SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Occurrence Investigation** Form Number: CA 12-12a

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/9052		
Aircraft Registration	**ZU-FHO**	**Date of Accident**	30 April 2012		**Time of Accident**	1000Z	
Type of Aircraft	Jabiru UL		**Type of Operation**		Private		
Pilot-in-command Licence Type	Microlight Aeroplane Pilot		**Age**	56	**Licence Valid**	Yes	
Pilot-in-command Flying Experience	Total Flying Hours		308.5		Hours on Type	149.2	
Last point of departure	Margate Aerodrome (FAMG), KwaZulu-Natal						
Next point of intended landing	Springs Aerodrome (FASI), Gauteng						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
About a kilometre south-east of Nagle dam in Pietermaritzburg, KwaZulu-Natal (GPS co-ordinates: S29°35,469' E030°39,097')							
Meteorological Information	Temperature: 21°C, wind: light and variable, dew point: 1°C, cloud cover: broken; cloud base: unknown; visibility: good						
Number of people on board	1 + 0	**No. of people injured**	1	**No. of people killed**	0		
Synopsis							

The pilot departed on an aircraft-positioning flight from George Aerodrome to Springs Aerodrome, but due to weather elected to land at Margate Aerodrome. Prior to the flight, the aircraft was at the Jabiru manufacturer in George for modifications to the fuel tanks and an upgrade to a FADEC fuel injection system.

En route to Springs Aerodrome, the engine suddenly lost power and the pilot performed a forced landing. During the forced landing the aircraft was substantially damaged.

The pilot was injured and taken to the hospital.

The investigation revealed that the scate hose for the air intake failed and coursed the air starvation to the engine.

Probable Cause

Unsuccessful forced landing due to air starvation.

Contributing factors:
Poor maintenance that caused scate hose to fail and collapse

IARC Date		Release Date	

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Lewis DP
Manufacturer : Shadow Lite CC
Model : Jabiru UL
Nationality : South African
Registration Marks : ZU-FHO
Place : Pietermaritzburg
Date : 30 April 2012
Time : 10H00z

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 pilot took off from George Aerodrome to Springs Aerodrome, but due to weather landed at Margate Aerodrome. Prior to the flight, the aircraft was at the Jabiru manufacturer in George for modifications to the fuel tanks and an upgrade to the FADEC fuel injection system.

1.1.2 After a night stop in Margate, the pilot took off on 30 April 2012 from Margate Aerodrome with the intention to land at Springs Aerodrome. En route to Springs Aerodrome, the engine suddenly lost power and the pilot performed a forced landing.

1.1.3 During the forced landing, about a kilometre south-east of the Nagle dam in Pietermaritzburg, the aircraft landed on uneven ground and sustained substantial damage. The pilot was injured in the accident and admitted to hospital with spinal injuries.

1.1.4 During the on-site investigation, it was discovered that the scat hose was not connected.

Figure 1: Google view of the accident site

Figure 2: Closer Google view of the accident site

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft sustained substantial damage during the accident sequence.

Figure 3: The aircraft wreckage

1.4 Other Damage

1.4.1 No other damage was sustained.

1.5 Personnel Information

1.5.1 Pilot-in-command:

Nationality	British	Gender	Male	Age	56
Licence Number	0270472129	Licence Type	Microlight		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 October 2012				
Restrictions	Corrective lenses				
Previous Accidents	None as per SACAA record				

1.5.2 Pilot-in-command flying experience:

Total Hours	308.5
Total Past 90 Days	37.2
Total on Type Past 90 Days	37.2
Total on Type	149.2

1.6 Aircraft Information

1.6.1 Airframe:

Type	Jabiru UL120	
Serial Number	050	
Manufacturer	Jabiru South Africa	
Year of Manufactured	2010	
Total Airframe Hours (At time of Accident)	164.1	
Last MPI (Date & Hours)	28/05/2012	155.6
Hours since Last MPI	8.5	
Authority to Fly (Issue Date)	2012/05/28	
C of R (Issue Date) (Present owner)	2012/04/28	
Operating Categories	Private	

1.6.2 Engine:

Type	Jabiru 2200
Serial Number	22A3315
Hours since New	164.1
Hours since Overhaul	TBO not yet reached

1.6.3 Propeller:

Type	Sensenich
Serial Number	Hub 26637b/ blades 15149 and 15121
Hours since New	164.1
Hours since Overhaul	TBO not yet reached

1.6.4 Weight and balance:

The total mass of the aircraft at take-off from Margate Aerodrome with the pilot on board the aircraft, including the fuel and baggage, was determined to be approximately 490 kg. The maximum limit for the aircraft is 500 kg. The weight of the aircraft at the time take-off was thus 10 kg below the maximum limit of the aircraft. At the time of the accident, the weight of the aircraft was below the maximum limit.

1.6.5 Fuel on board:

The aircraft had about 33 L of fuel drained at the accident site; the fuel was not contaminated.

1.7 Meteorological Information

1.7.1 The following weather information was submitted by the pilot:

Wind direction	variable	Wind speed	light	Visibility	good
Temperature	21˚C	Cloud cover	broken	Cloud base	unknown
Dew point	unknown				

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigational equipment as approved by the Regulator for the aircraft type. There were no recorded reports that the navigation equipment was unserviceable prior to or during the flight.

1.9 Communications

1.9.1 The aircraft was equipped with standard communication equipment as approved by the Regulator for the aircraft type, and there were no recorded defects prior to or during the flight.

1.10 Aerodrome Information

1.10.1 The accident occurred about a kilometre south-east of Nagle dam in Pietermaritzburg (GPS co-ordinates: S29°35.469', E0 30°39.097')

1.11 Flight Recorders

1.11.1 The aircraft was not equipped with a flight data recorder (FDR) or a cockpit voice recorder (CVR), and neither was required by the regulations.

1.12 Wreckage and Impact Information

1.12.1 During the forced landing sequence, the aircraft landed uphill with a slope down to the right. Due to the low landing speed and gradient of the terrain, the aircraft had hardly any forward motion after landing. The aircraft came to rest next to a tree 3 m from the touchdown mark.

1.12.2 Although the wreckage was intact, the aircraft sustained damage to the right wing, right wing flaps, left wing, propeller, flight control system, landing gear and horizontal stabiliser.

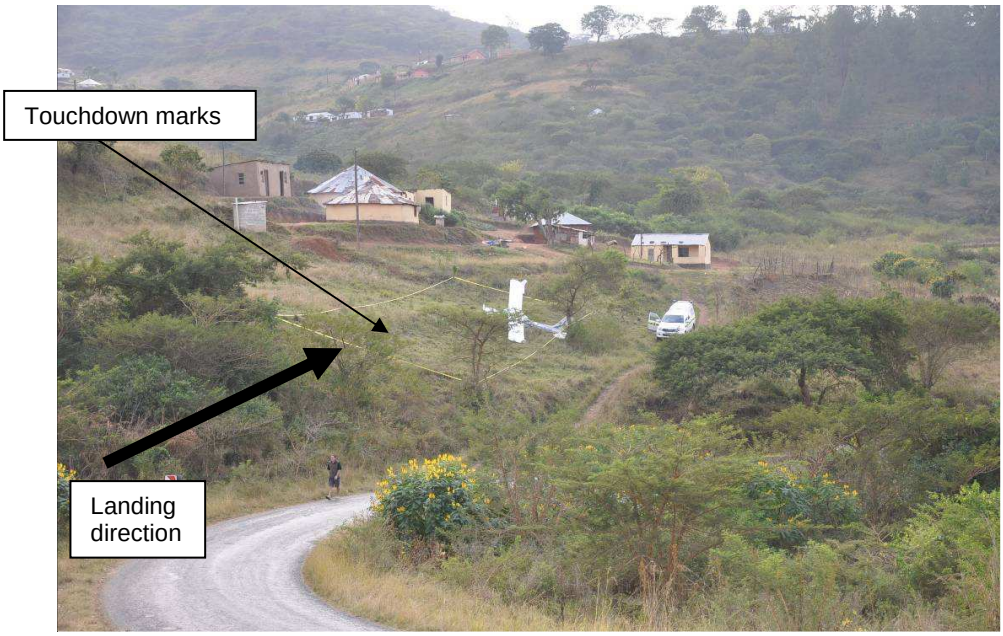


Figure 4: View of accident site

1.13 Medical and Pathological Information

1.13.1 The pilot's SACAA medical was valid.

1.14 Fire

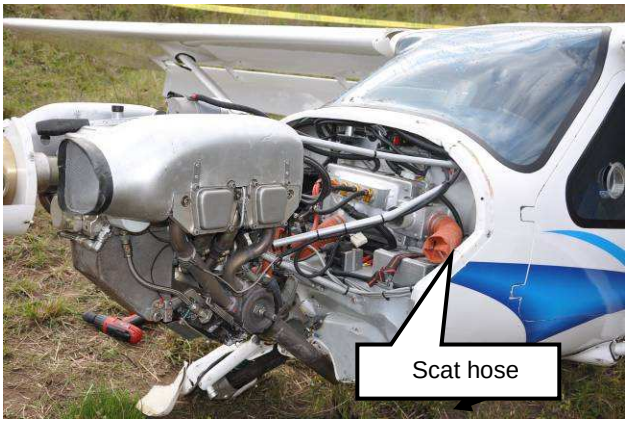
1.14.1 There was no pre or post-impact fire.

1.15 Survival Aspects

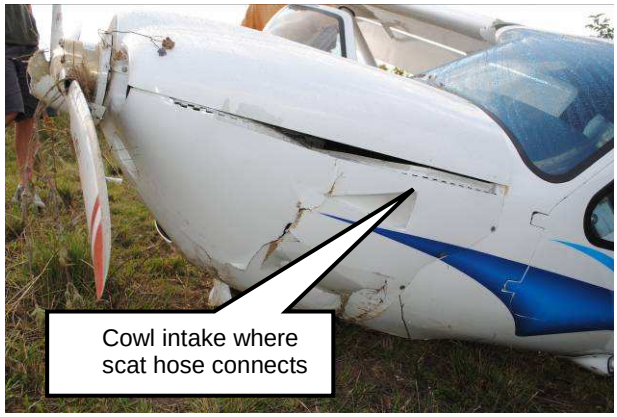
1.15.1 The pilot was properly restrained at the time of the accident by the equipped safety harness, which prevented possible fatal injuries. This accident was considered survivable.

1.16 Tests and Research

1.16.1 During the on-site investigation, the scat hose was found not connected to the cowling air intake, although a clamp was in place to secure the hose.



Figures 5 and 6: Scat hose



Figures 7 and 8: Scat hose

1.16.2 An engine investigation was conducted on Monday 11 June 2012 at the manufacturer. The engine tested normal with all the engine operating parameters being met by the engine. The following findings were made:

- The engine was found to be operating normally.
- The two fuel pumps were also found to be operating normally.
- No obstruction was found in the header tank or fuel filters.
- The scat hose was closed (collapsed) during the engine operation and the engine immediately stopped.

The engine investigation concluded that as the scat hose was found not connected to the cowling, the scat hose restricted airflow (collapsed) to the engine and the engine failed in operation shortly thereafter.

Figure 9: The engine being operated

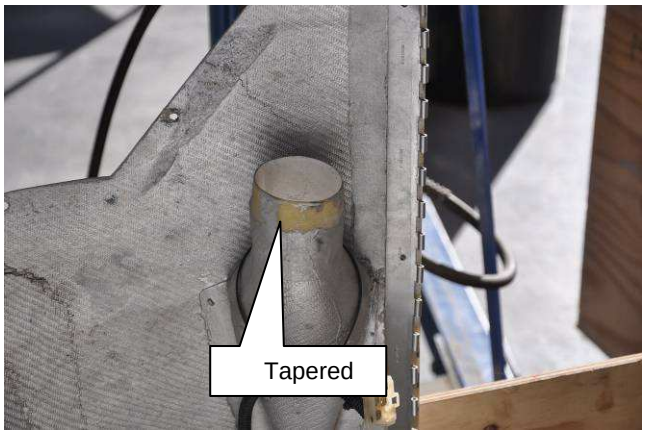


Figure 10: The scat hose connection on the engine cowl

1.16.3 The scat hose is connected to the intake air duct on the engine cowl and provides the fuel control system with air for engine operation.

1.16.4 The scat hose connection on the inside of the cowling was found to be tapered. The scat hose is reinforced with a steel wire that makes it more rigid. On the accident aircraft, the steel wire reinforcing at the end of the scat hose was removed to make the scat hose more flexible in order for it to fit on the cowling duct. The investigator is of the opinion that the scat hose was connected with a clamp to the cowling but due to vibration during operation and the tapered shape of the connection, the scat hose became dislodged from its attachment on the cowling.

1.17 Organizational and Management Information

1.17.1 The aircraft was maintained by an Approved Person.

1.17.2 The aircraft was certified and maintained in accordance with existing regulations and approved procedures.

1.17.3 The aircraft had a valid Authority to Fly issued by the SACAA.

1.17.4 The aircraft was airworthy when dispatched for the flight.

1.18 Additional Information

1.18.1 None.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1 During a cross-country flight, the aircraft engine lost power and the pilot executed an unsuccessful forced landing. During the initial on-site investigation, the cowling air duct scat hose was found disconnected and collapsed.

2.2 During the engine investigation at facilities of the manufacturer, the engine operated normally. The scat hose was closed (collapsed) during the engine operation and the engine immediately stopped. The aircraft engine stopped as a result of air starvation to the engine.

2.3 The scat hose connection on the inside of the cowling was found to be tapered. The scat hose is reinforced with a steel wire that makes it more rigid. On the accident aircraft, the steel wire reinforcing at the end of the scat hose was removed to make the scat hose more flexible in order for it to fit on the cowling duct.

2.4 The investigator is of the opinion that the scat hose was connected with a clamp to the cowling but due to vibration during operation and the tapered shape of the connection, the scat hose became dislodged from its attachment on the cowling. This then caused the scat hose to collapse and close, resulting in air starvation to the engine and subsequent engine power loss. However, there is a possibility that the scat hose was never secured after connection due to time and pressure on the technicians.

3. CONCLUSION

3.1 Findings

3.1.1 The aircraft was certified and maintained in accordance with existing regulations and approved procedures.

3.1.2 The aircraft had a valid Authority to Fly issued by the SACAA.

3.1.3 The aircraft was airworthy when dispatched for the flight.

3.1.4 The pilot’s license was valid at the time of the accident.

3.1.5 The pilot’s medical certificate was valid.

3.1.6 The scat hose was found not connected to the cowling duct and in a collapsed position.

3.2 Probable Cause/s

3.2.1 Unsuccessful forced landing due to air starvation.

3.3 Contributing Factor/s:

3.3.1 The scat hose failed.

4. RECOMMENDATION

4.1 On 12 June 2012 the following recommendation was submitted to the DCA and it was approved on 15 June 2012:

It is recommended that the Director for Civil Aviation, in the interest of aviation safety and continued airworthiness of the aircraft type in South Africa, should implement the following safety recommendations:

i. The SACAA Airworthiness Department should ensure that all owners of Jabiru aircraft be made aware of the above findings, thus ensuring the sufficient securing of the scat hose.

ii. The SACAA Airworthiness Department should assist the manufacturer in finding a solution with regards to the potential problematic tapered connector.

iii. The SACAA Airworthiness Department together with the manufacturer should look at the possibility of including a failsafe alternative in the air supply system should the above finding re-occur or the air intake be blocked by foreign objects.

5. APPENDICES

5.1 None.