AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

Revised 28 April 2010 to reflect correct times.

				Reference:	CA18/2/3/8270		
Aircraft Registration	**ZS-XPS**	**Date of Accident**	16 March 2007		**Time of Accident**	0600Z	
Type of Aircraft	Cirrus SR 22 Aeroplane		**Type of Operation**		Private		
Pilot-in-command Licence Type	Private Pilot		**Age**	56	**Licence Valid**	Yes	
Pilot-in-command Flying Experience	Total Flying Hours as on 13 January 2007		2 400		Hours on Type	Unknown	
Last point of departure	New Tempe Aerodrome near Bloemfontein (FATP)						
Next point of intended landing	Queenstown Aerodrome (FAQT)						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Next to a dirt road near Queenstown at the geographical position determined as S 32°2.943' E 026°48 .165'							
Meteorological Information	**Wind:** Calm; **Temperature:** 12.5℃						
Number of people on board	1 + 0	**No. of people injured**	0	**No. of people killed**	1		

Synopsis

On 16 March 2007, at approximately 0600Z, a Cirrus SR 22 aircraft was destroyed on impact with terrain while manoeuvring 14 nautical miles from Queenstown. A post-impact fire ensued. The pilot was fatally injured.

Witnesses on the ground stated that they had heard the aircraft circling for approximately 1½ hours and had seen the aircraft flying low before impacting with the ground in misty conditions.

Probable Cause

Controlled flight into terrain in misty conditions.

IARC Date		Release Date	

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Medkor Trust
Manufacturer : Cirrus
Model : SR 22
Nationality : South African
Registration Marks : ZS-XPS
Place : Queenstown
Date : 16 March 2007
Time : 0600Z

All times given in this report is 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 the morning of 16 March 2007, the pilot – a doctor – departed at 0330Z from Bloemfontein on a flight to Queenstown where he was due to perform surgery. Queenstown is approximately 170 nautical miles south of Bloemfontein. The pilot had fuelled the aircraft with 154 litres (40.6 gallons) of fuel on the day prior to the accident.

1.1.2 At 0400Z, the pilot sent a text message from his cell phone stating: “I’m on my way to Queenstown how are you?”

1.1.3 At approximately 0430Z, two witnesses on the ground in the vicinity that the accident occurred reported hearing the aircraft. They stated that there was heavy mist at the time.

1.1.4 At 0519Z, the pilot sent another text message from his cell phone, stating: “Waiting for mist to settle see you now.”

1.1.5 At approximately 0540Z, another witness heard the aircraft overhead in the vicinity the accident occurred. The witness stated that when he had driven to Queenstown at 0550Z the mist had been so heavy that he had had to switch on his headlights and use the windshield wipers.

1.1.6 At 0600Z, another witness stated that he was listening to the 0600Z news when he heard the aircraft. He went out to look and saw the aircraft approximately 50 metres above the ground over his house (between A and B – see Figure 1 below). He described the mist as starting to lift, but still patchy.

1.1.7 Another witness, who was busy working, stated that he had heard the aircraft coming towards him. At location C (see below) he saw it suddenly appear out of the mist just above the trees and house, then bank left and down over a poultry abattoir towards the area referred to as “the lands”.

1.1.8 The final witness, who saw the impact, described seeing the aircraft coming out of the mist and dropping suddenly. He initially thought the aircraft was going to land, but then it flattened out and travelled along “the lands” at about 7 metres above the ground. He said that at point E the aircraft climbed, turning to the left, and disappeared into the mist. The witness then heard the aeroplane coming back and saw it in the vicinity of point F approximately 200 metres above the ground. He stated that it then suddenly turned left and seemed to dive straight into the ground at point G.

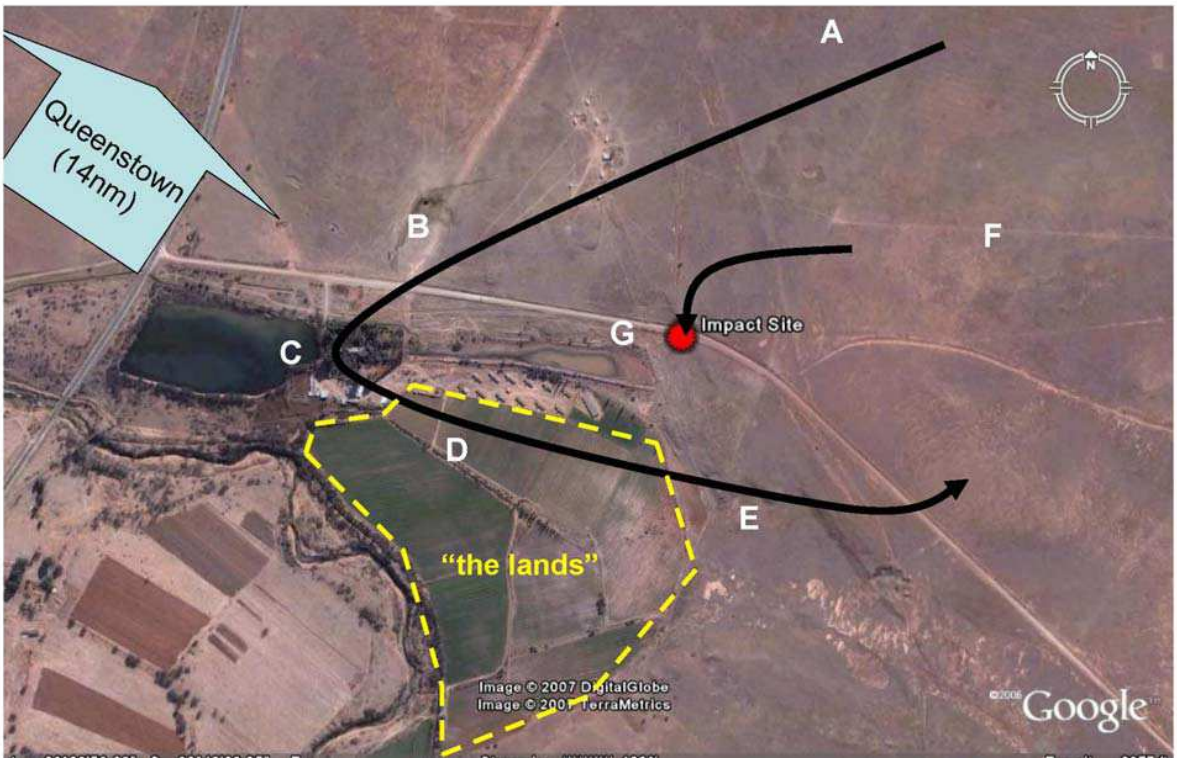

Figure 1: Flight path as described by witnesses.

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed by impact forces and a post-impact fire.

Figure 2: The wreckage of ZS-XPS.

1.4 Other Damage

1.4.1 A 3-foot barbed wire fence was damaged by the impact.

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	56
Licence Number	**********	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating				
Medical Expiry Date	30 March 2007				
Restrictions	Medical restriction to wear corrective lenses				
Previous Accidents	On 19 July 2004 the pilot landed with the landing gear retracted				

Flying Experience

Total Hours as on 13 January 2007(as per CAA records)	2 400
Total Past 90 Days	Unknown
Total on Type Past 90 Days	Unknown
Total on Type	Unknown

1.6 Aircraft Information

Airframe

Type	Cirrus SR 22	
Serial Number	0556	
Manufacturer	Cirrus	
Year of Manufacture	2003	
Total Airframe Hours (at time of accident)	485	
Last MPI (Date & Hours)	481	26 February 2007
Hours since Last MPI	4.0	
C of A (Issue Date)	23 October 2003	
C of A (Expiry Date)	22 October 2007	
C of R (Issue Date) (Present Owner)	17 June 2003	
Operating Categories	Standard	

Engine

Type	Continental IO-550-N(7)
Serial Number	687421
Hours since New	485
Hours since Overhaul	TBO not yet reached

Propeller

Type	Hartzell PHC-J3YF-1RF
Serial Number	FP2255B
Hours since New	485
Hours since Overhaul	TBO not yet reached

1.7 Meteorological Information

1.7.1 Official weather report obtained from the South African Weather Services reported the following weather conditions on the day of the accident:

Surface Analysis:

A deep low-pressure system was present south-east of the country with a trough of low pressure over the central interior.

Upper Air

An upper-air high was present at 500 hPa (+/- 18 000 ft above mean sea level) over the northern interior with a trough of low pressure south-east of the country causing SW winds in the Queenstown area.

Weather conditions in the vicinity of the accident:

The deep low-pressure system southeast of the country and high-pressure system west of the low caused an on-shore flow of moist air into the Eastern Cape. This caused cloudy to partly cloudy conditions in the Eastern Cape. The most likely weather conditions at the place of the accident were as follows:

Temperature	:	12.5℃
Dew Point	:	12.5℃
Wind Direction	:	Calm
Cloud	:	BKN cloud at 500 ft AGL
Humidity	:	100%

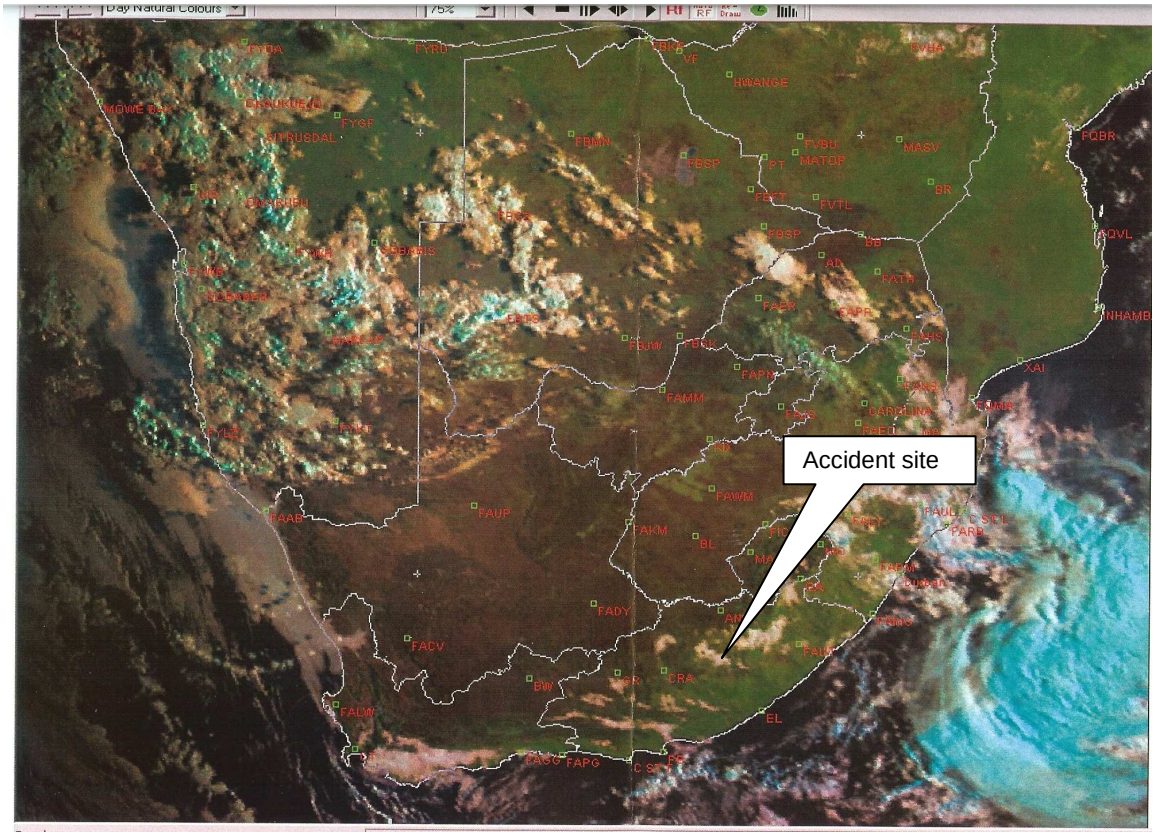

Figure 3: Satellite image of accident site.

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with a Garmin GMA 430 Nav/Com1 and Garmin GMA 430 Nav/com 2. There were no recorded defects experienced with the navigation equipment.

1.8.2 The aircraft was also equipped with a Stormscope, Emax, S-TEC 55X Autoplilot.

1.9 Communications

1.9.1 A Garmin GMA 340 audio panel was installed in the aircraft. There were no recorded entries of defects experienced with the communication equipment.

1.10 Aerodrome Information

1.10.1 The accident did not happen at or in close proximity to an aerodrome.

1.10.2 The accident occurred approximately 14 kilometres from Queenstown at the geographical position determined as: S 32°2.943' E 026°48.165'.

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with a flight data recorder or a cockpit voice recorder as these were not required in terms of the Civil Aviation Regulations.

1.12 Wreckage and Impact Information

1.12.1 The aircraft came to rest facing in a north-westerly direction at an altitude of 3 392 feet.

1.12.2 Ground scarring at the accident site indicated that the aircraft had first struck a road and then a sand mound on the side of the road before it came to rest. Ground scarring also showed that the aircraft had hit the road in a wings-level attitude. It seems that the aircraft's flight path was between the telephone wires and the ground, based on the location of the initial ground scar, the orientation of the wreckage, the undisturbed telephone wires and the fence on the side of the road opposite the accident site.

1.12.3 Although the wreckage was consumed by fire, all major components were accounted for and included the fuselage, stabilisers, flight control surfaces, engine and propeller.

1.13 Medical and Pathological Information

1.13.1 A post mortem examination was performed on the deceased pilot after the accident.

1.13.2 The results of the post mortem report and toxicology tests were not available at the time this report was compiled. Should any of the results be positive, an attachment will be added to include the results.

1.14 Fire

1.14.1 A post-impact fire erupted when the aircraft impacted with the ground. The aircraft was destroyed by this fire.

1.14.2 The aircraft caught fire on impact, most probably due to the fuel tank rupturing. The fuel would have leaked onto the hot engine, which in turn would have ignited the fuel.

1.15 Survival Aspects

1.15.1 The accident was not considered survivable due to the magnitude of the impact forces and the severity of the post-impact fire which erupted moments after the aircraft struck the ground.

1.16 Tests and Research

1.16.1 The engine was examined by a field inspector of Teledyne Continental Motors Inc.

The inspector stated that "No pre-mishap abnormalities were visually observed with the engine/propeller inspection that would have prevented normal engine operation".

Figure 4: The damaged engine.

1.16.2 The propeller was visually examined by a field inspector of Teledyne Continental Motors Inc., a safety investigator from Cirrus Design, and South African Civil Aviation Authority aircraft accident investigators.

The propeller examination revealed the following:

i. The propeller was separated from the engine crankshaft just aft of the propeller flange.

ii. Blades were arbitrarily numbered 1-3. Blade 1 was distinguishable by the s-bending of the blade and the fact that it was the most damaged of the three. Blades 2 and 3 were numbered consecutively in a counter-clockwise fashion as viewed from the pilot's seat looking forward.

iii. Blade 1 exhibited twisting and s-bending. Chord-wise scratches were present on the camber side of the blade. There were gouges along the outer two-thirds of the blade's leading edge. The blade tip was gouged on three sides.

The trailing edge of the blade also had small gouges.

iv. Blade 2 exhibited aft bending at its mid-span and forward bending near the blade tip. A portion of the blade tip was broken off. Gouges were present on the leading and trailing edges from the tip inboard to approximately one-third of the blade's length. Chord-wise scratches were present on the cambered side of the blade.

v. Blade 3 exhibited chord-wise scratches on the cambered side of the blade. Approximately 2 inches of the tip were bent aft and approximately ½ inch of the blade tip was missing.

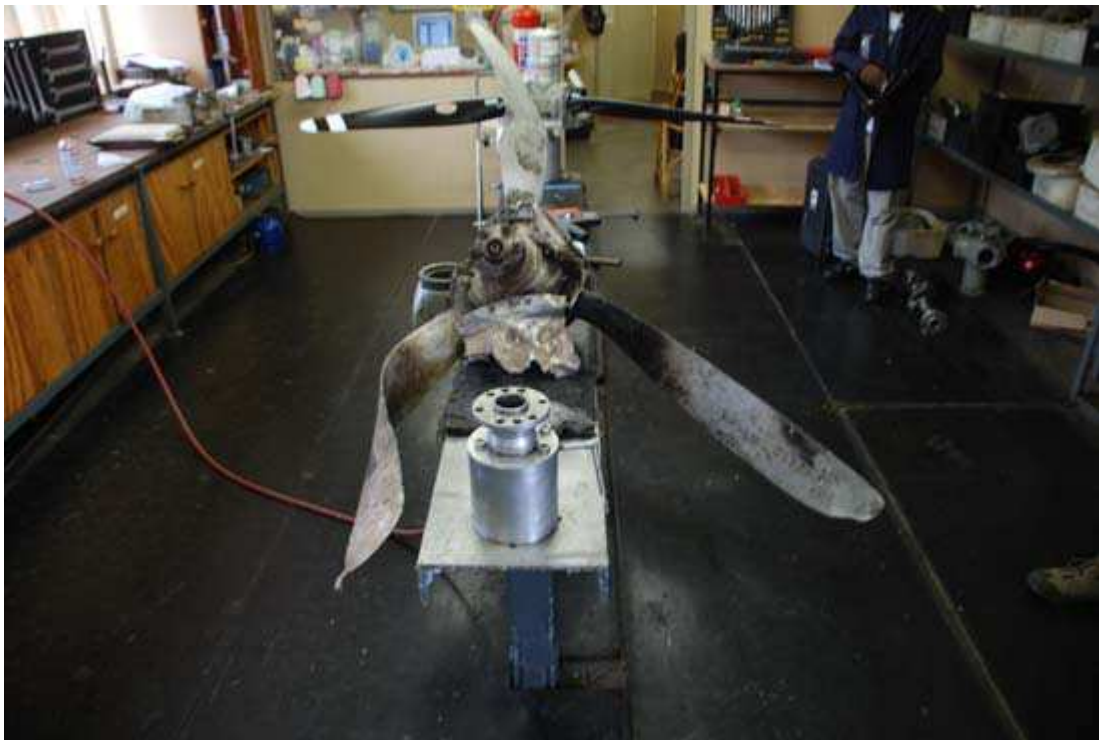

Figure 5: The damaged propeller.

Figure 6: Damage to the propeller hub.

1.17 Organisational and Management Information

1.17.1 This was a private flight.

1.17.2 The pilot was the owner of the aircraft.

1.17.3 According to available records, the Aircraft Maintenance Organisation (AMO) that certified the last MPI on the aircraft prior to the accident had been in possession of a valid AMO approval with an expiry date of 30 April 2007.

1.18 Additional Information

1.18.1 The aircraft was fitted with a flash memory module containing engine monitoring data, but since the aeroplane was destroyed by fire, no data could be downloaded.

1.18.2 The aircraft was also fitted with a CAPS (Cirrus Airframe Parachute System) parachute which was found in its enclosure behind the fuselage bulkhead. The parachute was destroyed by the fire. The rocket motor, which was not expended, was found by itself near the aft side of the wing close to the right-hand flap.

1.18.2 The pilot's cell phone was recovered by the police at the accident site and was given to the pilot's fiancé. She made copies of text messages that the pilot had sent on the morning of the accident and provided them to the investigating team.

1.18.4 The pilot was a medical doctor and was scheduled to perform surgery in Queenstown.

1.18.5 The performance data in section 5 of the Cirrus SR22 Pilot Operating Handbook (POH) states that the aircraft have a usable fuel capacity of 81 gallons and have an endurance of 6.1 hours. The aircraft was refuelled with 154 litres (40.6 gallons) the

day prior to the accident.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1 The pilot took off from Tempe Aerodrome in Bloemfontein at approximately 0330Z on 16 March 2007 on a flight to Queenstown where he was due to perform surgery on a patient.

2.2 Several witnesses on the ground stated that they heard the aircraft circling overhead for about 1½ hours approximately 14 kilometres from Queenstown and saw the aircraft flying low before crashing into the ground in misty conditions. The aircraft was destroyed on impact and a post-impact fire erupted.

2.3 All major components of the aircraft were accounted for. The engine and propeller was examined after the accident and no anomalies were found that could have contributed to the accident.

2.4 The pilot was properly licensed and medically fit to operate the aircraft. He was the holder of a night rating but did not hold an instrument rating.

2.6 The Certificate of Airworthiness was valid at the time of the accident. No evidence of pre-accident defects or malfunctions was found that could have contributed to the accident.

2.7 The official weather report obtained from the South African Weather Services reported partly cloudy conditions at 500 feet above ground level.

2.8 The aircraft has a usable fuel capacity of 81 gallons and endurance of 6.1 hours. The aircraft was refuelled with 40.6 gallons and it can therefore reasonably be accepted that the aircraft was refuelled to full capacity. The pilot left Bloemfontein around 0330Z and was heard by two witnesses around 0430Z which is 1 hour. The pilot further was holding above cloud/mist for approximately 1 and a half hours which equals to 2 and half hours of flight. If the aircraft was thus refuelled to capacity the pilot would have had another 3.6 hours of endurance before he was running low on fuel. If this was then the case, it is the investigators opinion that the pilot was not becoming hasty to land because he was running low on fuel, but rather was becoming hasty to perform surgery on the patient.

2.8 To summarise:

- Evidence and witness statements obtained during the investigation indicated that the pilot circled for approximately 1½ hours, 14 kilometres from Queenstown above the mist.

- The possibility exists that the pilot might have been worried about being late for the surgery on his patient, and that he became hasty and took the decision to fly through the mist in the hope that it would clear sufficiently for him to see the ground and get his bearings. However, he did not know how

high he was above the ground, and effectively flew from VMC into IMC conditions without an instrument rating.

3. CONCLUSION

3.1 Findings

(i) The pilot was the holder of a valid private pilot's licence and properly type-rated on the aircraft. The pilot however was not instrument rated.

(ii) The aircraft was properly maintained and the Certificate of Airworthiness of the aircraft was valid at the time of the accident.

(iii) The Aircraft Maintenance Organisation was in possession of a valid AMO approval.

(iv) Prevailing weather conditions contributed to the accident.

(v) The pilot was fatally injured.

(vi) The aircraft was destroyed by impact forces and a post-impact fire.

(vii) Examination of the engine and propeller which was performed after the accident revealed no anomalies that could have contributed to the accident.

3.2 Probable Cause/s

3.2.1 Controlled flight into terrain in misty conditions.

4. SAFETY RECOMMENDATIONS

4.1 None.

5. APPENDICES

5.1 None.

Report reviewed and amended by Advisory Safety Panel: 25 August 2009.

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