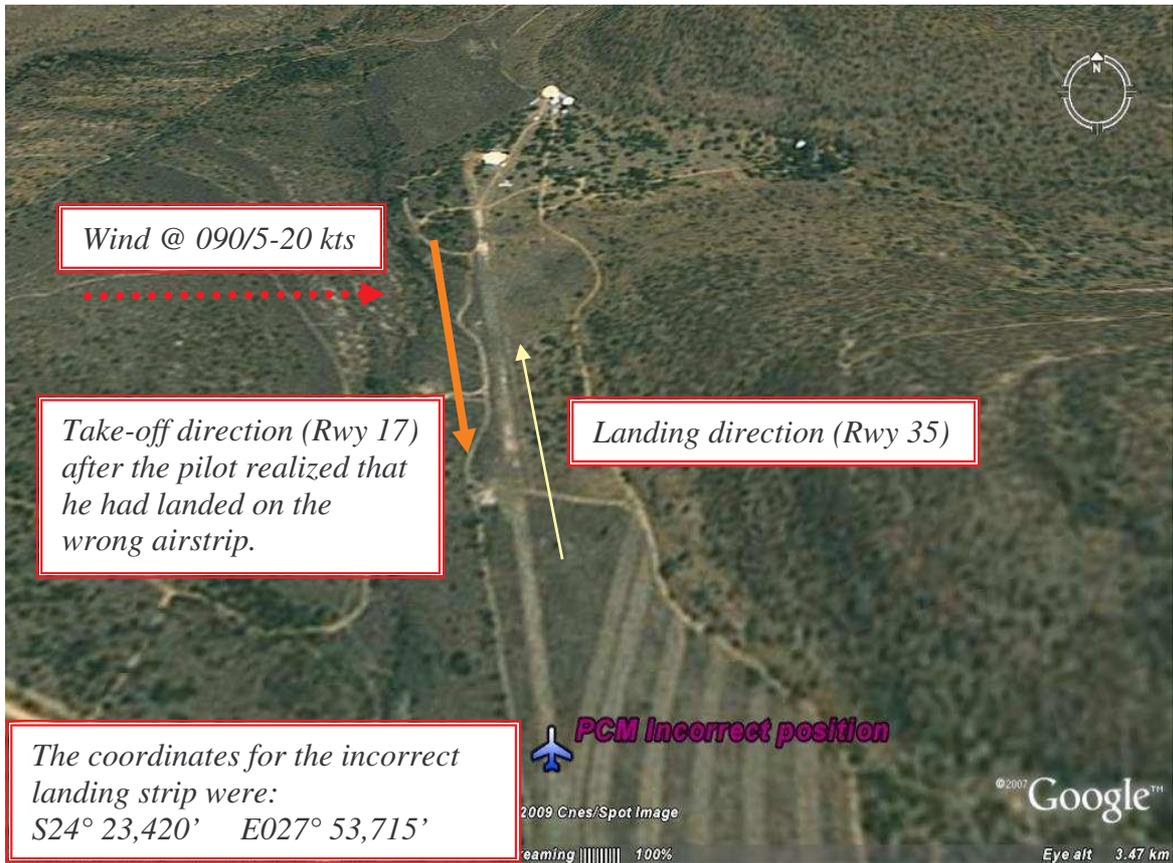
1.10 Aerodrome Information

Aerodrome Location	82.07 NM on a heading 347° True from Pretoria
Aerodrome Co-ordinates	S24° 28.261' E027° 53.682'
Aerodrome Elevation	4600'
Runway Designations	17/35
Runway Dimensions	17/35 900m x 23m
Runway Used	17
Runway Surface	Gravel / grass
Approach Facilities	None

NOTE:

The runway surface is a combination of grass and gravel with a significant amount of minor bumps and holes. In addition, the runway ends are lower than the centre section of the runway.





1.11 Flight Recorders

1.11.1 The aircraft was not fitted with either a FDR (Flight Data Recorder) or a CVR (Cockpit Voice Recorder) and none of these were required by CARs to be fitted to this type of aircraft.

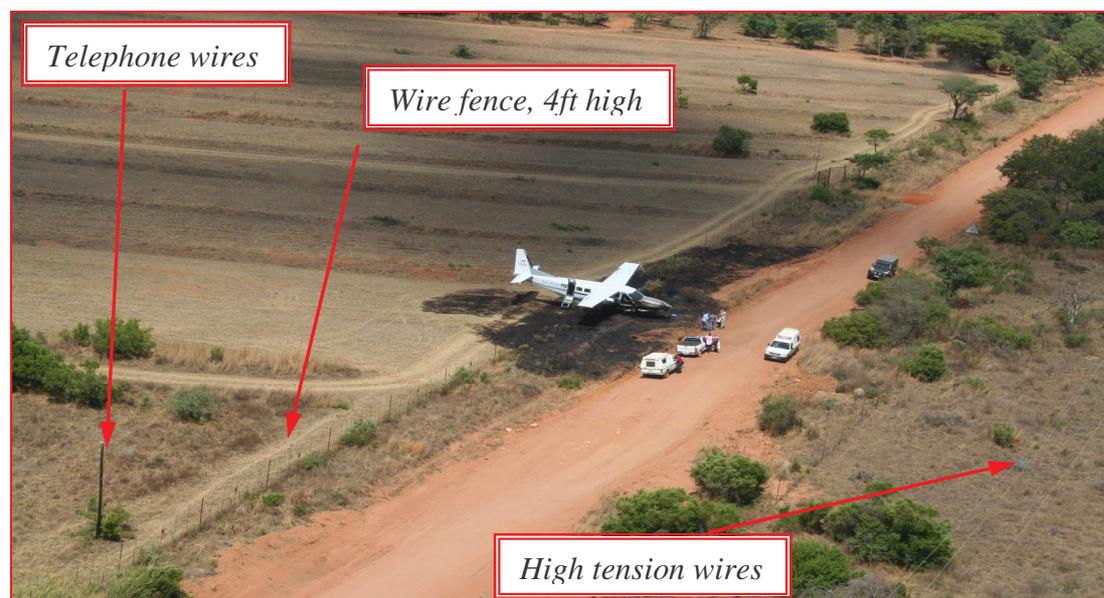
1.12 Wreckage and Impact Information

1.12.1 The coordinates for the correct landing strip were S24° 28.261' E027° 53,682'; however the pilot incorrectly interpreted it as S24° 23,420' E027° 53,715'. The two runways were on either side of a ridge. The coordinates given to the pilot had put him on the ridge and he was unsure which runway he should use. He then chose the runway where a vehicle was parked, which he thought was waiting to pick up the passengers. After the landing, he realized that he had landed on the wrong runway. He then turned the aircraft around, repositioned it on runway 17 and attempted to take off again. After rotation, the aircraft failed to gain height.

1.12.2 Directly ahead of the aircraft were some telephone wires as well as high tension wires. The pilot then decided to abort the take-off in fear of colliding with the high tension wires.

1.12.3 However, the remaining runway length was too short to safely stop the aircraft in time and a collision with the surrounding fence and telephone wires followed.

1.12.4 The accident occurred in the day, during take-off from Rwy 17. The site elevation was determined as 4550 ft AMSL.



1.13 Medical and Pathological Information

1.13.1 Not applicable.

1.14 Fire

1.14.1 The aircraft sustained substantial damage after the exhaust had set the grass alight. The fire was quickly extinguished by a fire truck that was on the airfield at the time of the accident.



1.15 Survival Aspects

1.15.1 The propeller made contact with a huge rock and then the aircraft collided with a telephone wire and the surrounding fence before it came to a stop, a mere 5 metres from high tension wires across the road.

1.15.2 The fact that the aircraft stopped a mere 5 metres from the high tension wires and the low magnitude of the impact, rendered the accident to be a survivable accident.

1.16 Tests and Research

1.16.1 None

1.17 Organisational and Management Information

- 1.17.1 The operator was in possession of a valid Part 135 Operating Certificate which was issued on 19 February 2008 and expired on 19 January 2009.
- 1.17.2 Passenger tickets were issued to the passengers on 1 November 2008 prior to the flight from Wonderboom to Njala lodge.

1.18 Additional Information

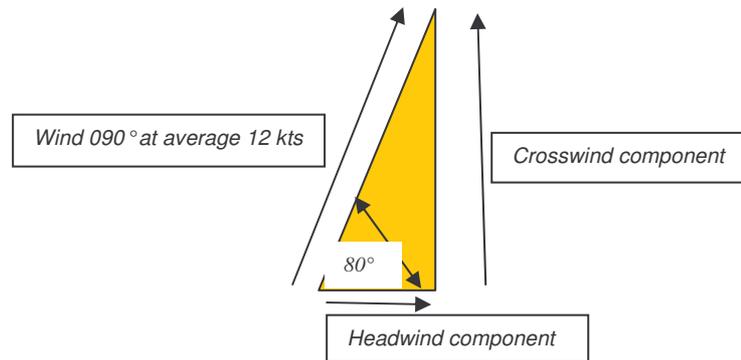
- 1.18.1 An investigating team from the SACAA initiated the on-site investigation into the cause of the accident the following day.

1.19 Useful or Effective Investigation Techniques

- 1.19.1 None

2. ANALYSIS

- 2.1.1 The pilot, accompanied by 5 passengers, departed from Wonderboom to Njala Lodge in the Limpopo province on a chartered flight after receiving the coordinates for the runway at Njala Lodge.
- 2.1.2 The coordinates given to the pilot by the lodge were S24° 28' E027° 53'. The coordinates given to the pilot had put him on a ridge with two runways, on either side of a ridge. The pilot was therefore unsure which was runway he should use. He then chose the runway where a vehicle was parked, which he thought was waiting to pick up the passengers. After the landing, he realized that he had landed on the wrong runway. He then turned the aircraft around, repositioned it on runway 17 and attempted to take off again.
- 2.1.3 After rotation, the aircraft failed to gain height and the pilot decided to abort the take-off. During the landing following the aborted take-off, the aircraft collided with a huge rock, a telephone pole and the associated telephone wires and a 4 ft wire fence. The runway surface was a combination of grass and gravel with a significant amount of minor bumps and holes. In addition, the runway ends are lower than the centre section of the runway. According to the pilot, the wind direction during take-off was 010° and variable. Initial information received at the time that the accident was reported, suggested that the wind direction was 090° at 5-20 kts.
- 2.1.4 If the wind direction was 010° and variable as reported by the pilot, the aircraft took off with a headwind. Even if the wind direction was 090° at 5-20 kts, the aircraft took off with a minor headwind component as illustrated below:



$$\begin{aligned} \text{Crosswind component} &= 12 \times \sin 80^\circ = 12 \times 0.984 = 11.817 \text{ kts} \\ \text{Headwind component} &= 12 \times \cos 80^\circ = 12 \times 0.174 = 2.084 \text{ kts} \end{aligned}$$

The above suggested that the crosswind was strong enough to cause the aircraft to drift to the left once it became airborne. In addition to this, there is a possibility of a down draft causing a loss of lift, necessitating the pilot to abort the take-off. It would appear that the pilot did not make a proper assessment of the wind conditions at the time of taking off.

- 2.1.5 The aircraft sustained substantial damage to the left-hand main landing gear, propeller, nose landing and both wings as a result of the collision and the ensuing fire. Some minor damage was caused to the immediate vegetation as a result of the ensuing fire. In addition to the above, some minor damage was caused to the wire fence surrounding the landing strip area and also to the telephone wires and pole. The aircraft stopped a mere 5 metres from the high tension wires across the dirt road.
- 2.1.6 The pilot held a valid, unrestricted medical certificate as a commercial pilot in South Africa, which expired on 31 December 2008.
- 2.1.7 According to available information, the aircraft was correctly maintained as required by the regulations. The aircraft was equipped with standard navigational and communicational equipment and no defects were reported or recorded prior, during or after the flight.
- 2.1.8 The aircraft was not fitted with either a FDR (Flight Data Recorder) or a CVR (Cockpit Voice Recorder) and none of these were required by CARs to be fitted to this type of aircraft.
- 2.1.9 The operator was in possession of a valid Part 135 Operating Certificate and the passengers were issued with tickets prior to the flight.

3. CONCLUSIONS

3.1 Findings

- 3.1.1 On 1 November 2008 the pilot, accompanied by 5 passengers, departed from

Wonderboom Aerodrome to Njala Lodge in the Limpopo Province on a chartered flight.

- 3.1.2 The coordinates used by the pilot were insufficient for the purpose and resulted in him landing on an incorrect runway.
- 3.1.3 During the take-off from the incorrect runway, the pilot apparently failed to do a proper assessment of the wind conditions. This resulted in the aircraft failing to gain height as a result of a possible down draft and this resulted in an aborted take-off.
- 3.1.4 During the landing following the aborted take-off, the aircraft collided with a huge rock, a telephone pole and the associated telephone wires and a 4 ft wire fence.
- 3.1.5 The aircraft sustained substantial damage during the accident sequence and stopped a mere 5 metres from high tension wires across the dirt road.
- 3.1.6 The pilot held a valid, unrestricted medical certificate as a commercial pilot in South Africa.
- 3.1.7 According to available information, the aircraft was correctly maintained.
- 3.1.8 The operator was in possession of a valid Part 135 Operating Certificate and the passengers were issued with tickets prior to the flight.

3.2 Probable Cause/s

- 3.2.1 The pilot failed to carry out a proper assessment of the wind conditions. The aircraft failed to gain height as a result of a possible down draft and collided with obstacles on the ground after landing.
- 3.2.2 The pilot failed to maintain directional control after take-off, resulting in a landing on the left side of the runway after aborting the take-off.

4. SAFETY RECOMMENDATIONS

- 4.1 None.

Report reviewed and amended by Advisory Safety Panel: 28 July 2009.

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