



## AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8356	
<b>Aircraft Registration</b>	<b>ZU-DMT</b>	<b>Date of Accident</b>	29 August 2007	<b>Time of Accident</b>	1210Z	
<b>Type of Aircraft</b>	Tecnam P92-S ECHO		<b>Type of Operation</b>	Training		
<b>Pilot-in-command Licence Type</b>		Student	<b>Age</b>	41	<b>Licence Valid</b>	Yes
<b>Pilot-in-command Flying Experience</b>		Total Flying Hours	36.9		Hours on Type	6.3
<b>Last point of departure</b>		Rand Aerodrome (FAGM)				
<b>Next point of intended landing</b>		Rand Aerodrome (FAGM)				
<b>Location of the accident site with reference to easily defined geographical points (GPS readings if possible)</b>						
Open field in Lambton (Germiston), GPS co-ordinates: S26° 15' 13.30" E028° 09' 51.4"						
<b>Meteorological Information</b>		<b>Temperature:</b> 22°C; <b>Wind:</b> 340°/12 kts; <b>Visibility:</b> +10 km				
<b>Number of people on board</b>	1 + 0	<b>No. of people injured</b>	0	<b>No. of people killed</b>	0	
<b>Synopsis</b>						
<p>On 29 August 2007, the pilot flew from Rand aerodrome (FAGM) on a training flight to the general flying area (GF), and then headed back to FAGM. While he was on final approach for runway 35, the engine stopped and he made a Mayday call to FAGM tower on frequency 118.7 MHz. The aeroplane was too far from the runway for a normal landing, and after unsuccessfully trying to restart the engine, the pilot executed a forced landing in an open field in Lambton. The aircraft collided with a rock before coming to a halt.</p> <p>The investigation found that the engine had stopped due to fuel starvation.</p>						
<b>Probable Cause</b>						
Engine stoppage due to fuel starvation.						
IARC Date				Release Date		



<b>AIRCRAFT ACCIDENT REPORT</b>
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**Name of Owner/Operator** : Aircraft Fractional Ownership Services (PTY) Ltd  
**Manufacturer** : Tecnam  
**Model** : P92-S Echo  
**Nationality** : South African  
**Registration Marks** : ZU-DMT  
**Place** : Lambton, Germiston  
**Date** : 29 August 2007  
**Time** : 1210Z

*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 29 August 2007, the pilot flew from Rand aerodrome (FAGM) on a training flight to the general flying area (GF), and then headed back to FAGM. While he was on final approach for runway 35, the engine stopped and he made a Mayday call to FAGM tower on frequency 118.7 MHz.. The aeroplane was too far from runway 35 for a normal landing, and after unsuccessfully trying to restart the engine, the pilot executed a forced landing in an open field in Lambton. The aircraft collided with a rock before coming to a halt.

1.1.2 The accident occurred in daylight.



**Figure 1.** The red arrow indicates the position of accident site relative to runway 35 at FAGM

## 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 was substantially damaged.

## 1.4 Other Damage

1.4.1 There was no other damage.

## 1.5 Personnel Information

Nationality	South African	Gender	Male	Age	41
Licence Number	*****	Licence Type	Student		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 July 2008				
Restrictions	Corrective lenses				
Previous Accidents	None				

## Flying Experience

Total Hours	36.9
Total Past 90 Days	6.3
Total on Type Past 90 Days	6.3
Total on Type	6.3

## 1.6 Aircraft Information

### Airframe

Type	Tecnam P92-S Echo	
Serial Number	806	
Manufacturer	Tecnam	
Year of Manufacture	2004	
Total Airframe Hours (at time of accident)	1 944.18	
Last MPI (Date & Hours)	27 July 2007	1 868.04
Hours since Last MPI	76.14	
Authority to Fly (Issue Date)	27 July 2007	
C of R (Issue Date) (Present Owner)	15 February 2006	
Operating Categories	Training	

### Engine

Type	Rotax 912 ULS
Serial Number	4428965
Hours since New	604.99
Hours since Overhaul	TBO not reached

### Propeller

Type	Tonni GT-Echo GT2/173/VRRFW101SRTC
Serial Number	1996
Hours since New	900.49
Hours since Overhaul	TBO not reached

## 1.7 Meteorological Information

Wind direction	340°	Wind speed	12 kts	Visibility	+10 km
Temperature	22°C	Cloud cover	None	Cloud base	None
Dew point	6°C				



## 1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigation instrumentation. None was reported unserviceable during the flight or prior to the accident.

## 1.9 Communications

1.19.1 The aircraft was equipped with very high frequency (VHF) equipment and none was reported unserviceable during the flight or prior to the accident.

## 1.10 Aerodrome Information

1.10.1 The accident occurred in an open field in Lambton, Germiston. The GPS coordinates were determined as S26° 15' 13.30" E028° 09' 51.4"

## 1.11 Flight Recorders

1.11.1 The aircraft was not equipped with any flight recorders. These were not required by regulations.

## 1.12 Wreckage and Impact Information

1.12.1 During a forced landing in an open field due to engine stoppage, the aircraft collided with a rock and sustained damage to the fuselage and wings.



**Figure 2.** Side view of the damaged aircraft after the forced landing.



**Figure 3.** Front view of the aircraft at the accident site.

### **1.13 Medical and Pathological Information**

1.13.1 None considered necessary or relevant to this accident.

### **1.14 Fire**

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

### **1.15 Survival Aspects**

1.15.1 The impact forces associated with the accident were relatively low. Although the windscreen broke, the cabin remained fairly intact and the pilot was shielded. The use of the safety harness also assisted in preventing injury. The accident was considered survivable.

### **1.16 Tests and Research**

1.16.1 During the on-site investigation, all the control surfaces were inspected and found intact except for accident damage. The airframe was also inspected and all the noted damage was found to be caused by the accident itself.

1.16.2 The assessment of the accident site and the propeller scratch marks indicated that the engine had not been running when the accident occurred.

1.16.3 The fuel lines were inspected for blockages, and it was ascertained that there were no obstructions and the fuel flowed freely. The filters were checked and found to be clean. The fuel was checked for contamination and none was found.

1.16.4 Both carburettors were opened and the bowls were found to be dry.

1.16.5 Below is a description of the Tecnam P92-S Echo fuel system as extracted from the aircraft maintenance manual:

*The fuel system (see Figure 4) consists of two metallic fuel tanks (1) located in the wing's leading edge after wing-fuselage union. Each fuel tank has 35 litres capacity (optional 45 litres). On the upper external is refuelling's cap (2), bay (3) for float (4) chamber and fuel tank bleed (5). Metal cover plate (6) may be removed for inspection of tank interior that assembly riveted and puttied with dope gasoline resistant. Return line discharged flange (7) of fuel system on the left fuel tank rear wall placed. At each fuel tank outlets are present (and serviceable by specific port holes) fuel mesh filters (8).*

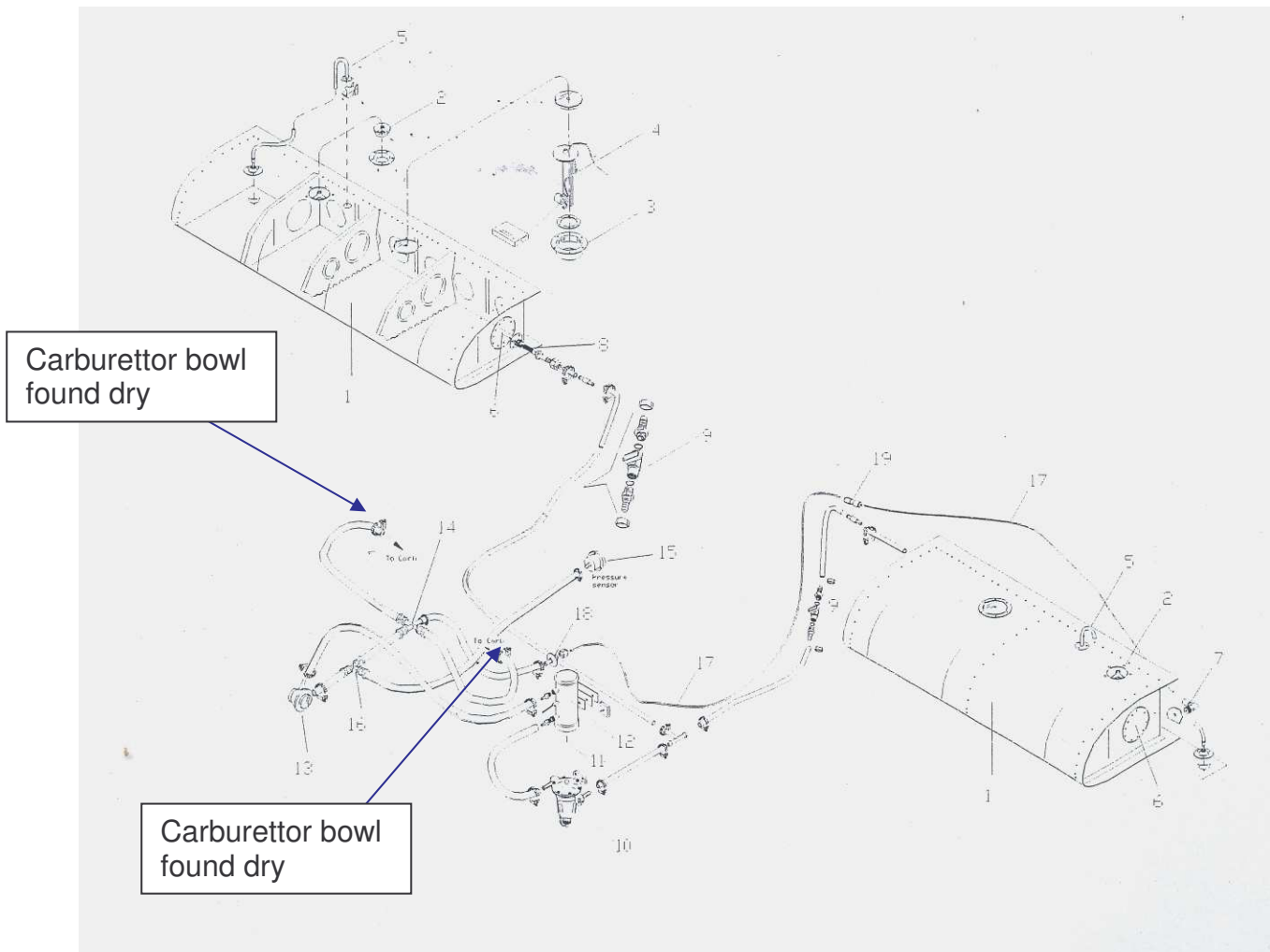


Figure 4. Tecnam P92-S Echo Fuel system



*Diaphragm mechanical pump (13), engine connected, stoking provide by means flexible pipelines come to the fuel tank and across cabin vertical rods, easily accessible, after disassembled plastic structural. On the same cabin vertical rods are circuit on-off valve (9), one for each fuel tank, easily accessible to the pilot. Circuit link with union tee in correspondence of the firewall, and then to drainage bowl (10), located left upper side in the engine bay, visible through an upper cowling port.*

*Downstream respect to the gascolator is located a fuel filter (11) built in an electric fuel pump (12) and then the mechanical (13). Mechanical pump feeds the fuel manifold (14); its left branch feeds the left carburettor. In derivation a tee connector (16) with restrictor feed the fuel pressure gauge (15). The rear branch of the "X" manifold (14) is connected to the fuel return line (17). In case of mechanical pump failure, electrical pump feed is available. Return tube (17) engage in pipe fitting (18) located on the fire-wall and then by means a thin transparent tube return at the LH fuel tank.*

- 1.16.6 The aircraft was recovered from the accident site to the approved maintenance facility at FAGM. The engine was put on a test bench, and the damaged propeller replaced. The engine was then started and performed satisfactorily at various power settings.

## **1.17 Organisational and Management Information**

- 1.17.1 This was a training flight and was conducted in compliance with applicable regulations and procedures.
- 1.17.2 The Aviation Training Organisation (ATO) under which the flight training was conducted was authorised to conduct the training and had an applicable approval.
- 1.17.3 The Aircraft Maintenance Organisation (AMO) that certified the last MPI on the aircraft prior to the accident had a valid AMO approval and had authority to perform maintenance on the aircraft type.

## **1.18 Additional Information**

- 1.18.1 None.

## **1.19 Useful or Effective Investigation Techniques**

- 1.19.1 None considered necessary or relevant to this accident.



## **2. ANALYSIS**

- 2.1 On 29 August 2007, the pilot flew from Rand Aerodrome (FAGM) on a training flight to the general flying area (GF), and then headed back to FAGM. While he was on final approach, the engine stopped and he made a Mayday call to FAGM tower. The aeroplane was too far from runway 35 for a normal landing and after unsuccessfully trying to restart the engine, the pilot executed a forced landing in an open field in Lambton. The aircraft collided with a rock before coming to a halt.
- 2.2 The pilot had 36.9 total flying hours and 6.3 hours on the aircraft type. He had not been involved in any previous incident or accidents and his flight medical was valid.
- 2.3 There was no evidence of maintenance anomalies or defects with the aircraft reported by the pilot prior to the flight. The aircraft had flown for 76.14 airframe hours since the last inspection, which had been certified without any problem.
- 2.4 During the investigation, the engine was bench-tested and performed satisfactorily, thus removing the possibility of a mechanical engine failure. Fuel contamination and fuel-line blockage were also eliminated during the on-site investigation, and it was found that there was adequate fuel in the tanks. Nonetheless, it was discovered that the engine had stopped due to fuel starvation.
- 2.5 From the fuel system diagram in Figure 4, it can be seen that the only factor that would prevent the fuel reaching the engine would be the closure of the circuit on/off valve (OFF position selected). The circuit on/off valve is easily accessible to the pilot in the cabin.

## **3. CONCLUSION**

### **3.1 Findings**

- 3.1.1 The pilot was licensed and qualified for the flight in accordance with existing regulations.
- 3.1.2 The maintenance records indicated that the aircraft was equipped and maintained in accordance with existing regulations and approved procedures.
- 3.1.3 The engine stopped due to fuel starvation.
- 3.1.4 The ATO was in possession of a valid certificate of approval as per regulatory requirements.
- 3.1.5 Weather was not considered a factor in this accident.

### **3.2 Probable Cause/s**

- 3.2.1 Engine stoppage due to fuel starvation.

#### **4. SAFETY RECOMMENDATIONS**

4.1 None.

#### **5. APPENDICES**

5.1 None.

Report reviewed and amended by Advisory Safety Panel: 29 September 2009.

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