AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:		CA18/2/3/8746	
Aircraft Registration	ZS-PNM	**Date of Accident**	03 February 2010			**Time of Accident**	0420Z
Type of Aircraft	Cessna 206 Stationair		**Type of Operation**		Private		
Pilot-in-command Licence Type		Private Pilot Aeroplane	**Age**	43	**Licence Valid**		Yes
Pilot-in-command Flying Experience		Total Flying Hours	203.8		Hours on Type		unknown
Last point of departure	Krugersdorp Aerodrome (FAKR) Gauteng						
Next point of intended landing	Wonderboom Aerodrome (FAWB) Gauteng						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Magaliesberg Ridge east of Hartbeespoort Dam with co-ordinates S 25° 41' 12.64" E 28°00' 05.63"; elevation 5169' AMSL							
Meteorological Information	Temperature 15 °C; dew point 15 °C; surface wind 030°T/05 knots; cloud cover OVC with cloud on the ground; visibility nil in the cloud						
Number of people on board	1 + 1	**No. of people injured**	0	**No. of people killed**	2		

Synopsis

The pilot accompanied by another pilot (Instructor) departed from Krugersdorp Aerodrome for a private flight to Wonderboom Aerodrome for maintenance work (mandatory periodic inspection). En route to Wonderboom, the aircraft collided with the Magaliesberg Mountain. A fire erupted that destroyed the aircraft.

The weather conditions reported in the area were instrument metrological conditions (IMC), and from the information provided by witnesses it appears that the aircraft was flying in adverse weather conditions at the time of the accident.

According to another witness, the mountain was covered in mist and fog, the mist reaching down to the tree line of the mountain.

Both occupants were fatally injured.

Probable Cause

The aircraft flew in adverse weather conditions which resulted in the pilot flying into the mountain (CFIT).

IARC Date		Release Date	

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator	**:** Marshall Fowler (South Africa)(Pty) Ltd
Manufacturer	**:** Cessna Aircraft Company
Model	**:** Cessna T206H
Nationality	**:** South African
Registration Marks	**:** ZS-PNM
Place	**:** Magaliesberg Mountain range, east of Hartebeespoort Dam
Date	**:** 03 February 2010
Time	**:** 0420Z

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 03 February 2010, the pilot and part owner of the aircraft, accompanied by an instructor were involved in a private flight from Krugersdorp Aerodrome (FAKR) to Wonderboom Aerodrome (FAWB). The purpose of the flight was to position the aircraft for maintenance involving a 50 hour oil change. Weather conditions at the departure airport were reported as acceptable for VFR flights.

1.1.2 En route to FAWB, the aircraft impacted terrain in the Magaliesberg Mountain range and a post-impact fire erupted that destroyed the aircraft. Both occupants were fatally injured.

1.1.3 The weather conditions reported in the accident area were instrument meteorological conditions (IMC). The information received from the witness's statement at the time of the accident suggests that the aircraft was flying in adverse IMC conditions prior to the accident. According to the witnesses in the surrounding area, the mountain was covered in mist and fog, the mist reaching down to the tree line of the mountain.

1.1.4 According to a witness (who is also a pilot), he heard an aircraft passing over his house around 0420Z. He stated that he heard an aircraft with a constant RPM engine sound but about 2 seconds later heard an increase in RPM followed by the

sound of an impact. He stated that prior to the increase in RPM sound, the engine sounded perfectly normal and it did not sound as if there were any problems. He called FAWB ATC, but there was no contact as the station is only manned from 0500Z. He then called Johannesburg ATC to report the accident.

1.1.5 Another witness, (a pilot as well), stated that it took him about 20 minutes on foot before he could locate the wreckage on the side of the mountain.

1.1.6 He stated that he could not see further than 10 metres because of the mist, but located the wreckage and found it burning. He immediately directed the police to where the wreckage was, but the police could not fly up the mountain because of the mist. The witness stated that the mist cleared at about 08h30 local time and at about 09h00 (local time) the Police Airwing located the wreckage.

1.1.7 The accident occurred in daylight conditions with mist and foggy conditions reported in the accident location.

1.1.8 According to available information, the pilot was accompanied by an instructor to monitor the flight, as the pilot although rated did not feel comfortable flying the aircraft on his own due to his relative low hours on type.

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed by post-impact fire.

Figure 1: Showing location of the wreckage on the Magaliesberg Mountain

1.4 Other Damage

1.4.1 No other damage was caused.

1.5 Personnel Information

1.5.1 Pilot in Command

Nationality	South African	Gender	Male	Age	43
Licence number	**********	Licence type	Private pilot		
Licence valid	Yes	Type endorsed	Yes		
Ratings	Night rating; flight test				
Medical expiry date	31/07/2010				
Restrictions	None				
Previous accidents	None				

Flying Experience

Total hours	203.8
Total past 90 days	2.1
Total on type past 90 days	2.1
Total on type	Unknown

1.5.2 Instructor

According to available information, the pilot was accompanied by an instructor to monitor the flight, as the pilot, although rated, did not feel comfortable flying the aircraft on his own due to his relative low hours on type.

Nationality	South African	Gender	Male	Age	59
Licence number	**********	Licence type	Commercial		
Licence valid	Yes	Type endorsed	Yes		
Ratings	Night rating, instrument rated				
Medical expiry date	31/03/2010				
Restrictions	None				
Previous accidents	None				

Flying Experience

Total hours	±5660.3
Total past 90 days	±173.1
Total on type past 90 days	Unknown
Total on type	Unknown

Note: The instructor's logbooks were not readily available and the hours on type could therefore not be established but is not considered to be a factor in the cause of the accident.

1.6 Aircraft Information

1.6.1 Airframe

Type	Cessna T206H	
Serial number	T20608447	
Manufacturer	Cessna Aircraft Company	
Date of manufacture	2004	
Total airframe hours (at time of accident)	±645.2 [Note: Flight Folio hours]	
Last MPI (date & hours) [From Logbook]	25/05/2009	532.9
Hours since last MPI	54.6 [Extracted from Flight Folio]	
C of A (issue date)	10/06/2005	
C of R (issue date) (present owner)	20/11/2007	
Operating categories	Standard	

1.6.2 Engine

Type	Lycoming TIO-540 AJ1A
Serial number	L-11521-61A
Hours since new	646.2
Hours since overhaul	Not yet reached

1.6.3 Propeller

Type	Mc Cauley B3D36C432
Serial number	040044
Hours since new	646.2
Hours since overhaul	Not yet reached

Note: The aircraft was imported into South Africa as a used aircraft and for issuance of a South African Certificate of Airworthiness a Mandatory Periodic Inspection (MPI) was performed. New logbooks were opened at that time. Subsequent to this it would appear that flight folio hour entries were based on Hobbs meter readings, whilst logbook hours for MPI purposes were based on Tachometer readings. This resulted in a significant split in recorded hours of utilization between the Flight Folio and logbook hours. The Tachometer records were not available for verification. In general Tachometer readings are lower than Hobbs meter readings.

1.7.1 Meteorological Information

1.17.2 The witnesses stated that in the vicinity of the accident site, they could not see further than 10 metres and that the mist reached down to the tree line of the mountain.

1.17.2 A meteorological report as received from the South African Weather Services is listed below.

Wind direction	030ºTN	Wind speed	05 knots	Visibility	Nil in the cloud
Temperature	15 ºC	Cloud cover	OVC	Cloud base	-
Dew point	15 ºC				

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigation instruments as per manufacturer's design. None were reported unserviceable prior to or during the flight.

1.9 Communications

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

1.9.2 A transmission from the aircraft was recorded at 0417Z on FAWB Tower frequency of 120.6MHz. At the time of the pilot transmission, FAWB Tower was unmanned. This appears to be the last known communication from the aircraft and was as follows:

"Wonderboom Traffic Papa November Mike inbound from Hotel Bravo Victor (HBV) 5000 feet eh we'll report close to Wonderboom again…..Papa November Mike"

1.9.3 By means of a voice identification, by one of the next-of-kin, it was established that this transmission was made by the instructor.

1.10 Aerodrome Information

1.10.1 The accident occurred in mountainous terrain on the Magaliesberg Ridge near the Hartebeespoort Dam, 3 nautical miles east of the red and white radio mast, at an elevation of 5169 feet AMSL (GPS co-ordinates S 25° 41' 12.64" E 28°00' 05.63").

Figure 2: Showing where the wreckage impacted the side of the mountain

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 The aircraft impacted the mountainside at an angle with a left wing tip impacting first, then the nose section and right wing, followed by eruption of a post-impact fire.

1.12.2 The maximum elevation of the Magaliesberg Mountain in the area of the accident is 5319 feet and the aircraft impacted the mountain at 5165 feet.

1.13 Medical and Pathological Information

1.13.1 The pilot and instructor held a valid class 2 and class 1 aviation medical certificate respectively. The medical certificate had no medical restriction endorsed.

1.13.2 The post-mortem and blood toxicology reports were 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 that will necessitate the reopening of this investigation.

1.14 Fire

1.14.1 A post-impact fire erupted. The source of the fire was determined to be the fuel tank rupturing, but the source of the ignition could not be determined.

1.15 Survival Aspects

1.15.1 According to the witness, he could not see further than 10 metres because of the mist, but located the wreckage and found it burning. He immediately directed the police to the wreckage, but the police could not fly up the mountain because of the mist. The witness stated that the mist cleared at about 0630Z and at about 0700Z the Police Airwing was able to locate the wreckage.

1.15.2 The high impact forces associated with this accident led to the destruction of the cabin and the post-impact fire destroyed the aircraft. The pilot and passenger were exposed to high impact forces and fire during the accident sequence. The accident is not considered as to have been survivable.

1.16 Tests and Research

1.16.1 Based on the witnesses' accounts, tests and research were not considered necessary as the witnesses stated that the engine was running and operating

normally at constant rpm. Another witness confirmed that the mountain was misty and foggy.

1.17 Organisational and Management Information

1.17.1 This was a private flight.

1.17.2 The aircraft maintenance organisation (AMO) that certified the last mandatory periodic inspection (MPI) on the aircraft prior to the accident had a valid approved certificate and was correctly licensed for the type.

1.17.3 Record keeping and entries into the Flight Folio and logbooks were based on different sources and do not appear to have met the intent of the applicable Civil Aviation Regulations 1997 and associated Civil Aviations Technical Standards.

1.18 Additional Information

1.18.1 None.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1 The aircraft took off from FAKR to FAWB for the purpose of maintenance involving a 50 hour oil change. Weather conditions at the departure airport were reported as acceptable for VFR flights.

2.2 En route to FAWB, the aircraft collided with the Magaliesberg Mountain and a post-impact fire erupted that destroyed the aircraft. Both occupants were fatally injured.

2.3 The weather conditions reported for the area at the time of the accident and confirmed by witnesses in the vicinity was that the mountain was covered in mist and that it was foggy. The mist reached down to the tree line, and one witness stated that he could not see more than 10 meters when he was climbing the mountain towards the accident site. This suggests that the aircraft was flying in adverse weather conditions (instrument meteorological conditions) prior to the accident.

2.4 The pilot and the instructor held valid licences with appropriate ratings for the aircraft type, and held valid medical certificates.

2.5 The aircraft was maintained by a valid AMO and no defects were found that could have led to the accident. The purpose of the flight appears to have been to position the aircraft for a 50 hour oil change. However, the way in which hours flown were being recorded, were found to be far from satisfactory and confusing.

2.6 The last known and recorded transmission from the aircraft to the unmanned station at FAWB was made by the instructor. The transmission on frequency 120,6 MHz

and indicated that the aircraft was flying at 5000 feet inbound from Hotel Bravo Victor (HBV) and routing to FAWB. It also included the intent to report again once closer to FAWB.

2.7 According to available records, the pilot was not instrument rated, but the instructor was. It is not known who made the decision and who was actually flying when the aircraft was flown into IMC. In the general aviation environment it is generally accepted by pilots that when an instructor is on board, the instructor will take command should difficulties be encountered. This aspect is further complicated by the request of the pilot for the instructor to accompany him due to his low hours on type.

3. CONCLUSION

3.1 Findings

3.1.1 This was a private flight.

3.1.2 The aircraft impacted with the Magaliesburg mountain range.

3.1.2 The pilot was the holder of a valid private pilot (aeroplane) licence for the aircraft type and with a night rating endorsed on his licence. He was the holder of a valid class 2 aviation medical certificate with no restrictions with an expiry date of 31 July 2010.

3.1.3 The instructor was the holder of a valid commercial pilot licence with an instrument rating for the aircraft type.

3.1.4 The aircraft had a valid Certificate of Registration and a valid Certificate of Airworthiness. According to available records the aircraft was maintained by an approved aircraft maintenance organisation and there were no recorded defects prior to or during the accident.

3.1.5 The weather was reported to be misty and foggy. The witnesses who live in the vicinity stated that the mist reached down to the tree line.

3.1.6 It could not be established who was actually flying or who made the decision to proceed with the flight in IMC conditions.

3.2 Probable Cause/s

3.2.1 Controlled flight into terrain (CFIT) in IMC.

4. SAFETY RECOMMENDATIONS

4.1 It is recommended that the Director of Civil Aviation requires:

The Airworthiness Department of the SACAA to review the adequacy and

clarity of the relevant CARs and CATs to ensure the appropriate accurate recording of actual flight times applicable to aircraft utilization.

5. APPENDICES

5.1 None.

Report reviewed and amended by the Advisory Safety Panel on 20 July 2010

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