



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8722	
Aircraft Registration	ZU-EXT	Date of Accident	13 December 2009		Time of Accident	0635Z
Type of Aircraft	Extra EA300		Type of Operation	Private		
Licence Type	Private		Age	38	Licence Valid	Yes
Flying Experience	Total Flying Hours		591.7		Hours on Type	21.0
Last point of departure	Rand aerodrome (FAGM) (Gauteng province).					
Next point of intended landing	Parys aerodrome (FAPY) (Free State province).					
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
Walkerville area at GPS coordinates S26°21.150' E02 7°57.691' at an elevation of 5 170 ft AMSL.						
Meteorological Information	Temperature: 21°C; Dew point: 16°C; Wind: 320°/12 knots; Cloud cover: few @ 2000 ft; Visibility: 10 km.					
Number of people on board	1 + 1	No. of people injured	0	No. of people killed	2	
Synopsis	<p>On 13 November 2009, ZU-EXT, an Extra 300 aerobatic aircraft, departed Rand aerodrome under visual flight rules. According to the ATC at Rand, take-off was uneventful. The aircraft was next seen at Tedderfield aerodrome, where it performed a flypast above runway 29. A witness – a pilot performing a pre-flight inspection in a hangar – heard the aeroplane approaching from the east in a low-level, high-speed flypast. He went out to have a look, and saw the aircraft begin to climb. At approximately 500 feet altitude above ground level it banked to the right, then sharply to the left. Whilst it was in a left bank, its nose dropped sharply to the left and it then immediately performed a half-roll/flick to the right whilst in the vertical position. According to the witness, the engine sounded quite normal and was functioning well. The aeroplane then disappeared from view and he was certain it had crashed.</p> <p>The aircraft had in fact struck the ground after the aerobatic manoeuvre. Two medical doctors were the first on the scene; they found both pilots fatally injured and the aeroplane destroyed.</p> <p>The investigation did not reveal any failure with the aircraft systems.</p>					
Probable Cause						
Performing an aerobatic manoeuvre at an altitude too low for the pilots to recover in time.						
IARC Date				Release Date		



AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Radcool Investments (Pty) LTD
Manufacturer : Extra Flugzeugbau GMBH
Model : Extra EA-300
Nationality : South African
Registration Marks : ZU-EXT
Place : Walkerville area, Gauteng
Date : 13 December 2009
Time : 0635Z

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 13 November 2009, ZU-EXT, an Extra 300 aerobatic aircraft, departed Rand aerodrome with two pilots on board under Visual Flight Rule (VFR). According to the Air Traffic Controller (ATC) at Rand, take-off was uneventful. The aircraft was next seen at Tedderfield aerodrome, where it performed a flypast above runway 29. A witness – a pilot performing a pre-flight inspection in a hangar – heard the aircraft approaching from the east in a low-level, high-speed flypast, and went out to have a look.
- 1.1.2 He saw the aircraft start to climb. At approximately 500 feet altitude above ground level (AGL), it banked to the right then sharply to the left while still climbing. During the bank to the left, its nose dropped sharply to the left and it immediately performed a half- roll/flick to the right whilst still in the vertical position. According to the witness, the engine sounded quite normal and was functioning well. The aeroplane then disappeared from view and he was certain that it had crashed.
- 1.1.3 The aircraft had in fact struck the ground after the aerobatic manoeuvre. Two medical doctors were the first to arrive at the scene; they found both pilots fatally injured and the aircraft destroyed. The emergency services were informed and dispatched to the site. Although the aeroplane is normally flown from aft, both forward and aft pilots have flight controls; it could therefore not be determined which pilot had been flying at the time of the accident.

1.1.4 The accident occurred during daylight conditions close to Tedderfield aerodrome in the Walkerville area at geographical coordinates determined to be South 26°21.150' East 027°57.691' and at an elevation of 5 170 ft above mean sea level (AMSL).



Figure 1: Google earth view of the accident site.

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	2	-	-	-
Serious	-	-	-	-
Minor	-	-	-	-
None	-	-	-	-

1.3 Damage to Aircraft

1.3.1 The aircraft was destroyed.



Figure 2: View of the wreckage at the site.

1.4 Other Damage

1.4.1 None.

1.5 Personnel Information

1.5.1 Pilot 1 (back seat)

Nationality	South African	Gender	Male	Age	38
Licence Number	*****	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating				
Medical Expiry Date	30 September 2010				
Restrictions	None				
Previous Accidents	Nil				

Flying Experience

Total Hours	591.7
Total Past 90 Days	17.8
Total on Type Past 90 Days	15.8
Total on Type	21.0

1.5.2 Pilot 2 (front seat)

Nationality	South African	Gender	Male	Age	46
Licence Number	*****	Licence Type	Private pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating, Safety Pilot Rating				
Medical Expiry Date	28 February 2010				
Restrictions	None				
Previous Accidents	Nil				

Flying Experience

Total Hours	648.5
Total Past 90 Days	28.6
Total on Type Past 90 Days	28.6
Total on Type	56.0

Note: The pilots' hours had to be calculated as their logbooks were not fully updated.

1.6 Airframe

1.6.1 Aircraft description

The design of the Extra 300 is based on the Extra 230, an early 1980s monoplane with a wooden wing. The Extra 300 has a welded steel tubular fuselage covered in aluminum and fabric. The mid-set wing has a carbon fiber composite spar and carbon composite skins. A symmetrical airfoil, mounted with a zero angle of incidence, provides equal performance in both upright and inverted flight. The aircraft is a tail dragger with fixed, composite main legs and fiberglass wheel pants. The power plant is a fuel-injected Lycoming AEIO-540 producing 300 horsepower (224 kW).

Type	Extra EA-300	
Serial Number	011	
Manufacturer	Extra Flugzeugbau GMBH	
Date of Manufacture	Unknown	
Total Airframe Hours (at time of accident)	2 547.8	
Last Annual (Hours & Date)	2 481.0	03 July 2009
Hours since last annual inspection	66.8	
Authority to fly Certificate (Issue Date)	08 December 2009	
Authority to fly Certificate (Expiry Date)	17 June 2010	
C of R (Issue Date) (Present Owner)	11 September 2006	
Maximum take-off weight	950 Kilograms	
Operating Categories	Private	
Recommended fuel used	Avgas LL 100	

Note: According to the airframe logbook, the last annual inspection conducted on the aircraft prior to the accident was certified on 03 July 2009.

Previous Accidents and Incidents	On 24 June 2008, the right rudder cable snapped in flight. During landing, the aircraft was uncontrollable. The left main undercarriage broke and the propeller struck the ground.
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Engine

Type	Lycoming AEIO 540-LIB5D
Serial Number	L 24234-48A
Hours since New	Unknown
Hours since Overhaul	276.8

Propeller

Type	MTV-9-B-C
Serial Number	070510
Hours since New	199.0
Hours since Overhaul	Not reached

1.7 Meteorological Information

1.7.1 Official weather report provided by the South African Weather Services:

WEATHER CONDITIONS AT TIME OF ACCIDENT

SURFACE ANALYSIS (0600Z 13 December 2009)

- A cold front was passing south of the country with a trough of low pressure over the central and western part of the country and a high pressure system over the north-eastern part of the country.
- UPPER AIR
At 500 hPa, a high pressure system was present over the central and western part of the country.
- SATELLITE IMAGE
The 0630Z satellite image shows a few clouds in the Walkerville area.
- WEATHER CONDITIONS IN THE VICINITY OF THE ACCIDENT
No official observations are available at the time and place of the accident. The most likely weather conditions there were as follows:

06H20Z

Temperature: 21°C
 Dew Point: 16°C
 Surface Wind: 320°TN 12 kt
 Cloud cover: Few clouds at 2000 ft
 Visibility: 10 km or more.
 Weather: No weather

1.8 Aids to Navigation

- 1.8.1 No difficulties with the navigational aids were known or reported.
- 1.8.2 There were no recorded or reported defects experienced with the navigation equipment.

1.9 Communications

- 1.9.1 No difficulties with the communication equipment were known or reported.
- 1.9.2 The last known communication was conducted between ZU-EXT and Rand ATC on the frequency 118.7 MHz. The pilot in the aft seat conducted the communication.

1.10 Aerodrome Information

- 1.10.1 The accident occurred during daylight conditions near Tedderfield aerodrome at geographical coordinates South 26°21.150' East 027° 57.691' and at an elevation of 5 170 ft AMSL.

1.11 Flight Recorders

- 1.11.1 The aircraft was not equipped with a flight data recorder or a cockpit voice recorder. Neither was required by regulation.

1.10 Wreckage and Impact Information

- 1.12.1 The aircraft crashed in an open field near the aerodrome. On-site examination of the wreckage revealed that the aircraft had struck the ground in a nose-down attitude. The propeller showed evidence of high power on impact. Due to the damage to the instruments, it was impossible to determine their readings and the position of all the switches at the time of impact. The engine, propeller, tail section, both wings and undercarriage were all severely damaged by the impact. Both fuel tanks had been ruptured and there was evidence of fuel at the site.



Figure 3: View of the wreckage.

1.13 Medical and Pathological Information

1.13.1 The post-mortem investigation of the pilots concluded that the cause of death was multiple, mutilating injuries.

1.13.2 The results of the toxicology tests were not available at the time this report was compiled. Should these results have any bearing on the accident, they will be evaluated and the report may be revised accordingly.

1.14 Fire

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

1.15 Survival Aspects

1.15.1 Due to the severity of the impact, the accident was considered non-survivable.

1.15.2 Both occupants were properly restrained by the aircraft safety harnesses, and equipped with helmets and parachutes. The latter were not deployed, as lack of height and time had not permitted this.

1.16 Tests and Research

1.16.1 Not considered necessary.

1.17 Organisational and Management Information

1.17.1 This was a private flight.

1.17.2 The last annual inspection carried out on the aircraft prior to the accident was certified on 3 July 2009 by an aircraft maintenance organisation (AMO). The person who certified this inspection held a valid Approved Person accreditation from the CAA as well as an aircraft maintenance engineer's licence.

1.18 Additional Information

1.18.1 None.

1.19 Useful or Effective Investigation Techniques

1.19.1 None

2. ANALYSIS

2.1 Available information indicated that fine weather prevailed in the area at the time of the flight. Weather conditions were therefore considered not to have had any bearing on the accident.

2.2 The aircraft was properly maintained in accordance with the manufacturer's approved procedures and no documented evidence was found indicating any defect or malfunction that could have contributed to or caused the accident.

2.3 The aircraft struck the ground in a nose-down attitude. An intensive examination of the wreckage did not reveal any pre-existing mechanical defect or failure. Neither pilot's medical record revealed any indication of pre-existing medical issues that could have affected his ability to control the aircraft.

2.4 According to a witness, the last abrupt manoeuvre was performed approximately 500 ft AGL after the fly-past over runway 29. This supports the conclusions that the flypast was controlled and that the manoeuvre could be attributed to the fact that the pilots wanted to display their flying skills to onlookers on the ground. Due to insufficient height, the pilots failed to recover from the manoeuvre in time and crashed.

3. CONCLUSION

3.1 Findings

(i) Both pilots held the required ratings, and the aircraft type was endorsed in their logbooks.

(ii) Both pilots' medicals were valid at the time of the accident.

- (iii) The aircraft was maintained in accordance with the approved maintenance schedule, with the last annual inspection prior to the accident being certified on 3 July 2009.
- (iv) The aircraft authority to fly was valid.
- (v) The Approved Person that certified the last annual inspection on the aircraft was accredited by the CAA.
- (vi) It was the aircraft's first flight of the day.
- (vii) Fine weather conditions prevailed at the time and were not considered to have had a bearing on the accident.
- (viii) The accident was considered non-survivable.

3.2 Probable Cause/s

- 3.2.1 Performing an aerobatic manoeuvre at a low altitude from which the pilot could not recover in time.

4. SAFETY RECOMMENDATIONS

- 4.1 None.

5. APPENDICES

- 5.1 None.

Report reviewed and amended by the Advisory Safety Panel 08 April 2011.

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