

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9137	
Aircraft Registration	ZU-CRV	Date of Accident	02 February 2013		Time of Accident	1645Z
Type of Aircraft	Jabiru SPT Aeroplane		Type of Operation	Private		
Pilot-in-command Licence Type		Private Pilot	Age	49	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	2297.0		Hours on Type	+/-385hrs
Last point of departure		FAWI (Witbank, Mpumalanga Province)				
Next point of intended landing		FAWI (Witbank, Mpumalanga Province)				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
GPS co-ordinates S25 52.45' E029 17.10' next to the N4 highway near Witbank						
Meteorological Information		Temperature: 21 °C Dewpoint:09 °C Visibility: >10km Cloud base: Sky Clear				
Number of people on board	1+0	No. of people injured	1	No. of people killed	0	
Synopsis						
<p>The pilot departed in his Jabiru aircraft from Witbank airfield (FAWI) on a scenic flight to Witbank Dam, located to the East of the town.</p> <p>The aircraft was seen performing manoeuvres over the dam before routing back to FAWI airfield in a Westerly direction. En-route, the aircraft struck Eskom power lines, causing the right hand wing to separate from the aircraft. The pilot loss control of the aircraft and the aircraft impacted the ground bringing the aircraft to rest in an inverted attitude.</p> <p>The aircraft was extensively damaged, the pilot sustained serious injuries and was admitted to hospital.</p>						
Probable Cause						
<p>Aircraft collided with power lines and crashed during a low level flight.</p> <p>Contributory Factors: Disregard for standard safe regulating operating procedures in terms of Part 91 and 94</p>						
IARC Date				Release Date		



AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : G.K Kew
Manufacturer : Shadow Lite CC
Model : Jabiru SPT
Nationality : South African
Registration Marks : ZU-CRV
Place : Next to the N4 highway near Witbank
Date : 2 February 2013
Time : 1645Z

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 produced without prejudice to the rights of the CAA, which are reserved.

1. FACTUAL INFORMATION

1.1 History of Flight

- 1.1.1 The pilot departed FAWI airfield on 2 February 2013 at approximately 1600Z on a local scenic flight to Witbank Dam. Eyewitnesses reported seeing the aircraft performing several manoeuvres over the dam before returning to FAWI airfield in a Westerly direction.
- 1.1.2 The aircraft struck Eskom power lines next to the N4 highway approximately 12km from Witbank airfield. This caused the aircraft's right wing to separate from the fuselage and the pilot to lose control of the aircraft. The aircraft impacted the ground (elevation 4931ft Above Mean Sea Level (AMSL)) at a high speed and came to rest 44 meters from the initial impact point in an inverted attitude.
- 1.1.3 The pilot sustained serious injuries and was transported to the local hospital. The aircraft was extensively damaged.



Figure 1: The power lines height above ground level are approximately 11 metres

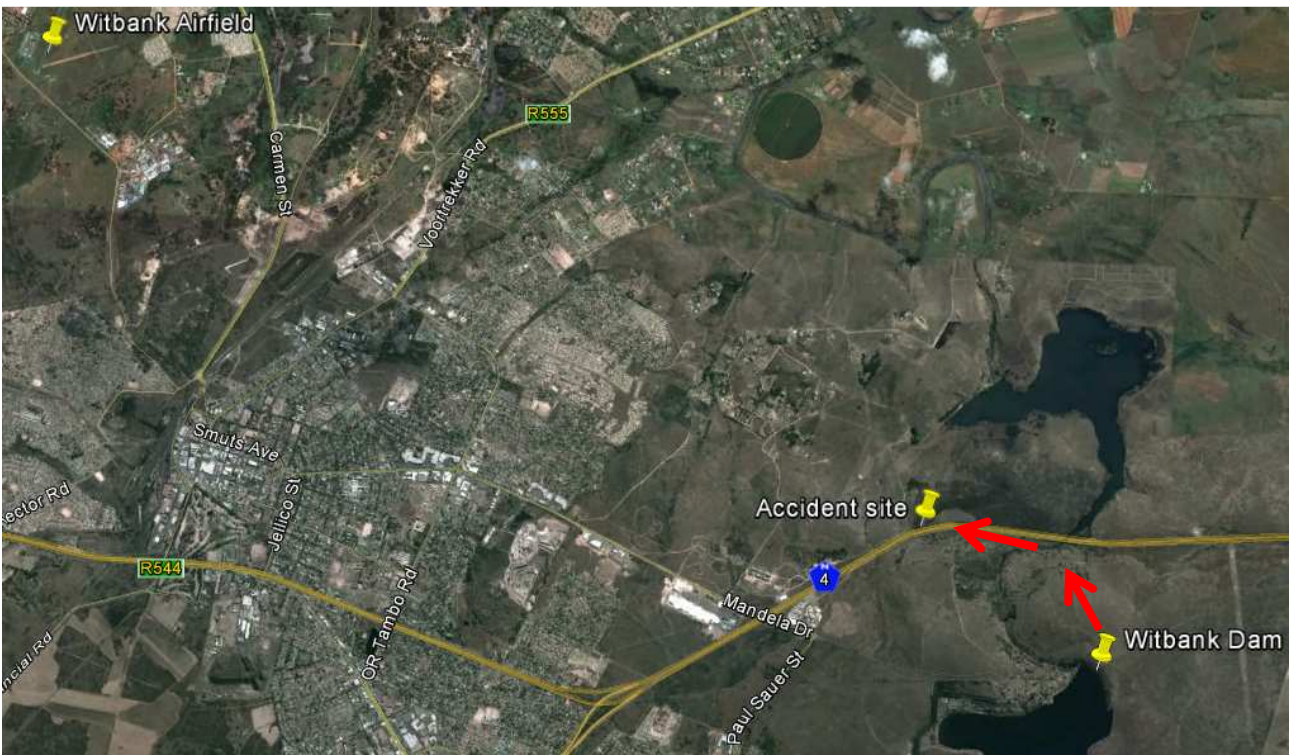


Figure 2: Google Earth image of accident site.

1.2 Injuries to Persons

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

1.2.1 The pilot sustained severe head and spinal injuries and was transported to a local hospital. The pilot was on life support for one month in a medically induced coma. At the time this report was concluded he was still in hospital.

1.3 Damage to Aircraft

1.3.1 The aircraft sustained extensive damage.



Figure 3: Damage sustained to the fuselage, undercarriage, propeller, engine and wings.

1.4 Other Damage

1.4.1 The insulation cable of the power line sustained minor damage.

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	49
Licence Number	0270281348	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating				
Medical Expiry Date	30 June 2013				
Restrictions	Corrective Lenses				
Previous Accidents	Yes				

- 1.5.1 The pilot was involved in an accident on 06 September 2011 due to low altitude operation and damaged the aircraft's right hand wing when the aircraft struck a tree.

Flying Experience:

Total Hours	2297
Total Past 90 Days	63.5
Total on Type Past 90 Days	63.5
Total on Type	385

- 1.5.2 The pilot's logbook could not be obtained after the accident. The hours used are an approximate and based on documented hours found in a note book in the aircraft and the pilot's CAA file.

1.6 Aircraft Information

Airframe:

Type	Jabiru SPT	
Serial Number	527	
Manufacturer	Shadow Lite CC	
Year of Manufacture	2002	
Total Airframe Hours (At time of Accident)	1117.8	
Last Annual (Date & Hours)	17 October 2012	1054.3
Hours since Last Annual	63.5	
Authority to Fly (Issue Date)	22 October 2012	
C of R (Issue Date) (Present owner)	16 November 2006	
Operating Categories	Private	

Engine:

Type	Jabiru A2200
Serial Number	22A1152
Hours since New	1117.8
Hours since Overhaul	Unknown

Note: A Jabiru engine is overhauled at 1000hrs however there was no evidence that documents that this engine was overhauled prior to the accident. The manufacturer did not have paperwork on their database indicating that the accident aircraft's engine was overhauled prior to the accident.

Propeller:

Type	Sensenich W62HJ42
Serial Number	AG 8566
Hours since New	411.4
Hours since Overhaul	TBO not yet reached

Note: Documents made available by the SACAA indicate that the above propeller was installed on 24 August 2008.

Weight and Balance

Basic Empty Weight	275kg
Pilot	104kg
Fuel on board	25kg
Take-off weight	404kg

- 1.6.1 The aircraft's Maximum Take-off Weight (MTOW) is 470kg. The aircraft's weight for this flight was within the prescribed limits.
- 1.6.2 The aircraft's logbook could not be located after the accident. The hours used are an approximate and based on paperwork made available by the SACAA and RAASA. The manufacturer could not locate any documentation indicating the aircraft had an engine overhaul prior to the accident.
- 1.6.3 The aircraft was refuelled prior to departure from FAWI airfield with fuel (AVGAS) the pilot stored in drums in his hangar. Fuel located in the carburettor of the accident aircraft was found to be free of contamination.

1.7 Meteorological Information

- 1.7.1 An official weather report from the South African Weather Service was obtained.

Wind direction	200°	Wind speed	5kts	Visibility	>10km
Temperature	21 °C	Cloud cover	Sky Clear	Cloud base	N/A
Dew point	09 °C				

- 1.7.2 The accident occurred at 1645Z, on the accident day sunset was at 1659Z. The aircraft travelled in a Westerly direction into sunset.

1.8 Aids to Navigation

- 1.8.1 The aircraft was equipped with the minimum Visual Flight Rules (VFR) navigation equipment required by the regulations and no defects were reported prior to the accident.

1.9 Communications

1.9.1 The aircraft was equipped with standard communication equipment as required by the regulator. There were no recorded defects on communication equipment prior to the flight.

1.10 Aerodrome Information

1.10.1 The accident occurred outside the boundaries of the aerodrome.

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



Figure 4 and 5: ZU-CRV's wreckage

1.12.1 The aircraft struck power lines before impacting the ground 15m from the power lines. The aircraft came to rest 44 metres from the initial impact point in an inverted position facing an Easterly direction.

1.12.2 Witness marks on the propeller indicate the engine was producing power on impact.

1.12.3 Arcing closer to the trailing edge on the right hand wing of the aircraft indicated the aircraft was banked to the right prior to impacting the power lines.

1.12.4 The right wing and undercarriage separated from the aircraft during the accident sequence. The propeller and tail plane of the aircraft was damaged.



Figure 6: Evidence of arcing close to the trailing edge of the aircraft's right hand wing

1.12.4 All control surfaces were accounted for at the accident site.

1.13 Medical and Pathological Information

1.13.1 The pilot was found medically unfit due to a medical condition on 23 April 2001 by a Designated Aviation Medical Examiner (DAME). The pilot re-applied for a Class 2 medical on 15 December 2003 and was successful.

1.13.2 The pilot was prescribed medication that was not compatible with flying. The investigation was unable to establish if the pilot used any medication prior to the accident flight. The pilot did not disclose the use of this medication to his DAME.

1.14 Fire

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

1.15 Survival Aspects

1.15.1 The aircraft impacted the ground at a high impact speed before coming to rest. Information obtained from the paramedic indicated the pilot did not use the aircraft's shoulder harness at the time of the accident. This caused his seat belt to become dislodged from the aircraft during the impact sequence. This resulted in the pilot sustaining severe head injuries when he impacted the instrument panel. The accident was considered survivable however associated with severe trauma.



Figure 7 & 8: The pilot's seat belt that became dislodged from the aircraft on impact

1.16 Tests and Research

- 1.16.1 The engine a Jabiru 2200, Serial number 22A1152 was recovered from the accident site and was found to be in a condition that an engine bench test run was possible.
- 1.16.2 The engine was transported to an approved facility to conduct the bench test. The propeller, distributor cap and spark plug leads were replaced for the engine bench test due to the impact damage sustained to the components during the accident sequence.
- 1.16.3 On first attempt the engine did not start, the carburettor bowl was removed and a significant amount of engine oil was in the bowl, however this was due to the engine being transported upside down. The carburettor inspected at the accident site was free of any oil or contamination.



Figure 9: Carburettor at accident site did not contain any oil.

1.16.4 After cleaning the bowl a second start was performed and the engine started. The engine was warmed and ran smoothly at various power settings.

1.17 Organizational and Management Information

1.17.1 This was a private flight.

1.18 Additional Information

1.18.1 Empty alcohol bottles were recovered from the aircraft on the scene. A blood test for alcohol concentration in the blood specimen of the pilot was not performed because the pilot was in a medically induced coma following the accident.

1.18.2 Minimum Heights as defined in the Civil Aviation Regulations (CARS) 91.06.32

(1) Except when necessary for taking off or landing, or except with prior written approval of the commissioner, no aircraft-

(a) Shall be flown over built up areas or over an open air assembly of persons at a height less than 1000 feet above the highest obstacle, within a radius of 2000 feet from the aircraft;

(b) When flown elsewhere than specified in paragraph (a), shall be flown at a height less than 500 feet above the ground or water, unless the flight can be made without hazard or nuisance to persons or property on the ground or water; and

(c) Shall circle over or do repeated over flights over an open air assembly of persons at a height less than 3000 feet above the surface.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1 Man (Pilot)

The pilot was involved in an accident previously as a result of low altitude operation.

The pilot did not adhere to the minimum heights stipulated in the CARS on the day of the accident. These heights are published in the interest of aviation safety and to prevent collisions with ground obstacles.

The severe head injuries sustained by the pilot might have been prevented had he worn the shoulder harness in the aircraft.

The pilot did not disclose to his DAME that he was using medication that could have adversely affected his flying abilities. The investigator was unable to prove that the pilot had taken this medication prior to the accident flight.

2.2 Machine (Aircraft)

The aircraft's engine was recovered from the accident site and was subjected to a bench test at an Approved Maintenance Organisation (AMO) and no fault was found that could have resulted in a loss of engine power prior to striking the power lines.

Arcing closer to the trailing edge on the right wing indicated that the aircraft was in a turn to the right when it collided with the power lines.

2.3 Environment

The aircraft flew in a Westerly direction before colliding with the power lines. Sunset was calculated to be 1659Z. It is possible that the pilot's forward visibility might have been obscured momentarily by glare during the turn prior to impacting the power lines. There were no clouds forecast in the accident area and this could have contributed to the glare of the sun being more intense.

2.4 Mission

The pilot flew recreationally and regularly during the weekend. This flight was therefore nothing out of the norm.

3. CONCLUSION

3.1 Findings

- 3.1.1 The aircraft had a valid Authority to Fly.
- 3.1.2 There was no documentation to support that an engine overhaul was completed.
- 3.1.3 There was no evidence of any defect or malfunction with the aircraft that could have contributed to the accident.
- 3.1.4 All control surfaces were accounted for, and all damage to the aircraft was attributable to the high impact forces.
- 3.1.5 The fuel contained in the carburettor was uncontaminated and of the recommended grade.
- 3.1.6 Aircraft collided with power lines and crashed during low level flight.
- 3.1.7 The witness marks on the propeller indicate the propeller was producing power on impact.
- 3.1.8 The pilot was licensed and qualified for the flight with the existing regulations.
- 3.1.9 Alcohol bottles were recovered from the aircraft on scene.
- 3.1.10 The pilot was prescribed medication that was not compatible with flying.

3.1.11 Although a shoulder harness was available, the pilot only wore his seat belt.

3.2 Probable cause

3.2.1 Aircraft collided with power lines and crashed during low level flight.

3.3 Contributory Factors

3.3.1 Disregard for standard safe regulating operating procedures in terms of Part 91 and 94.

4. SAFETY RECOMMENDATIONS

4.1.1 It is recommended that the regulations contained in Part 12 be amended so that if substance abuse is suspected, the Investigator in Charge (IIC) can request a blood test within a suitable period. Annexure 13 states that the state should ensure that any investigations conducted under the provisions of this Annex have unrestricted access to all evidential material without delay and are not impeded by administrative or judicial investigations or proceedings. Alcohol metabolises within 6 hours therefore it is crucial to an investigation to establish substance abuse within the above time period. The existing regulations does not give the IIC authority to request a blood test, although Part 67 makes provision for blood testing the period of 48 hours would not indicate conclusive results of alcohol abuse.

5. APPENDICES

None