



## AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8784	
<b>Aircraft Registration</b>	ZS-WXS	<b>Date of Accident</b>	15 May 2010		<b>Time of Accident</b>	0830Z
<b>Type of Aircraft</b>	Windlass trike		<b>Type of Operation</b>	Training		
<b>Pilot-in-command Licence Type</b>	Microlight		<b>Age</b>	45	<b>Licence Valid</b>	Yes
<b>Pilot-in-command Flying Experience</b>	Total Flying Hours	4477.9		Hours on Type	2254.8	
<b>Last point of departure</b>	Heidehof farm airstrip					
<b>Next point of intended landing</b>	Heidehof farm airstrip					
<b>Location of the accident site with reference to easily defined geographical points (GPS readings if possible)</b>						
Heidehof farm airstrip at Gansbaai in Hermanus in the Western Cape Province. GPS: S34°37.362' E019°29.757'						
<b>Meteorological Information</b>	CAVOK weather conditions were reported at the time of the accident.					
<b>Number of people on board</b>	1 + 1	<b>No. of people injured</b>	1	<b>No. of people killed</b>	1	
<b>Synopsis</b>						
<p>On 15 May 2010, the instructor and the student were engaged in training flight exercises when the accident occurred. After successful steep turns and stall exercises in the general flying area with the intention of returning to Heidehof farm airstrip, the engine failed. It was reported that the engine failure occurred during the left-hand climbing turn from the general flying area.</p> <p>The student pilot immediately initiated a turn towards the available open field, but did not have sufficient height and time and elected to land on a farm road next to the fence. During the flare the right-hand wing tip collided with a bush and the aircraft pitched nose down into the ground and the aircraft groundlooped. The aircraft was destroyed during the impact sequence.</p> <p>The student pilot sustained fatal injuries. The instructor sustained serious injuries.</p> <p>The investigation concluded that the single ignition coil had failed in flight, causing the engine to stop.</p>						
<b>Probable Cause</b>						
<p style="text-align: center;">Unsuccessful forced landing following an engine failure due to a damaged earth wire on the ignition coil</p>						
IARC Date				Release Date		



## AIRCRAFT ACCIDENT REPORT

**Name of Owner/Operator** : Albert A D & Marais H F Partnership  
**Manufacturer** : Solo Wings CC  
**Model** : Windlass Trike  
**Nationality** : South African  
**Registration Marks** : ZS-WXS  
**Place** : Heidehof farm  
**Date** : 15 May 2010  
**Time** : 0830Z

*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 The instructor reported that on 15 May 2010 at 0745Z, he and the student pilot took off from Heidehof airstrip to the general flying area. On arrival in the general flying area they climbed to 2000 feet above ground level for the following exercises: steep turns to the left and right, medium turns to the left and right, stalls, power on and off and forced landing from 1000 feet above ground level.
- 1.1.2 After they had completed exercises in the general flying area (GFA), they returned to Heidehof airstrip where they practised forced landing from 1500 feet above ground level with a spot landing at the threshold of the runway and touch and go exercises. They then returned to the general flying area where the student pilot demonstrated precautionary landings at an open field in the area.
- 1.1.3 On successful completion of the precautionary landing sequence at 20 feet above ground level, with the throttle at full power, a left hand climbing turn was performed. At an estimated 200 feet above ground level, after completing the turn, they experienced a loss of power followed by an engine failure.



1.1.4 The student pilot immediately initiated a left turn towards the open field but did not have sufficient height and time and elected to land on a farm road next to the fence. During the flare the right-hand wing tip collided with a bush and the aircraft pitched nose down into the ground and the aircraft ground looped. The aircraft was destroyed during the impact sequence. The accident happened during daylight conditions.

## 1.2 Injuries to Persons

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

## 1.3 Damage to Aircraft

1.3 The aircraft was destroyed during the impact.

## 1.4 Other Damage

1.4.1 There was no other damage.

## 1.5 Personnel Information (Instructor)

Nationality	South African	Gender	Male	Age	45
Licence Number	*****	Licence Type	Microlight		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Instructors				
Medical Expiry Date	31 October 2010				
Restrictions	None				
Previous Accidents	Yes				

NB: On 28 July 2006, the pilot experienced a loss of directional control upon landing in gusty wind conditions. On 09 November 2006, the aircraft encountered a bird strike and the pilot performed a forced landing. In both cases involved private operations.

Flying Experience:

Total Hours	4477,9
Total Past 90 Days	16,8
Total on Type Past 90 Days	16,8
Total on Type	2254,8

## Personnel Information (Student)

Nationality	South African	Gender	Male	Age	51
Licence Number	*****	Licence Type	Microlight		
Licence valid	No	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 May 2009				
Restrictions	None				
Previous Accidents	Yes, but it had no relevant to this accident.				

Flying Experience:

Total Hours	456,5
Total Past 90 Days	3,0
Total on Type Past 90 Days	3,0
Total on Type	342,6

## 1.6 Aircraft Information

### Airframe:

Type	Windlass Trike	
Serial Number	WL 303	
Manufacturer	Solo Wings CC	
Date of Manufacture	1991	
Total Airframe Hours (At time of Accident)	540,0	
Last Annual Inspection (Date & Hours)	19 April 2010	542.5
Hours since Last Annual Inspection	Unknown	
Private Operation Authority to Fly (Issue Date by RAASA)	20 August 2009	
C of R (Issue Date) (Present owner)	13 April 2006	
Operating Categories	Private Authority to Fly	

**NOTE:** According to the aircraft flight folio as on 24 April 2010, the aircraft had a total of 543,6 airframe hours. However, on-site observation showed that the Hobbs meter had a total of 540 airframe hours. The exact total airframe hours and the total airframe hours since the last inspection at the time of the accident could not be determined conclusively.

### Engine:

Type	Rotax 503
Serial Number	3867593
Hours since New	540
Hours since Overhaul	TBO not reached

### Propeller:

Type	Warp drive
Serial Number	C8873
Hours since New	540
Hours since Overhaul	TBO not reached

## 1.7 Meteorological Information:

The following weather report was provided by the South African Weather Services (SAWS). There was no official observation at the Heidehof farm airstrip. The official weather report available closest to this place at the time of accident is that of Cape Town International Airport. The official report from Cape Town by 0830Z shows a visibility of more than 10000 kilometres. The temperature and dew point at the time suggest dry conditions closer to the ground. Light south-easterly winds were measured at the time.

Wind direction	170°	Wind speed	05 Knots	Visibility	10 km
Temperature	14°C	Cloud cover	NSC	Cloud base	Nil
Dew point	08°C				

## **1.8 Aids to Navigation**

1.8.1 The aircraft was equipped with standard navigation instrumentation as per manufacture design. No instruments were reported unserviceable during the flight or prior to or the accident.

## **1.9 Communications.**

1.9.1 The aircraft was equipped with very high frequency (VHF) radio, which was not reported unserviceable during the flight or prior to the accident.

## **1.10 Aerodrome Information**

1.10.1 The accident occurred on the farm called Heidehof at Gansbaai next to the Pearly beach suburb. The GPS co-ordinates were determined as S34°37.362' E019°29.757'

## **1.11 Flight Recorders**

1.11.1 The aircraft was not fitted with a Cockpit Voice Recorder (CVR) or a Flight Data Recorder (FDR) and neither was required by regulations to be fitted to this type of aircraft.

## **1.12 Wreckage and Impact Information**

1.12.1 Aircraft structure:

- The aircraft was found intact but lying right side up. The aircraft had slewed around and was facing in the direction it had come from.
- The front section of the keel tube and the pylon had broken off .

## **1.13 Medical and Pathological Information**

1.13.1 The findings of the post mortem report were as follows: Head injury with soft tissue injuries on the face; skull base fractures with bilateral smear; subdural , subarachnoid and intraventricular haemorrhage; blood aspiration; cause of death:. head injuries.

1.13.2 The toxicological report was still outstanding at the time of compiling this report. Should any of the results have a bearing on the circumstances leading to this accident, it will be treated as new evidence which will necessitate the reopening of this investigation.

#### 1.14 Fire

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

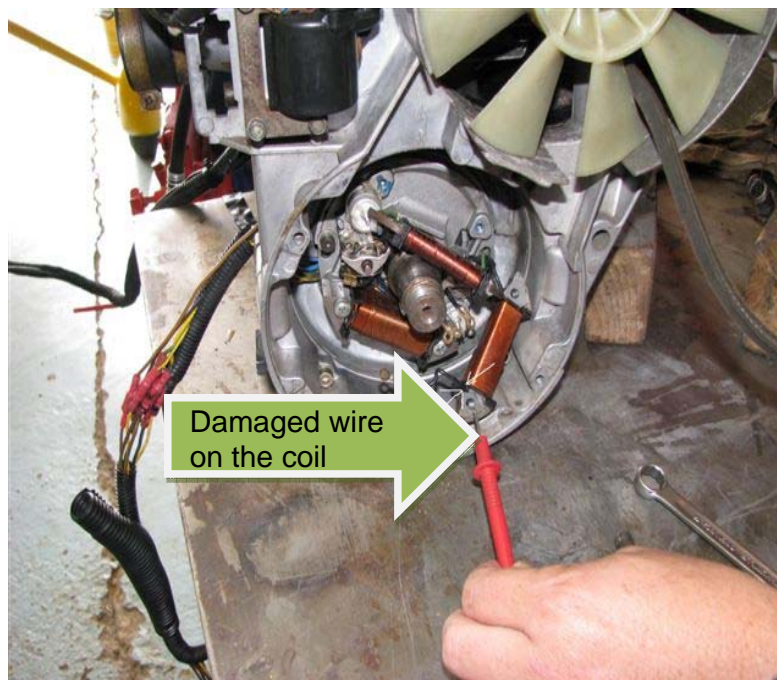
#### 1.15 Survival Aspects

1.15.1 Due to the high angle of impact, the impact forces and the damage to the aircraft, the accident was considered unsurvivable. The local fire services arrived at the accident site within minutes, but found that the student pilot had already died.

#### 1.16 Tests and Research

1.16.1 The engine was recovered to an approved maintenance organisation for inspection to determine what had caused the failure. The engine was inspected for any obvious outside damage, but nothing abnormal was found.

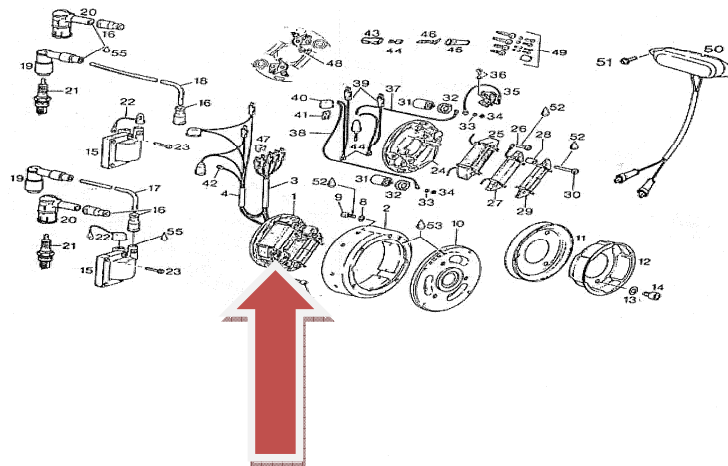
1.16.2 A compression test was carried out by cranking the engine and found to be within the limits. During the compression test the engine was rotating properly with the self-starter and showed no signs of damage when cranking the engine.



Damaged wire on the coil

1.16.3 No spark was noticed when cranking the engine. On removal of the coil, it was noticed that the earth wire on the ignition coil was not making a connection inside the coil. It was concluded that the single ignition coil failed in flight, causing the engine to stop.

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<http://www.ultralightnews.ca/rotax503/parts/images/503boschignition.jpg>

5/27/2010

Schematic structure showing the electrical wiring of the engine

## 1.17 Organisational and Management Information

1.17.1 This was a flight test training flight (licence renewal) which was within the scope of accreditation and approval of the operator.

1.17.2 At the time and date of the accident, the training school (ATO) had a valid accreditation certificate which was issued on 19 January 2010 and would expire on 09 November 2010.

1.17.3 The last audit inspection at the ATO was conducted on 17 December 2009 and no corrective action requirement was identified during the audit.

## 1.18 Additional Information

1.18.1 It was initially reported that while close to the ground they noticed that the ground was muddy and soft and attempted to turn away. The microlight then clipped the trees (plus minus 3,5 metres high) and dived into the ground.



- 1.18.2 The instructor reported that he did not intervene because the student was in control of the aircraft at the time.
- 1.18.3 The aircraft engine manual (Engine problem isolation charts) states that if the engine suddenly stops after running: Check C.D. unit/coil and if defective replace with a new one.
- 1.18.4 The maintenance inspections do not require inspection of the coil.

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

- 1.19.1 None

## **2. ANALYSIS**

- 2.1 The instructor was correctly licensed and was the holder of valid medical certificate; there was no record of any anomaly that could have affected him during the accident or which could have contributed to the cause of the incident.
- 2.2 The prevailing weather conditions at the time of the incident were considered not to be a factor in this incident. The surface wind was reported to be light at the time of the incident.
- 2.3 The aircraft was serviceable when certified for the flight and no record of any malfunction or defect was recorded that could have contributed to or caused the incident.
- 2.4 On 15 May 2010, the instructor and the student were engaged in a training flight when the accident occurred. After successful exercises in the general flying area with the intention of returning to the Heidehof farm airstrip the engine failed. It was reported that the engine failure occurred during the left-hand climbing turn from the general flying area.
- 2.5 The student pilot immediately initiated a turn towards the open field, but did not have sufficient height and time and elected to land on a farm road next to the fence. During the flare the right-hand wing tip collided with a bush and the aircraft pitched nose down into the ground the aircraft groundlooped.
- 2.6 No spark was noticed when cranking the engine. On removal of the coil, it was noticed that the earth wire on the ignition coil was not making a connection inside the coil. It was concluded that the single ignition coil failed in flight, causing the engine to stop.

## **3. CONCLUSION**

### **3.1 Findings**

- 3.1.1 The instructor was properly licensed and his medical certificate was valid at the time of the accident.

- 3.1.2 This was a training flight for the purpose of renewing the licence.
- 3.1.3 The student pilot was reported to be in control of the aircraft when the accident happened.
- 3.1.4 The instructor reported that he could not take control because it was clear that the student was handling the aircraft correctly or was not struggling to control the aircraft after the engine failure.
- 3.1.5 The aircraft had a valid certificate of registration and a valid private authority to fly.
- 3.1.6 The aircraft was serviceable when dispatched for the flight and no snag or fault was reported prior to the flight.
- 3.1.7 The engine was recovered to an approved maintenance organisation for inspection to determine what had caused the failure. The engine was inspected for any obvious outside damage, but nothing abnormal was found.
- 3.1.8 A compression test was carried out by cranking the engine and found to be within the limits. During the compression test the engine was rotating properly with the self-starter and showed no signs of damage when cranking the engine.
- 3.1.9 No spark was noticed when cranking the engine. On removal of the coil, it was noticed that the earth wire on the ignition coil was not making a connection inside the coil. It was concluded that the single ignition coil failed in flight, causing the engine to stop.
- 3.1.10 Fine weather conditions were reported at the time of the accident. The surface wind was reported as 170 degrees at 05 knots.

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

- 3.2.1 Unsuccessful forced landing following an engine failure due to a damaged earth wire on the ignition coil

## **4. SAFETY RECOMMENDATIONS**

- 4.1 None.

## **5. APPENDICES**

- 5.1 None.

Report reviewed and amended by the Advisory Safety Panel 16 November 2010.

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