

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8912	
Aircraft Registration	ZS-PSC	Date of Accident	27 March 2011		Time of Accident	1330Z
Type of Aircraft	Cessna 206		Type of Operation	Sport (Para drop)		
Pilot-in-command Licence Type	Commercial		Age	32	Licence Valid	Yes
Pilot-in-command Flying Experience	Total Flying Hours	447		Hours on Type	104	
Last point of departure	Delta 200 (FADX)					
Next point of intended landing	Delta 200 (FADX)					
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
Fire Service Road outside Delta 200 Airfield FADX (GPS Position S33° 38 44 E018° 28 20)						
Meteorological Information	Surface wind: 225 $\%$ 10 kt, temperature: 28 $^{\circ}$ C, V isibility: CAVOK					
Number of people on board	1+0	No. of people injured	0	No. of people killed	0	
Synopsis	<p>On 27 March 2011, at approximately 1320Z, the pilot accompanied by a group of skydivers took off from runway 20 at Delta 200 on a paradrop flight with the intention of landing back at Delta 200 after dropping the skydivers. The pilot stated that after dropping the last group of skydivers at about 11000 feet, he was cleared by Cape Town control tower to descend over the Delta 200 airfield. He stated that at approximately 900 feet above ground level, the aircraft lost engine power and quit.</p> <p>Post-accident investigation revealed that the right fuel tank was empty and the left tank contained approximately 40 litres of fuel. Further examination of the aircraft, engine and related systems did not reveal any anomalies that would have explained the loss of engine power.</p> <p>From the available information it is obvious that the engine lost power and quit due to fuel starvation. As to why the engine failed to restart after the pilot changed the fuel supply to the left tank, it is possible that the electric fuel pump did not work, as it was discovered during the engine trial run that the pump operated intermittently.</p>					
Probable cause						
Unsuccessful forced landing due to fuel starvation.						
Contributory factor						
Poor fuel management by the pilot.						
IARC Date				Release Date		



AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Cape Parachute Centre Aviation CC
Manufacturer : Cessna Aircraft Company
Model : C206
Nationality : South Africa
Registration Marks : ZS-PSC
Place : Delta 200
Date : 27 March 2011
Time : 1330Z

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 (1997) 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 establish legal liability.***

Disclaimer:

This report is given without prejudice to the rights of the CAA, which are reserved.

1. FACTUAL INFORMATION

1.1 History of flight

- 1.1.1 On 27 March 2011, at approximately 1320Z, the pilot accompanied by a group of skydivers took off from runway 20 at Delta 200 on a paradrop flight with the intention of landing back at Delta 200 after dropping the skydivers.
- 1.1.2 The pilot stated that after dropping the last group of skydivers at about 11000 feet, he was cleared by Cape Town control tower to descend over the Delta 200 airfield. He stated that at approximately 900 feet above ground level, the aircraft lost engine power and quit.
- 1.1.3 The pilot mentioned that he continued with the base turn to aim for runway 20. He then tried to restart the engine but the engine failed to restart. When he realised that he was not going to make it to the runway, he decided to identify a suitable area to execute a forced landing.
- 1.1.4 The pilot then executed a forced landing on a fire service road just outside the Delta 200 airfield. During the landing sequence the left wingtip struck the ground as the nose landing gear dug into the soft sand, resulting in substantial damage to the aircraft's left wingtip and the nose landing gear.
- 1.1.5 The accident happened in daylight, at approximately 1330Z, a few metres outside the Delta 200 Airfield at an elevation of 200 feet above mean sea level and GPS position determined to be (S 33°38'44" E 18°28'20").

1.2 Injuries to persons

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

1.3 Damage to aircraft

1.3.1 The aircraft sustained substantial damage to the nose gear, the left wing tip, the propeller as well as the bottom side of the engine cowling.



FIGURE 1 Damage to the wing tip and propeller

1.4 Other damage

1.4.1 There was no other damage.

1.5 Personnel information

Nationality	South African	Gender	Male	Age	32
Licence number	*****	Licence type	Commercial		
Licence valid	Yes	Type endorsed	Yes		
Ratings	Instrument rating				
Medical expiry date	30 September 2011				
Restrictions	None				
Previous accidents	None				

Flying experience

Total hours	447
Total past 90 days	134
Total on type past 90 days	104
Total on type	104

1.6 Aircraft information

Airframe

Type	Cessna 206	
Serial number	206-0112	
Manufacturer	Cessna Aircraft Company	
Date of manufacture	1964	
Total airframe hours (at time of accident)	5807	
Last MPI (date & hours)	24 February 2011	5747
Hours since last MPI	60	
C of A (issue date)	22 May 1972	
C of R (issue date) (present owner)	22 December 2008	
Operating categories	Standard	

Engine

Type	Continental 10-520A
Serial number	832152R
Hours since new	778
Hours since overhaul	TBO not yet reached

Propeller

Type	McCauley D2A34C58 NO
Serial number	738696
Hours since new	8243
Hours since overhaul	1004

1.7 Meteorological information

1.7.1 This weather information was obtained from the pilot questionnaires.

Wind direction	225°	Wind speed	10 knots	Visibility	Cavok
Temperature	28°C	Cloud cover	Nil	Cloud base	Nil
Dew point	-----				

1.7.2 The meteorological conditions were suitable for visual flight and were deemed not to have contributed to the accident.

1.8 Aids to navigation

1.8.1 The aircraft was equipped with standard navigation equipment. All the navigation equipment was serviceable prior to the accident.

1.9 Communications

1.9.1 The aircraft was equipped with standard communication systems and none was reported unserviceable prior to or during the accident.

1.9.2 The pilot broadcast his intentions on the VHF frequency 119.7 MHz, which is the frequency for Cape Town approach control.

1.10 Aerodrome information

1.10.1 The pilot executed a forced landing on a fire service road running east to west at the north end of the airfield (FADX), at a GPS position determined to be (S 33°38'44" E 018°28'20") and an elevation of approximately 200 ft above mean sea level (AMSL).

Aerodrome location	Delta 200	
Aerodrome co-ordinates	S33° 38' 59.0" E018° 28' 19.0"	
Aerodrome elevation	200 feet	
Runway designations	02/20	
Runway dimensions	800m x 9m	
Runway used	20	
Runway surface	Asphalt	
Approach facilities	Nil	

1.11 Flight recorders

1.11.1 The aircraft was not fitted with a cockpit voice recorder (CVR) or a flight data recorder (FDR). Neither was required by regulations to be fitted to this type of aircraft.

1.12 Wreckage and impact information

1.12.1 The accident site was sandy terrain on a fire service road just outside the Delta 200 airfield. Evidence of airframe damage indicated that the aircraft had struck the ground on a south-easterly heading, while in a slight nose-down attitude.

1.12.1 The aircraft sustained substantial damage. The integrity of the flight control system was established and all parts of the aircraft were accounted for on the accident site.

1.13 Medical and pathological information

1.13.1 Nobody was injured in this accident.

1.14 Fire

1.14.1 There was no evidence of pre- or post-impact fire.

1.15 Survival aspects

1.15.1 The accident was considered to be survivable, as the pilot was securely strapped in his seat and the cabin was not damaged.

1.16 Tests and research

1.16.1 On-site wreckage examination

- (i) On-site inspection of the wreckage revealed that all of the structural damage was consistent with the impact; nothing was found to suggest that there had been any pre-impact failure of the primary structure. It was also established that both fuel gauges were working properly. Approximately 40 litres of fuel was drained from the left fuel tank, and the right tank was empty (bone dry).

1.16.2 Aircraft systems and engine examination

- (i) The wreckage and engine were recovered and taken to an approved aircraft maintenance facility for further investigation. The engine was inspected for any obvious outside damage, but nothing abnormal was found. All fuel lines and fittings were inspected for cracking, leaks and loose attachments, and none were found.
- (ii) A decision was taken to run the engine while still fitted on the airframe. During the first attempt the engine failed to start. Upon investigation it was discovered that one of the wires on the electric pump microswitch was loose, which made the pump intermittent. The electric pump is normally switched on during engine start and switched off afterwards. The reason why the microswitch was loose could not be determined. It may have come loose due to the impact forces caused during the accident sequence.
- (iii) On the second attempt the engine operated at different power settings, with no anomalies found.

1.17 Organisational and management Information

1.17.1 This was a skydiver dropping flight operated under the auspices of the Cape Parachute Centre.

1.18 Additional information

1.18.1 On the written statement provided to the CAA, the pilot stated that before he tried to restart the engine, he moved the fuel selector from the right tank to the left tank. The right-hand fuel tank was the one that was found empty during the on-site investigation. This means that the right fuel tank was the one supplying fuel at the time when the engine stopped.

1.19 Useful or effective investigation techniques

1.19.1 None.

2. ANALYSIS

- 2.1 It was reported that the flight was normal until the engine malfunction occurred. After the engine failure, the pilot switched the fuel selector to the left tank and attempted an engine restart, but the engine failed to restart. The pilot conducted a forced landing on a fire service road, resulting in substantial damage to the aircraft.
- 2.2 From the written pilot statement, it is apparent that the pilot did not realise he was out of fuel in the right fuel tank until the engine quit. This fact was also confirmed during the on-site examination, when the right fuel tank was found to be empty.
- 2.3 Post-accident examination by the investigator revealed that the right fuel tank was empty and the left fuel tank contained approximately 40 litres of fuel. Further accident examination of the aircraft, engine and related systems did not reveal any anomalies that would have explained the loss of engine power.
- 2.4 From the available information it is obvious that the engine lost power and quit due to fuel starvation. As to why the engine failed to restart after the pilot changed the fuel supply to the left tank, it is possible that the electric fuel pump did not work, as it was discovered during the engine trial run that the pump was operating intermittently.

3. CONCLUSION

3.1 Findings

- 3.1.1 The pilot was a holder of a valid commercial pilot's licence (aeroplane).
- 3.1.2 The aircraft had a valid certificate of airworthiness.
- 3.1.3 Weather conditions were reported to be fine, with the prevailing wind being 225° at 10 knots. It was not a factor in this accident.
- 3.1.4 The accident happened in daylight conditions.
- 3.1.5 The aircraft was certified, equipped and maintained in accordance with regulations and approved procedures.
- 3.1.6 The engine stopped in flight due to fuel in the right fuel tank being exhausted.

3.2 Probable cause/s

- 3.2.1 Unsuccessful forced landing due to fuel starvation.

Contributory factor/s

3.2.2 Poor fuel management by the pilot.

4. SAFETY RECOMMENDATIONS

4.1 None.

5. APPENDICES

5.1 None.

Compiled by

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Date:

For: Director of Civil Aviation

Investigator-in-charge:

Date:

Co-Investigator:

Date: