AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8341		
Aircraft Registration	**ZS-FJY**	**Date of Accident**	26-07-2007		**Time of Accident**	0830Z	
Type of Aircraft	Cardinal (C177)		**Type of Operation**		Private		
Pilot-in-command Licence Type	Private	**Age**	37		**Licence Valid**	Yes	
Pilot-in-command Flying Experience	Total Flying Hours	188.4			Hours on Type	181.8	
Last point of departure	Bethlehem Aerodrome						
Next point of intended landing	Bethlehem Aerodrome						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
Runway 31 at Bethlehem. Elevation: 5 469 feet. GPS coordinates: S28˚ 14' 911'' E028˚ 20' 502''							
Meteorological Information	Weather was fine. Visibility: CAVOK						
Number of people on board	1 + 2	**No. of people injured**	0	**No. of people killed**	0		

Synopsis

The pilot, accompanied by two passengers, departed from Bethlehem Aerodrome on a private flight returning to the aerodrome. According to the pilot, on final approach for landing on runway 29 with 30˚ of flaps and at an IAS of 60 mph in calm wind conditions, he "felt that there was no response from the elevator and immediately realised that there was a big problem".

The pilot then decided to land on runway 31, which had a grass surface. In order to land without any elevator control, he increased and decreased the engine power setting to control the pitch of the aeroplane. However, upon touchdown, the aircraft bounced three times before it came to a stop. The nose landing gear collapsed.

The occupants escaped without any injuries. The aircraft sustained minor damages to the propeller, nose gear and main landing gear.

On-site investigations revealed that the right-hand elevator control cable had failed due to corrosion caused by leakage of battery acid.

The last MPI (Mandatory Periodic Inspection) had been carried out on 12 October 2006 at 4 783.2 hours and the aircraft had flown 78 hours since then. The airworthiness department had conducted audits on 23 September 2005 and 20 September 2006 and no major findings had been recorded.

Probable Cause

The elevator control cable failed due to corrosion as a result of battery acid spillage at the point where the cable is routed through the fairlead in the aft section of the fuselage.

IARC Date		Release Date	

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Lezmin CC
Manufacturer : Cessna
Model : 177A
Nationality : South Africa
Registration Marks : ZS-FJY
Place : Bethlehem Aerodrome
Date : 26 July 2007
Time : 0830Z

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, accompanied by two passengers, departed from Bethlehem Aerodrome on a private flight returning to the aerodrome. According to the pilot, on final approach for landing on runway 29 with 30˚ of flaps and at an IAS of 60 mph in calm wind conditions, he “felt that there was no response from the elevator and immediately realised that there was a big problem”.

1.1.2 The pilot then decided to land on runway 31, which had a grass surface. In order to land without any elevator control, he increased and decreased the engine power setting to control the pitch of the aeroplane. However, upon touchdown, the aircraft bounced three times before it came to a stop.

1.2 Injuries to Persons

Injuries	Pilot	Crew	Pass.	Other
Fatal	-	-	-	-
Serious	-	-	-	-
Minor	-	-	-	-
None	1	-	2	-

1.3 Damage to Aircraft

1.3.1 The aircraft sustained damage to the propeller, nose gear and main landing gear.

1.4 Other Damage

1.4.1 None

1.5 Personnel Information

Nationality	RSA	Gender	Male	Age	37
Licence Number	**********	Licence Type	Private		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	28 February 2007				
Restrictions	Hearing aid requirement				
Previous Accidents	None				

Flying Experience

Total Hours	188.4
Total Past 90 Days	0.7
Total on Type Past 90 Days	0.7
Total on Type	181.8

1.6 Aircraft Information

Airframe

Type	Cardinal C177	
Serial Number	177.01174	
Manufacturer	Cessna	
Year of Manufacture	1968	
Total Airframe Hours (at time of accident)	4 861.2	
Last MPI (Date & Hours)	12 October 2006	4 783.2
Hours since Last MPI	78	
C of A (Issue Date)	07 July 2004	
C of R (Issue Date) (Present Owner)	27 January 2003	
Operating Categories	Standard	

Engine

Type	Lycoming 0360-A2F
Serial Number	13666-36A
Hours since New	4 783.2
Hours since Overhaul	653.6

Propeller

Type	McCauley 1A170/EPA/2656
Serial Number	YC23018
Hours since New	Unknown
Hours since Overhaul	Unknown

1.6 Meteorological Information

1.6.1 Weather information obtained from the pilot's questionnaire.

Wind direction	Nil	Wind speed	Nil	Visibility	CAVOK
Temperature	18˚C	Cloud cover	Nil	Cloud base	Nil
Dew point	Unknown				

1.8 Aids to Navigation

1.8.1 The aircraft was fitted with standard navigational equipment.

1.9 Communications

1.9.1 The pilot gave a passenger briefing before the aircraft came to a halt.

1.10 Aerodrome Information

Aerodrome Location	Bethlehem	
Aerodrome Co-ordinates	S28˚ 15" 0' E028˚ 20" 01'	
Aerodrome Elevation	5 561 feet	
Runway Designations	11/29	13/31
Runway Dimensions	1 175 m x 15 m	1 311 m x 46 m
Runway Used	31	
Runway Surface	Grass	
Approach Facilities	NDB	

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with flight recorders, nor was this required by law.

1.12 Wreckage and Impact Information

1.12.1 The aircraft landed safely on runway 31.

Figure 1: The aircraft after landing

1.13 Medical and Pathological Information

1.13.1 Not applicable

1.14 Fire

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

1.15 Survival Aspects

1.15.1 The accident was considered survivable. The occupants were properly restrained with safety belts.

1.16 Tests and Research

1.16.1 On-site investigations revealed that the right-hand elevator control cable had failed due to corrosion caused by the leakage of battery acid. The battery is situated above the cables in the aft fuselage section. The battery overboard vent-pipe was found to be venting into the fuselage instead of overboard.

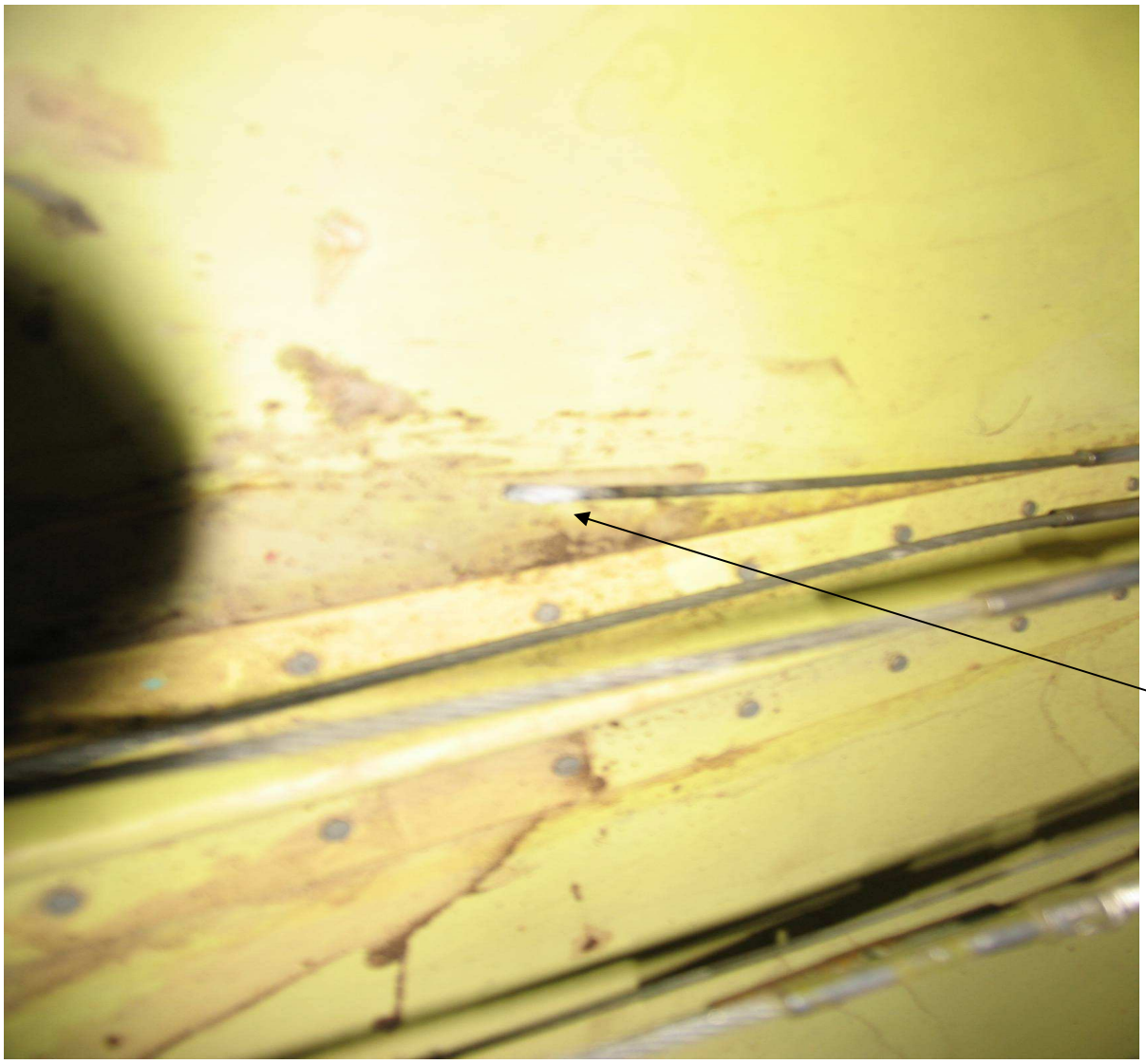

Figure 2: The elevator control cable which broke off.

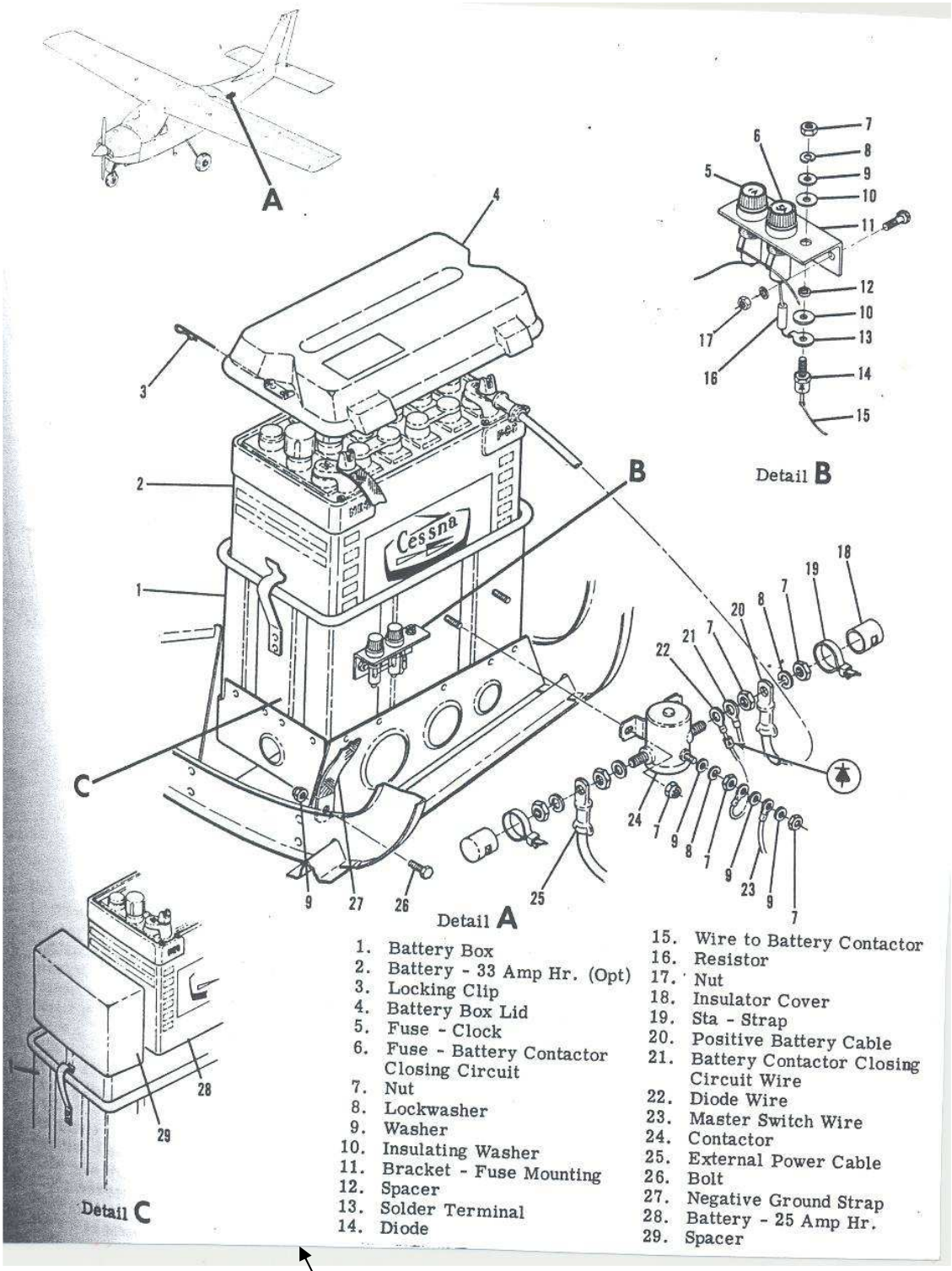

Figure 3: The schematic diagram of the battery.

1.17 Organisational and Management Information

1.17.1 This was a private flight.

1.17.2 The airworthiness department had conducted audits on 23 September 2005 and 20 September 2006 and no major findings had been recorded.

1.18 Additional Information

1.18.1 According to the job card history, the AMO had inspected the control cables but he had not noticed the corrosion.

1.19 Useful or Effective Investigation Techniques

1.19.1 None

2. ANALYSIS

2.1 The pilot departed from Bethlehem Aerodrome uneventfully but on final approach for landing he noticed that the elevator control was inoperative. The elevator control cable had fractured and failed due to corrosion where the control cable is routed through the fairlead in the aft baggage compartment as a result of battery acid spillage.

3. CONCLUSION

3.1 Findings

3.1.1 The pilot had a valid licence and was type-endorsed at the time of accident.

3.1.2 Weather was not a contributing factor to the accident.

3.1.3 The control cable to the elevator failed due to corrosion caused by the leakage of the battery acid.

3.1.4 From the work-pack, it was established that the AMO had inspected the control cables but had not noticed the corrosion.

3.2 Probable Cause/s

3.2.1 The elevator control cable failed due to corrosion where the control cable is routed through the fairlead in the aft section of the fuselage as a result of battery acid spillage.

4. SAFETY RECOMMENDATIONS

4.1 In the interest of aviation safety, it is recommended that the AMO should be audited regarding maintenance practice in terms of scope of work and approval certificate. The AMO had inspected the control cables but had not noticed the corrosion.

5. APPENDICES

5.1 None.

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Report reviewed and amended by office of the EM: AIID October 2009