AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8196		
Aircraft Registration	**ZS-EXM**	**Date of Accident**	19 October 2006		**Time of Accident**	0630Z	
Type of Aircraft	Piper PA-28-140		**Type of Operation**		Domestic Charter Flight		
Pilot-in-command Licence Type	Commercial		**Age**	24	**Licence Valid**	Yes	
Pilot-in-command Flying Experience	Total Flying Hours		865.6		Hours on Type	359.75	
Last point of departure	Kimberley Aerodrome (FAKM)						
Next point of intended landing	Kimberley Aerodrome (FAKM)						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Farm Spitskop, approximately 15 km from Petrusburg on the R48 road towards Kimberley. (GPS: S29˚06˝ E025˚16˝).							
Meteorological Information	**Wind speed:** 020/15 kts; **Temperature:** 19℃; **Clouds:** scattered clouds, with a base of 3 000 ft						
Number of people on board	1 + 1	**No. of people injured**	0	**No. of people killed**	2		

Synopsis

The pilot, accompanied by a surveyor, departed from Kimberley aerodrome on a local flight to inspect high-tension wires in the area. According to an eyewitness, the aeroplane flew at low level over a farm and made a right-hand turn. It then suddenly descended and crashed. The aircraft skidded for approximately 200m from the point of first impact before colliding with a tree and rolling over. The occupants were thrown out of the aircraft.

Both pilot and passenger were fatally injured and the aeroplane was destroyed during the accident sequence.

The investigation concluded that the aircraft stalled while making a low-level turn, the pilot was unable to recover in time, and the aeroplane crashed.

Probable Cause

The aircraft stalled during a turn.

Contributing factors:

- Low flying
- Windy conditions

IARC Date		Release Date	

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Bevrick Air (PTY) Ltd
Manufacturer : Piper Aircraft Company (PTY) Ltd
Model : PA-28-140
Nationality : South African
Registration Marks : ZS-EXM
Place : Spitskop farm
Date : 19 October 2006
Time : 0630Z

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

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1. FACTUAL INFORMATION

1.1 History of Flight

1.1.1 On 19 October 2006, the pilot, accompanied by a surveyor, aircraft departed from Kimberley aerodrome at 0345Z for a VFR (visual flight rules) charter flight to inspect high-tension wires in the area.

1.1.2 Approximately two-and-a half hours later, an eyewitness saw the aircraft flying at low level over a farm and then turn as if the pilot were looking at something on the ground. Then the aeroplane suddenly fell out of the sky and crashed.

1.1.3 The aircraft bounced and skidded for approximately 200 metres from the point of first impact before colliding with a tree and rolling over. The occupants were thrown out of the aeroplane, which was destroyed during the accident sequence.

1.1.4 Windy conditions were reported at the time of the accident by the farm owner and workers. The accident happened in daylight conditions.

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 forces.

Figure 1. The wreckage of ZS-EXM.

1.4 Other Damage

1.4.1 There was no other damage.

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	24
Licence Number	**********	Licence Type	Commercial		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Instructor Grade 3 and Night Rating				
Medical Expiry Date	31 May 2007				
Restrictions	Corrective lenses				
Previous Accidents	Fuel exhaustion on C150, 6 December 2000				

Flying Experience:

Total Hours	865.6
Total Past 6 Months	339.9
Total on Type Past 12 Months	384.5
Total on Type	359.75

1.5.1 The pilot's logbook was not located during the investigation. The following hours were as reflected on the application for renewal as on 1 June 2006. The pilot had a total of 865.6 flying hours at the time of his last renewal.

1.6 Aircraft Information

Airframe

Type	Piper	
Serial Number	28-22497	
Manufacturer	Piper Aircraft Company (PTY) Ltd	
Date of Manufacture	22 September 1970	
Total Airframe Hours (at time of accident)	7 698.24	
Last MPI (Date & Hours)	24 August 2006	7 628.44
Hours since Last MPI	69.8	
C of A (Issue Date)	7 April 1981	
C of R (Issue Date) (Present Owner)	30 August 2004	
Operating Categories	Standard	

NB: According to available records, the aircraft had flown a total of 67.3 airframe hours from the previous last MPI until 18 October 2006. The operator reported that the aircraft had been operated for approximately 2.5 flying hours on the day of the accident. Therefore the aircraft had operated for approximately 69.8 flying hours since the last MPI was carried out. This estimation also applies to engine hours since overhaul.

Engine

Type	Lycoming 0320-E2A
Serial Number	LI3588-27
Hours since New	Unknown
Hours since Overhaul	1 523.24

Propeller

Type	Sensenich M74 DM054
Serial Number	K7115
Hours since New	Unknown
Hours since Overhaul	Date of overhaul 5 May 2005

1.7 Meteorological Information

1.7.1 The information reflected below was obtained from an official weather report issued by the South African Weather Services (SAWS).

Wind direction	020˚	Wind speed	15 kts	Visibility	Unknown
Temperature	19˚C	Cloud cover	Few clouds	Cloud base	3 000 ft
Dew point	Un-known				

1.7.2 Surface analysis – A high pressure system was south-east of the country extending into the eastern part of the country, with a trough of low pressure over the western part of the country. Isolated thunderstorms were present over the north-eastern part of the country.

1.7.3 Upper Air Analysis – At 500 hpa a high pressure system was present north of the country.

1.7.4 Weather conditions in the vicinity of the accident – On the satellite photograph, thunderstorms can be seen over the NE part of the country and also in the Mafikeng area. There are very few clouds between Bloemfontein and Kimberley.

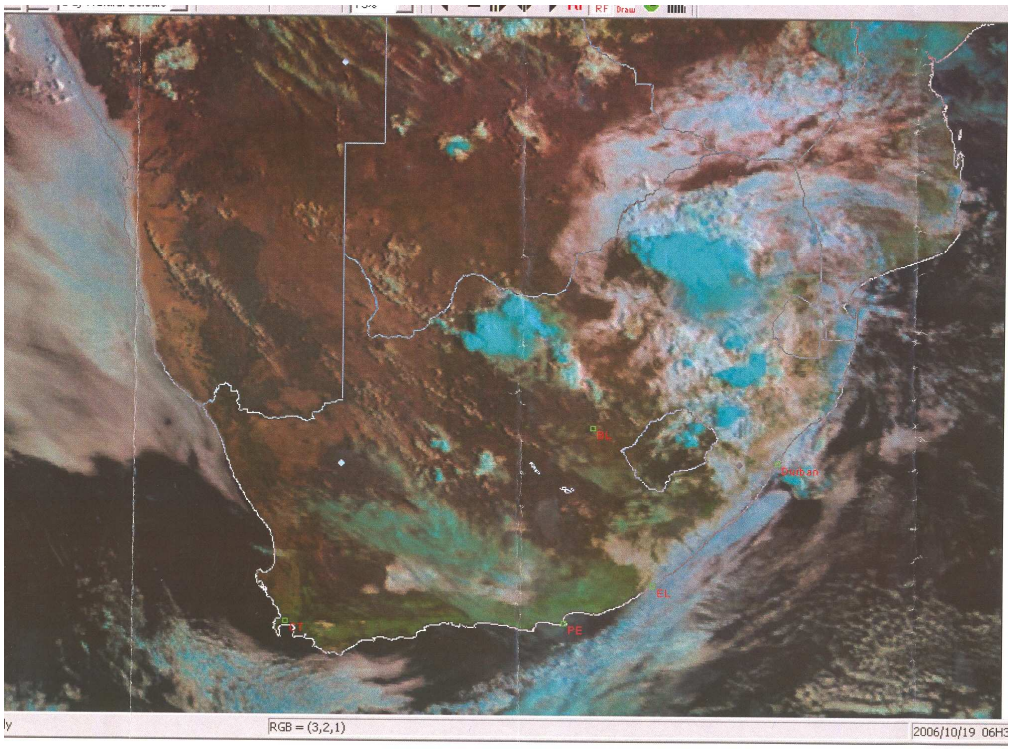

Figure 2. Satellite image of SA weather.

1.8 Aids to Navigation

1.8.1 The aircraft was fitted with standard navigational aids certified for this type of aircraft and there was no record of reports of failures on the navigational aids prior to the accident.

1.9 Communications

1.9.1 The aircraft was fitted with standard communication equipment for the aircraft type and there was no any report of failures of the communication system prior to the accident.

1.10 Aerodrome Information

1.10.1 The accident happened in an open area on the farm Spitskop, approximately 15 km from Petrusburg on the R48 road towards Kimberley (GPS: S29˚06˝ E025˚16˝).

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with a cockpit voice recorder (CVR) or a flight data recorder (FDR). It was not a regulatory requirement for the aircraft to be fitted with such recorders.

1.12 Wreckage and Impact Information

1.12.1 The aircraft was reported as flying at low level over the farm. It then made a left-hand turn as if the pilot were looking at something on the ground, and suddenly descended and crashed.

1.12.2 The aircraft bounced and skidded for approximately 200 metres from the point of first impact. It then collided with a tree and rolled over. The occupants were thrown out and the aeroplane was destroyed during the accident sequence. It could not be established if the occupants had strapped in.

Figure 3. The first impact mark.

Figure 4. The bush which was struck by the aircraft.

1.12.3 All control cables and surfaces were found properly attached, serviceable and in good order. On-site investigation made at the wreckage site on the continuity of the controls to the ailerons, rudder and elevator showed that there had been no disconnection in any of the three primary flying controls prior to the impact.

1.13 Medical and Pathological Information

1.13.1 Post-mortem examination results were not available at the time of compiling this report. Should any of these, once received, indicate that medical aspects contributed to or affected the performance of the pilot, this will be considered as new evidence and the investigation will be re-opened.

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 non-survivable as the entire fuselage was destroyed during the impact.

1.16 Tests and Research

1.16.1 All control cables and surfaces were found properly attached, serviceable and in good order. On-site investigation made at the wreckage site on the continuity of the controls to the ailerons, rudder and elevator showed that there had been no disconnection in any of the three primary flying controls prior to the impact.

1.16.2 The engine was removed from the wreckage and taken to an approved maintenance facility which had extensive experience on the engine type. The inspection was conducted in the presence of the SACAA investigators. Visual inspection was carried out and no anomalies were observed. The strip inspection and examination included internal mechanical inspection. The AMO concluded that apart from the damage caused by the impact, nothing abnormal was found and the engine appeared to have been serviceable prior to the impact.

1.17 Organisational and Management Information

1.17.1 This was a domestic charter flight.

1.17.2 The maintenance organisation had a valid certificate of maintenance at the time of the accident. The last audit prior to the accident had been carried out on 20 September 2006 and no major findings were identified.

1.17.3 The operator (Part 135) had a valid aircraft operating certificate (AOC-CAA/N199D) at the time of the accident which had been issued on 7 September 2006. The aircraft registration was endorsed on the certificate. The operator also had a Class II Air Service Licence (N199D) which had been issued on 23 March 2005.

1.17.4 The operator was a flight academy and charter service based at Kimberley airport. The surveyor was a private valuator and owner of Fenwick Valuations. The aircraft was chartered by Fenwick at the time of the accident.

1.18 Additional Information

1.18.1 None.

1.19 Useful or Effective Investigation Techniques

1.19.1 Not considered necessary in this report.

2. ANALYSIS

2.1 The pilot was correctly licensed and was the holder a valid medical. Post-mortem results revealed that the pilot and passenger's death was caused by multiple injuries.

2.2 The aircraft in question was serviceable prior to the accident and no record of any malfunction or defect was recorded that could have contributed to, or caused, the accident. This was also supported by on-site investigation and the engine teardown inspection from the maintenance organisation.

2.3 The prevailing weather conditions at the time of the incident were considered to be a factor in this accident with the reported surface wind being 020/15 knots. On the satellite photograph, thunderstorms can be seen over the north-eastern part of the country and also in the Mafikeng area. Very few clouds can be seen between Bloemfontein and Kimberley. Windy conditions were also reported at the time of the accident by the farm owner and workers.

2.4 The investigation found that the pilot, being a Grade 3 instructor, had enough experience to make a positive contribution to the safety of the operation by assessing continually the prevailing or changing weather conditions. This should have helped him to evaluate the potential risks – the wind in this case – and make quick decisions, perhaps cancelling the operation. The investigation identified that the pilot's performance could have been influenced significantly by the interface of circumstances.

2.5 In the case of this accident, the interface could be attributed to fact that the surveyor was giving instructions to the pilot on which altitude to fly and also where and when to turn so that he could take good photographs of the power lines. All of the above could have contributed significantly to the pilot's decision-making.

2.6 The investigation concluded that the aircraft lost height during the turn and in an attempt to recover, the pilot pitched the nose of the aircraft up, which increased the angle of attack. This resulting in a decrease in indicated airspeed and the aircraft stalled due to its low speed. The pilot was unable to recover in time due to lack of height.

3. CONCLUSION

3.1 Findings

3.1.1 The aircraft had a valid certificate of registration and a valid certificate of airworthiness.

3.1.2 The maintenance records indicated that the aircraft was maintained in accordance with existing regulations and approved procedures.

3.1.3 The aircraft was serviceable when dispatched for the flight.

3.1.4 On-site investigations revealed no anomalies of the engine and the airframe.

3.1.5 Engine teardown from the AMO revealed no anomalies inside the engine.

3.1.6 The pilot was properly licensed and medically fit for the flight in accordance with existing regulations.

3.1.7 The Civil Aviation Authority safety oversight records for both organisations with regard to procedures and operations were adequate at the time of compiling this report.

3.1.8 The aircraft crashed on open ground. Windy conditions were reported at the time of the accident.

3.2 Probable Cause/s

3.1 The aircraft stalled during the turn.

3.2 Contributing factors: low flying in windy conditions.

4. SAFETY RECOMMENDATIONS

4.1 Not applicable.

5. APPENDICES

5.1 Not applicable.

Report reviewed and amended by the Advisory Safety Panel 30 October 2009

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