

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

					Reference:	CA18/2/3/9323	
Aircraft Registration	ZS-GIA	Date of Accident	24 May 2014		Time of Accident	12:20Z	
Type of Aircraft	Glider Schleicher ASK 13		Type of Operation		Private		
Pilot-in-command Licence Type		Glider Pilot's Licence	Age	65	Licence Valid	Yes	
Pilot-in-command Flying Experience		Total Flying Hours	330		Hours on Type	280	
Last point of departure		Howick Airfield (FAHC), KwaZulu-Natal					
Next point of intended landing		Howick Airfield (FAHC), KwaZulu-Natal					
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Next to Howick Airfield, approximately 21km north-west of Pietermaritzburg Airport (coordinates S29° 34q023+E030° 12q266+)							
Meteorological Information		Sky clear, visibility >10km, with a north-easterly wind of 04kt					
Number of people on board	1 + 1	No. of people injured	0	No. of people killed	2		
Synopsis		<p>Two gliders, ZS-GIA and ZS-GGE, both belonging to Howick Gliding Club, were launched repeatedly from runway 34 using a dual drum winch machine. Once airborne, the pilots would attempt to catch a thermal along the face of a nearby hill.</p> <p>The pilot on board ZS-GIA was accompanied by a passenger. On their fourth launch, ZS-GIA climbed along the face of the hill until they disappeared from onlookers view. On reaching the ridge the pilot lost control of the aircraft and crashed. The passenger was fatally wounded on impact. The pilot, who was seated at the rear, suffered serious injuries but managed to free himself from the wreckage. He made a call to a club member, informing him of the accident and saying that their situation was desperate. Before anyone could reach them, however, he succumbed to his injuries. The glider was completely destroyed.</p> <p>The pilot of the second glider, ZS-GGE, which was airborne at the time, confirmed the accident.</p>					
Probable Cause		Error in judgement with respect height due to down drafts.					
IARC Date				Release Date			

AIRCRAFT ACCIDENT REPORT

Name of Owner : Howick Flying Club
Name of Operator : Howick Flying Club
Manufacturer : Schleicher
Model : ASK13
Nationality : South African
Registration Marks : ZS-GIA
Place : Howick Airfield (FAHC)
Date : 24 May 2014
Time : 12:20Z

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 On the morning of 24 May 2014, Howick Glider Club hosted one of its regular gliding events at Howick Airfield, during which two gliders were repeatedly launched using a dual drum winch machine (Manufactured by the club approximately 15 years ago). Each launch was carried out by three people: the launcher, who operated the launch machine; a wing walker, who kept the glider's wings level in the initial roll; and a winch driver, who pulled the launching cable towards the glider. Visibility was greater than 10km and the wind was light and variable. Runway 34

was used.

- 1.1.2 The activities started with the launch of ZS-GGE (similar to the accident aircraft) at 10:30Z and this flight lasted a couple of minutes. ZS-GIA was then launched and flown successfully three times. At 11:49, the glider was launched for the fourth time that day. Once it had reached a height of 1 300ft above ground level (AGL), it was released from the cable.
- 1.1.3 According to onlookers at the airport, the launch and initial climb was uneventful. The pilot followed an established climbing pattern where he turned left and headed towards the face of a nearby hill to catch a thermal. The glider continued to climb and after few minutes was near the top of the hill. Once it was over the ridge, it disappeared from onlookers view.
- 1.1.4 At 12:07, members of the club launched ZS-GGE, not knowing the fate that had befallen ZS-GIA. At 12:20, a member of the club received a call from the pilot of ZS-GIA saying that they had crashed on top of the hill and that their situation was desperate. A few minutes later, the pilot of ZS-GGE confirmed that he had seen the accident. He returned to the airfield as soon as possible to join the rescue party.
- 1.1.5 The accident site was at an elevation of 4 427ft AMSL at the co-ordinates S29° 34q 023+ E030° 12q266+. The passenger was fatally wounded on impact. The pilot suffered serious injuries but was able to free himself from the wreckage. Emergency services and Pietermaritzburg Airport were alerted but it is unclear when they arrived at the scene. The accident site was not easily accessible and when they arrived in an SAPS helicopter, they found that the pilot had succumbed to his injuries. The glider was completely destroyed in the accident.

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 in the impact.



Figure1: The force of the impact destroyed the glider.

1.4 Other Damage

1.4.1 None.

1.5 Personnel Information: pilot flying (rear seat)

Nationality	South African	Gender	Male	Age	65
Licence Number	0279005383	Licence Type	GPL		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Winch launch instructor				
Medical Expiry Date	28 December 2014				
Restrictions	Corrective lenses				
Previous Accidents	None				

Flying Experience

Total Hours	330
Total Past 90 Days	15
Total on Type Past 90 Days	15
Total on Type	280

1.6 Aircraft Information

Airframe

Type	ASK 13	
Serial Number	13409	
Manufacturer	Schleicher	
Date of Manufacture	1972	
Total Airframe Hours (At time of Accident)	668	
Last MPI (Date & Hours)	1 April 2014	657
Hours since Last MPI	11	
Authority to fly (Issue Date)	16 January 2014	
Operating Categories	Part 94	

Engine: Not Applicable

Propeller: Not Applicable

1.7 Meteorological Information

Wind direction	Light	Wind speed	4kt	Visibility	>10km
Temperature	30°C	Cloud cover	None	Cloud base	None
Dew point	0°C				

1.7.1 The above weather conditions at 12.00Z on 24 May 2014 were obtained from Aerodrome Traffic Information Services (ATIS) at Pietermaritzburg Airport, 23nm south- west of Howick. The weather report from SAWS contained the same information.

1.8 Aids to Navigation

1.8.1 The aircraft was fitted with standard navigational equipment as approved at the time of certification by the regulator. No defects were recorded or reported prior to or during the accident flight.

1.9 Communications

1.9.1 The aircraft was equipped with standard communication systems and none was reported unserviceable prior to the accident. Communication between ground crew and gliders in the circuit was on 123.4MHz.

1.10 Aerodrome Information

Aerodrome Location	FAHC
Aerodrome Co-ordinates	S29° 33q10+ E030° 12q40+
Aerodrome Elevation	3 615ft
Runway Designations	16/34
Runway Dimensions	825m x 35m
Runway Used	34
Runway Surface	Grass
Approach Facilities	None

1.10.1 The accident occurred on a hill 1,45km to the west of the aerodrome. The environment consists mostly of grass and short vegetation. The elevation of the site is 4 427ft, which is 812ft higher than the aerodrome.

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with a cockpit voice recorder or flight data recorder. Neither was required by regulations to be fitted to this type of aircraft or used on this type of operation.

1.12 Wreckage and Impact Information

1.12.1 The accident site was on a hill 1.45km from the runway and at an elevation of 4 427ft. The investigation found that the right wing had dropped and struck the ground first, causing its main spar to break in half. The cockpit was completely destroyed as the aircraft struck the ground in a nose-down attitude. The debris was found in a radius of approximately 10m from the aircraft. No major components had broken off the glider.

1.12.2 The passenger, seated in front, was fatally injured and trapped in the aircraft's broken tubular framework. The pilot, seated at the back, was critically hurt. He nonetheless managed to free himself and call a friend back at the airport for assistance.



Figure 2: Damaged instrument panel and broken cockpit tubing.

1.12.3 The nose skid and main wheel were damaged. The instrument panel and seats were partially removed from their mountings. The rudder was dislodged from its mountings.



Figure 3: The right wing hit the ground first, as can be seen here..

1.13 Medical and Pathological Information

1.13.1 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 the accident, they will be treated as new evidence that will necessitate the reopening of the investigation.

1.14 Fire

1.14.1 There was no pre- or post-impact fire.

1.15 Survival Aspects

1.15.1 The accident was not survivable. The cockpit collapsed, exposing broken tubing, and both occupants sustained serious injuries from impact. Their four-point safety harnesses did not break on impact, but their seats were partially ripped from the fuselage floor.

1.16 Tests and Research

1.16.1 On inspection of the wreckage, all the airframe components not affected by the accident were found to be in good condition. The glider did not have an engine and there were hence no engine-driven systems.

1.17 Organisational and Management Information

- 1.17.1 The maintenance records indicated that the aircraft had been equipped and maintained in accordance with existing regulations and approved procedures.
- 1.17.2 The last MPI had been certified on 1 April 2014 by aircraft maintenance organisation (AMO) No. 312 at 657 airframe hours and the aircraft had flown a further 11 hours before the accident.

1.18 Additional Information

Type of gliding: Ridge Soaring

Source: *Glider Flying Handbook*, FAA-H-8083-13A

A ridge soaring pilot uses upward air movements caused when the wind blows on to the sides of hills. It can also be augmented by thermals when the slopes also face the sun. In places where a steady wind blows, a ridge may allow virtually unlimited time in the air.

Airflow mirrors a hill or ridge shape. Surface winds of 15–20 knots that are perpendicular to the ridge are ideal. Wind flow within 45° of the perpendicular line also provides adequate lift. Winds less than 10 knots have also produced adequate ridge soaring dependent on the terrain, but with 10 knots of wind or less, pilots should avoid flying low over any ridge due to the possibility of encountering thermal sink.”

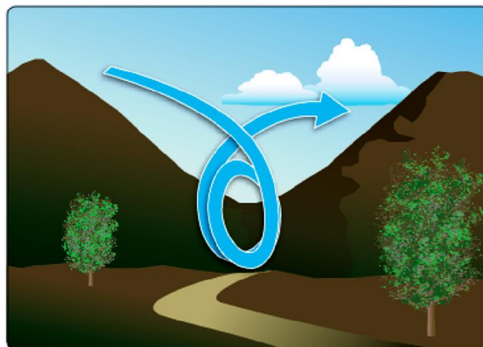


Figure 4: Airflow reflects the hill shape.

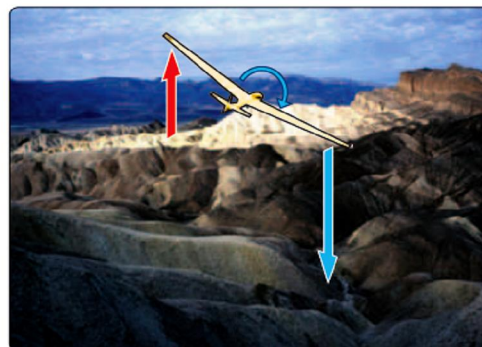


Figure 5: Thermal sink can roll the aircraft.

Winch Launcher:

Source: *Introduction to Winch Launching* by Marc Ramsey and Hans van Weersch (2004)

“Gliders are often launched using a stationary ground-based winch mounted on a heavy vehicle. This method is widely used at many European clubs, often in addition to an aerotow service. The engine is usually a large diesel, though hydraulic fluid engines and electrical motors are also used. The winch pulls in a 1,000 to 1,600-metre (3,000 to 5,500ft) cable, made of high-tensile steel wire or a synthetic fiber, attached to the glider. The cable is released at a height of about 400 to 700 meters (1,300 to 2,200ft) after a short, steep ride.



Figure 6: A glider being launched



Figure 7: A winch launcher.

“Winch launches are much cheaper than aerotow and have the advantage that many members of a club can be taught to operate the equipment. A winch may also be used at sites where an aerotow could not operate, because of the shape of the field or because of noise restrictions. The height gained from a winch is usually less than from an aerotow so pilots need to find a source of lift soon after releasing from the cable, otherwise the flight will be short. A break in the cable or the weak link during a winch launch is a possibility for which pilots are trained.”

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

- 2.1 The pilot and his passenger were properly qualified for this flight and their medicals were up to date.
- 2.2 The weather did not contribute to the accident as the wind was light and variable for the greater part of the day. The wind velocity for FAPM METAR between 11:00Z and 13:00Z never exceeded 5kt, according to the SA Weather Services weather report attached as Annexure C.
- 2.3 The thermals were present that day, since ZS-GIA and ZS-GGE managed three launches each. One of the legs flown by ZS-GGE lasted approximately 30 minutes but those of ZS-GIA never exceeded 10 minutes each. The time sheet of the legs flown is attached as Annexure D.
- 2.4 After a successful launch from Runway 34 at 13:49Z, ZS-GIA climbed to the top of a nearby hill in a southerly direction. The glider continued to climb and disappeared from onlookers' view.
- 2.5 The investigation found that the glider had encountered a thermal sink on top of the ridge. This had caused the right wing to drop and strike the ground. The glider then pivoted around that point, spinning in a clockwise direction, and struck the ground in a nosedive attitude. The right wing and its main spar broke in the middle. The impact broke the fuselage and its tubing. The passenger was killed instantly

and the pilot was badly injured. The aircraft came to rest facing north-west.

- 2.6 The pilot, who was badly injured, managed to free himself from the wreckage and telephone a fellow club member to advise him that they had had an accident and were injured. ZS-GGE had already been launched at 12:07 and was soon able to confirm the wreckage.

3. CONCLUSION

3.1 Findings

- 3.1.1 The aircraft was certified, equipped and maintained in accordance with existing regulations and approved procedures.
- 3.1.2 Proper pre-flight inspection was conducted and the launching of the aircraft was uneventful.
- 3.1.3 There was no evidence of airframe failure or system malfunction prior to the accident. The damage to all control surfaces and joining cables was attributed to impact forces.
- 3.1.4 The weather did not contribute to the accident as the wind was light and variable.
- 3.1.5 The pilot was licensed and medically fit for the flight in accordance with existing regulations. He was also rated as a winch launch instructor.
- 3.1.6 The investigation was unable to determine who had control at the time of the accident.
- 3.1.7 The wreckage pattern and the destruction of the nose indicated that impact was at a steep angle.

3.2 Probable Cause/s

- 3.2.1 Error in judgement with respect height due to down drafts.

4. SAFETY RECOMMENDATIONS

- 4.1 None.

5. APPENDICES

- 5.1 Annexure A; Authority to fly for ZS-GIA

HOWICK FLYING CLUB
72 BOTHA ROAD
BOTHAS MEEL
3610



Expiry Date: 2015/01/05

AUTHORITY TO FLY - PRIVATE

AUTHORITY TO FLY ISSUED IN TERMS OF PART 21

- | | |
|-------------------------------------|--------------------|
| 1. DETAILS OF APPLICANT | HOWICK FLYING CLUB |
| 2. DETAILS OF AIRCRAFT | |
| 2.1. Registration marks: | ZS-GIA |
| 2.2. Aircraft Manufacturer/builder: | SCHLEICHER |
| 2.3. Aircraft model: | ASK 13 |
| 2.4. Serial Number: | 13409 |
| 2.5. Engine type and Model: | NA |
| 2.6. Engine Serial Number: | NA |

3. This aircraft is hereby issued with an authority to fly in terms of Part 21.02.3 of Civil Aviation Regulations 2011, as amended with respect to the aircraft detailed in paragraph 2 of this permit. This permit replaces the requirement for the issue of a certificate of airworthiness in terms of regulation 21.06.1A.

4. CONDITIONS AND LIMITATIONS:

- 4.1 The aircraft is privately operated and not utilised for remuneration.
- 4.2 The aircraft is serviceable before each flight and has undergone an annual inspection during the 12 months immediately preceding any flight and is correctly certified in the applicable aircraft record.
- 4.3 All flights are conducted under VMC by day and unless unavoidable will not be undertaken over built-up areas and open-air assemblies of persons except for the purpose of take-off, transit and landing.
- 4.4 All the requirements of Part 24, Part 94 and Part 96 (if approved for training use) of the Civil Aviation Regulations, as amended are met.
- 4.5 This authority to fly is rendered invalid if the ownership of the aircraft is changed, but may be transferred to the new owner in accordance with Part 24 of the Civil Aviation Regulations as amended.
- 4.6 This authority to fly is rendered invalid if the aircraft is involved in an incident or accident that results in major damage to its primary structure.
- 4.7 This document or certified copy must be carried in the aircraft at all times.
- 4.8 The ATF is subject to Aeroclub membership in terms of regulation 94.06.1(2).
- 4.9 A radio station license is carried on board as per the Electronic Communications Act where applicable.
- 4.10 The aircraft may not be operated over any foreign country without special permission from the authority of that country.

Date of issue: 2014/01/16

FOR RECREATION AVIATION ADMINISTRATION OF SOUTH AFRICA

Tel: 011 082 1000

Fax: 011 082 1020

5.2 Annexure B; ZS-GIA Airframe hours

1	2	3	4	5	6	7	8
DATE	NAME & SURNAME OF THE PILOT	POB	FLIGHT FROM	TO	START TIME OF LANDING TIME	NUMBER OF LANDING	TIME IN MINUTES
1	2	3	4	5	6	7	8
DATE	Name und Unterschrift des verantwortl. Flz.-Führers	Anzahl Inassan	Flug Fahrt von nach	Zeit	Start Ldg.	Anzahl Landungen	Betriebszeit Std. Min.
Landungen, Betriebszeit seit der letzten Grundüberholung des Luftfahrzeuges							
L51		HAT EINSCHREIBUNG ERGÄNZT			TOTAL FLIGHTS 2255		
Jan-2014							
Feb 2014							
March 2014							
April 2014							
May 2014							
Gesamt-Betriebszeit bei der letzten Grundüberholung des Luftfahrzeuges				Stunden		Übriggen	
Gesamt-Betriebszeit des Luftz.							

5.3 Annexure C; Metar for FAPM from SAWS report

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South African Weather Service
ISO 9001 Certified Organisation

Aviation Weather Centre
designated Aeronautical Meteorological Authority for South Africa

Weatherline 083 123 0500

Searching for historic data between 2014-05-24 and 2014-05-24

Results for Meteorological Aerodrome Report(s)

Station: FAPM

Date: 2014-05-24

FAPM 241300Z AUTO 36006KT //// // // 30/M01 Q1020=
 FAPM 241200Z 12005KT CAVOK 30/00 Q1021=
 FAPM 241200Z AUTO 06002KT //// // // 30/00 Q1021=
 FAPM 241100Z AUTO 33002KT //// // // 29/01 Q1021=

Results for Special Meteorological Aerodrome Report(s)

No data

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5.4 Annexure D; Time sheet for 24 May 2014.

(19)

	P1	P2	Glider	Takeoff	Land	Duration	Charge To	Winch
1	DAVE H.	MILLO	K13 GE	1230	1235	05	GRADINSKI	
2	TEX	BARRY	K13 IA	1245	1249	04	BREDEKAMP	BARRY
3	DAVE H.	GARRY	K13 IA	1307	1311	04	MORTIMER	
4	TEX	JIM	K13 GE	1308	1338	30	ALLEN	
5	DAVE H.	GARRY	K13 IA	1327	1333	06	GARRY	
6	DAVE H.	MILLO	K13 IA	1349			GRADINSKI	
7	JOHAN	BARRY	K13 GE	1407	1415	08	LEWIS/SAYMAN	
8	TEX	JOHAN	K13 GE				N/C	
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Daily Inspection

Signature

Name

Date & Time

K13 ZS GGE

K13 ZS GIA

K7 ZS GUB

Astir ZS GYP

WINCH

WINDOW OPEN

CLOSE

[Signature]

M-DS-14
Schan

M. GRADINSKI photo
24/5

[Signature]

D. Hall

12:25 24/05/2014

ATF valid until: GGE - 29 June 2014 GIA - 26 June 2014 GUB - 27 May 2014 GYP - 11 Oct 2014