



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8511	
Aircraft Registration	ZS-KIA	Date of Accident	28 June 2008		Time of Accident	1530Z
Type of Aircraft	Piper PA 28-236		Type of Operation		Private	
Pilot-in-command Licence Type		Private Pilot	Age	53	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	375.5		Hours on Type	218
Last point of departure		Pietermaritzburg Aerodrome				
Next point of intended landing		Grand Central Aerodrome				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
In a sugar cane field at the geographical position determined as S29° 45.727 E30° 38.073.						
Meteorological Information		Temperature: 13°C; Wind: 130° at 12 knots; Visibility: 5 to 10 km				
Number of people on board	2 + 0	No. of people injured	0	No. of people killed	2 + 0	
Synopsis						
On 28 June 2008 at approximately 15:21Z, ZS-KIA with two crew on board, contacted Durban Approach stating that they were airborne from Pietermaritzburg Aerodrome en route to Grand Central Aerodrome in Gauteng. At approximately 15:26Z, the aircraft was lost from radar at flight level 057 at the position S29°45.18 E030°37.53, 13 nautical miles South of Pietermaritzburg as indicated on the ATC radar screen. It was found that the aircraft had suffered an in-flight break-up.						
Probable Cause						
The aircraft experienced an in-flight break-up due to aerodynamic overstress failure as a result of excessive speed.						
IARC Date				Release Date		



AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : J M Jones
Manufacturer : Piper Aircraft Corporation
Model : PA28-236
Nationality : South African
Registration Marks : ZS-KIA
Place : Hammarsdale
Date : 28 June 2008
Time : 1530Z

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 28 June 2008 at approximately 15:21Z, ZS-KIA contacted Durban Approach stating that they were airborne from Pietermaritzburg Aerodrome en-route to Grand Central Aerodrome in Gauteng.
- 1.1.2 At approximately 15:25Z, Durban approach noticed on radar that the aircraft was flying in a south-westerly direction towards the Durban harbour and not in a northerly direction as they were supposed to.
- 1.1.3 Durban approach then contacted ZS-KIA and requested them to confirm their destination, whereby ZS-KIA responded, "Grand Central".
- 1.1.4 Durban approach advised ZS-KIA that they were heading in a south-westerly direction of 145° and the track required for Grand Central was approximately 360°, whereupon ZS-KIA confirmed: "Copy that 360,° thank you".
- 1.1.5 After Durban approach had spoken to ZS-KIA, they noticed that the aircraft was turning to the right. Shortly thereafter the aircraft was lost from radar at flight level 057 at a position S29°45.18 E030°37.53, 13 nautical miles south of Pietermaritzburg as indicated on the ATC radar screen.

- 1.1.6 Although no witnesses reported seeing the events leading to the in-flight break up, two witnesses reported hearing the aircraft.

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 on impact with the ground.



Photo 1: Indicates the damages that the aircraft sustained.

1.4 Other Damage

- 1.4.1 No other damage was caused.

1.5 Personnel Information

- 1.5.1 Pilot 1

Nationality	South African	Gender	Female	Age	53
Licence Number	#####	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	31 May 2009				

Restrictions	Medical Restriction – To wear corrective lenses.
Previous Accidents	None

Flying Experience:

Total Hours as on 26 May 2008	375.5
Total Past 90 Days as on 26 May 2008	6.5
Total on Type Past 90 Days as on 26 May 2008	5.7
Total on Type as on 30 April 2008	218

1.5.2 Pilot 2

Nationality	South African	Gender	Male	Age	57
Licence Number	#####	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night rating				
Medical Expiry Date	31 May 2009				
Restrictions	Medical Restriction – To wear corrective lenses.				
Previous Accidents	None				

Flying Experience:

Total Hours as on 26 May 2006	665.9
Total Past 90 Days as on 26 May 2008	14.3
Total on Type Past 90 Days as on 26 May 2008	3.4
Total on Type as on 20 April 2008	279.9

1.6 Aircraft Information

Airframe:

Type	Piper PA28-236	
Serial Number	28-7911069	
Manufacturer	Piper Aircraft Corporation	
Year of Manufacture	1978	
Total Airframe Hours (On 08 May 2008)	1897.25	
Last MPI (Date & Hours)	1870.90	15 November 2007
Hours since Last MPI	26.35	
C of A (Issue Date)	12 May 1999	
C of A (Expiry Date)	11 May 2008	
C of R (Issue Date) (Present owner)	04 April 2001	
Operating Categories	Standard	

Engine:

Type	Lycoming O-540-J3A5D
Serial Number	L20802-40A
Hours since New(On 08 May 2008)	1897.25
Hours since Overhaul	TBO not yet reached

Propeller:

Type	Hartzell HC-F2yR-1F
Serial Number	CM168
Hours since New(On 08 May 2008)	1897.25
Hours since Overhaul	92.77

1.7 Meteorological Information

- 1.7.1 The official weather report obtained from the South African Weather Services reported the following weather conditions on the day of the accident:

Surface Analysis

A cold front was present over KZN with an on-shore flow of moist air into the coast and immediate interior.

Satellite image

The 14h30Z satellite image shows cloudy conditions in the Hammarsdale area.

Weather conditions in the vicinity of the accident:

Temperature: 13 °C
Dew Point: 10 °C
Wind Direction: 130 °TN 12 Knots
Cloud covers: BKN cloud at 1500ft.
Visibility 5 to 10 km

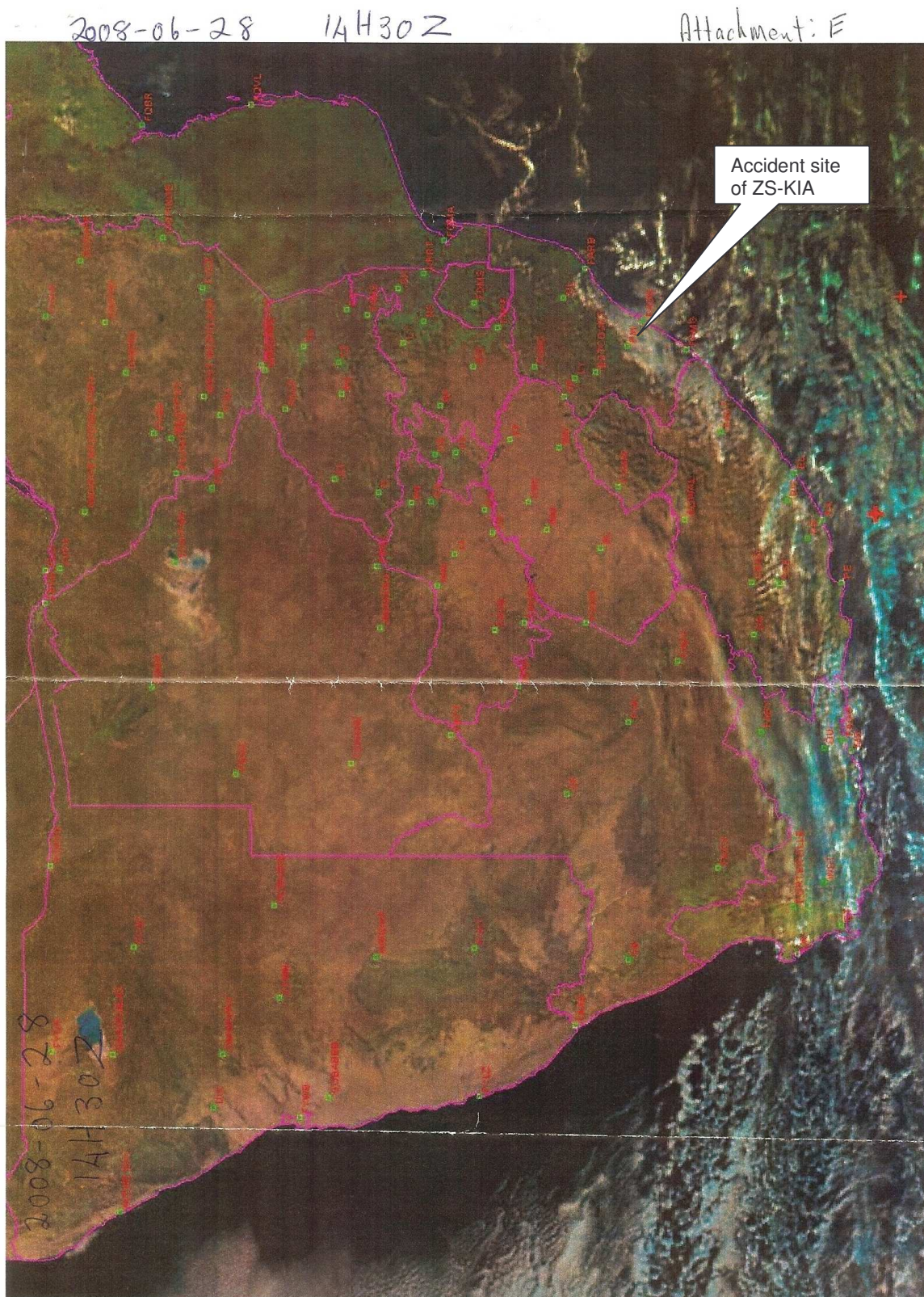


Photo 2: Satellite image indicating the weather conditions at the time of the accident.

1.8 Aids to Navigation

- 1.8.1 The aircraft was equipped with an Airpath C-2200-L4-B Compass. There were no recorded or reported defects experienced with the navigation equipment.

1.8.2 The radar images of the accident aircraft were obtained from ATC and it revealed that the pilot was flying on a heading of 145°.

1.9 Communications

1.9.1 The communication equipment that was installed in the aircraft was a King KI 208 VOR/LOC Indicator and a King KX 170 VHF Comm. / Nav. There were no entries of defects experienced with the communication equipment.

1.9.2 There was communication between the crew and Durban Air Traffic Control Services (ATC) on VHF frequency 119.1 MHz. Prior to take-off, the crew tried to establish communication with Pietermaritzburg ATC on VHF frequency 122.0 MHz, which was unsuccessful due to the fact that the ATC was not available.

1.9.3 The communication between ATC and the aircraft revealed the following information:

- At 15:21Z, ZS-KIA stated that they were airborne from Pietermaritzburg and requested flight level 85 for Grand Central Aerodrome.
- At 15:25Z, Durban Approach requested ZS-KIA to confirm their destination. ZS-KIA immediately responded by stating "Grand Central".
- Durban Approach then responded by stating that on radar "you are heading in a south-westerly direction of 145° and your track required for Grand Central is approximately 360°".
- ZS-KIA responded by saying "Copy that, 360° thank you".

1.10 Aerodrome Information

1.10.1 The accident did not happen at or in close proximity of an aerodrome.

1.10.2 The accident occurred in a sugar cane field near Hammarsdale at the geographical position determined as: S29° 45.727 E30° 38.073. The elevation was 2768 feet.

1.11 Flight Recorders

1.11.1 The aircraft was not equipped with a flight data recorder (FDR) or a cockpit voice recorder and neither recorder was required in terms of the Civil Aviation Regulations.

1.12 Wreckage and Impact Information

1.12.1 The main wreckage of the aircraft was found in a burnt sugar cane field, facing in the direction of 196°. The debris was scattered over an area of approximately 730 metres in length. The aircraft was found broken up into 10 major sections.

1.12.2 These sections consisted of the main wreckage, right-hand wing inner section, whole left-hand wing, a fibreglass section of the aircraft, right-hand wing outer section, 3 pieces of the elevator and a piece of the inboard left-hand wing aileron.

1.12.3 All major components of the aircraft were accounted for.

- 1.12.4 The main wreckage consisted of the cabin area, with all four seats and the aft fuselage including the rudder section.
- 1.12.5 The left-hand wing failed between the flap and aileron and the flap and a piece of the aileron was still attached to the wing. There was no evidence of any pre-existing cracks in any of the structure examined and no evidence of corrosion present in the wreckage. All fractured surfaces were consistent with overload separations.
- 1.12.6 The engine still formed part of the main wreckage. The propeller blades and spinner were still attached to the propeller hub, which was found separated from the engine. The propeller blades and spinner were found approximately 10 metres from the main wreckage. The one blade of the propeller was found partially buried in the ground and the other blade on the ground but bent backwards approximately in the middle of the blade.
- 1.12.7 The engine examination revealed no pre-impact abnormalities that could have indicated a power loss.
- 1.12.8 The left-hand wing inner section was found inverted 130.4 metres from the main wreckage. The right-hand wing was found inverted 300 metres from the main wreckage. A piece of unidentifiable fibre glass was found 320.9 metres from the main wreckage. A part of the stabilator was found 377.4 metres away from the main wreckage. Another part of the stabilator was found 432.6 metres from the main wreckage. Again another part of the stabilator was found 488.3 metres from the main wreckage. The outboard section of the left-hand wing was found inverted 608.2 metres from the main wreckage. A piece of the inboard left-hand wing aileron was found approximately 730 metres from the main wreckage.

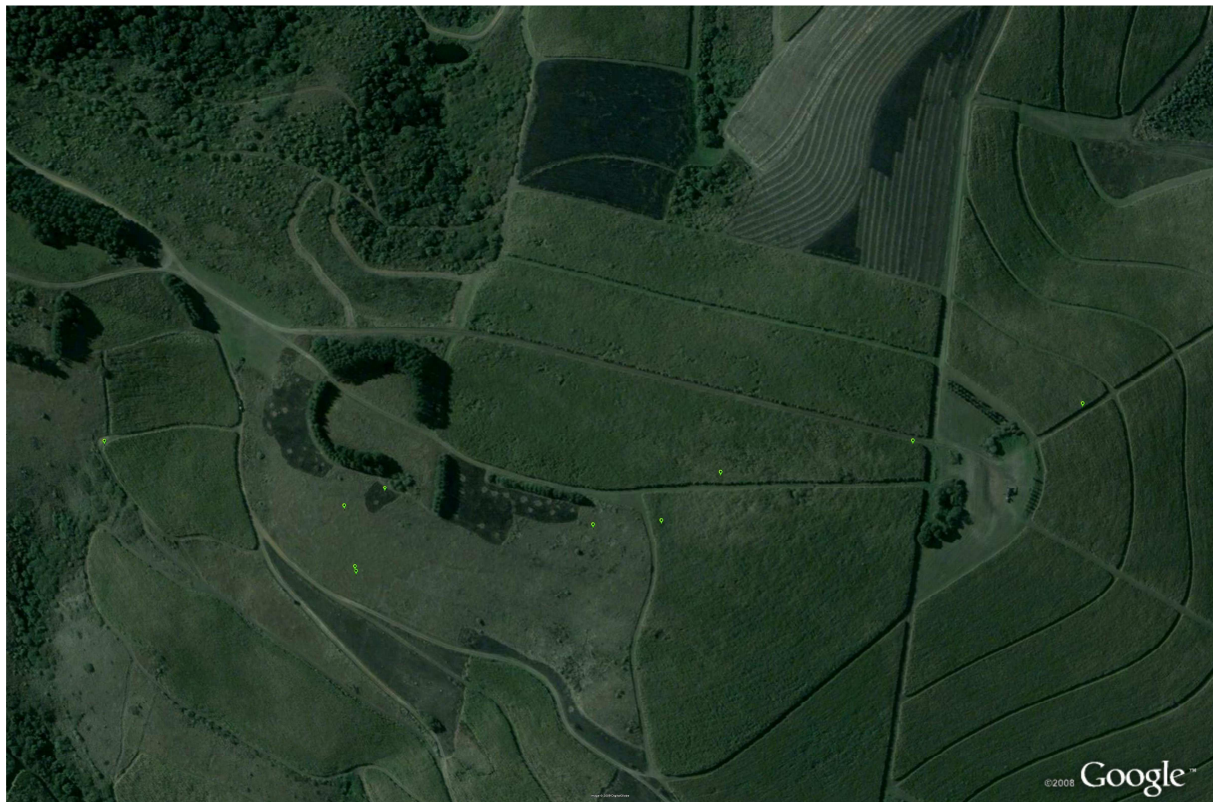


Photo 3: The green dots indicate the major sections of the aircraft.



Photo 4: Aerial view of the accident site.

1.13 Medical and Pathological Information

- 1.13.1 A post-mortem examination was performed on both the deceased pilots after the accident.
- 1.13.2 The post-mortem reports concluded that the cause of death for both pilots was multiple blunt force injuries.
- 1.13.3 No blood or vitreous fluid for toxicology analysis was available.

1.14 Fire

- 1.14.1 There was no evidence of fire in flight or after impact.

1.15 Survival Aspects

- 1.15.1 The accident was considered not survivable, due to the high impact forces which was associated with this type of accident. The cabin area was found destroyed. The safety belts were still intact.

1.16 Tests and Research

- 1.16.1 The fracture surfaces of where the wings and stabilator failed were analysed by a metallurgical analyst, who concluded the following:

“All the components examined, the wings and stabilator appear to have failed by aerodynamic overload through excessive airspeed. The fuselage had been destroyed on impact with the ground. Despite being specifically sought, no signs of any pre-existing fatigue cracking or corrosion damage could be found”.

- 1.16.2 The engine was not tested after the accident, as the engine examination did not reveal any pre-impact anomalies that would have prevented it from producing power. All the damages that were sustained to the engine were due to impact with the ground.

1.17 Organisational and Management Information

- 1.17.1 This was a private flight.

- 1.17.2 The pilot was the owner of the aircraft.

- 1.17.3 According to available records, the Aircraft Maintenance Organisation (AMO) that certified the last MPI on the aircraft prior to the accident was in possession of a valid AMO approval with an expiry date of 28 February 2009.

1.18 Additional Information

- 1.18.1 Since both people on board the aircraft were licensed pilots on type, it was difficult during the on-site investigation to determine who the actual pilot in control of the aircraft was prior or during impact, due to the severe damages that the cabin had sustained.

- 1.18.2 The police present on the scene on the day of the accident stated that during the recovery of the female body on board the aircraft, in order to remove the body from the wreckage, they had cut the seatbelt. The male body was found outside the wreckage, at a distance of approximately 10 metres away from the main wreckage.

- 1.18.3 A reconstruction of the wreckage was done after the accident. During the investigation, it was found that the seat belt of the left-hand seat was cut. Therefore the female body was occupying the left-hand seat.

- 1.18.4 It was found that the crew had taken off from Pietermaritzburg Aerodrome without filing a flight plan. On request from Durban Approach, the flight plan was later filed from the air.

1.19 Useful or Effective Investigation Techniques

- 1.19.1 None.

2. ANALYSIS

- 2.1 The aircraft took off from runway 16 at Pietermaritzburg Aerodrome and turned left to a heading of 145°. After approximately 6 minutes and in contact with Durban Approach, they were advised by ATC to turn onto a heading of approximately 360° to destination. During the turn, the aircraft disappeared from radar and it was later

discovered that the aircraft had suffered an in-flight break-up.

- 2.2 The debris was found scattered over an area of approximately 730 metres. The wreckage of the aircraft was found broken into 10 major sections, consisting of the main wreckage, right-hand wing inner section, whole left-hand wing, a fibreglass section of the aircraft, right-hand wing outer section, 3 pieces of the elevator and a piece of an inboard left-hand wing aileron. All major components of the aircraft were accounted for.
- 2.3 Metallurgical analysis revealed that the wings and stabilator sections failed due to an aerodynamic overload condition caused by excessive airspeed, and that no signs of any pre-existing fatigue cracking or corrosion damage could be found.
- 2.4 Although this was a private flight, both occupants on board the aircraft were pilots and one of the pilots was the owner of the aircraft. After the accident, a wreckage reconstruction was carried out and it was noticed that the seat belt of the left-hand seat was cut, which indicated that the female body had occupied the pilot seat.
- 2.5 The flight crew was properly licensed and medically fit to operate the aircraft. The female pilot, however, was without a night or instrument rating. The male pilot was night-rated.
- 2.6 Civil Aviation documentation revealed that the Certificate of Airworthiness had expired on 11 May 2008 and no evidence of a mandatory periodic inspection was found. No evidence of pre-accidental defects or malfunctions was found that could have contributed to the accident.
- 2.7 The official weather report obtained from the South African Weather Services reported that cloudy conditions as well as south-westerly winds were present at the time of the accident.
- 2.8 To summarize:

The possibility exists that after take-off the pilot entered some clouds and failed to notice that they were heading in the wrong direction until such time that Durban Approach brought it to their attention. Durban Approach also requested a flight plan, which was never filed prior to the flight. This is an indication that the pilots did not plan for the flight and indicated a lack of situational awareness.

The weather conditions contributed to the accident, and since the crew were not instrument-rated, it can be considered as one of the reasons why the crew lost control of the aircraft.

According to Radar, the heading change was considered to be the wrong way around as the distance between 145° and 360° is much shorter when turning left than when turning right.

During the turn, the pilot probably lost control of the aircraft, which resulted in the aircraft break-up. The radar reported that the aircraft was lost at flight level 057 as indicated on the ATC radar screen.

The pilot most probably exceeded the flight limitation of the aircraft during the turn.

3. CONCLUSION

3.1 Findings

- (i) Both pilots were holders of valid private pilot's licences and were properly type rated on the aircraft.
- (ii) The Certificate of Airworthiness of the aircraft expired on 11 May 2008.
- (iii) The Aircraft Maintenance Organisation was in possession of a valid AMO approval.
- (iv) Prevailing weather conditions contributed to the accident.
- (v) Both the pilots were fatally injured.
- (vi) The aircraft suffered an in-flight break-up.
- (vii) Metallurgical analysis revealed that the wings and stabilator failed due to an aerodynamic overload condition through excessive airspeed, and that no signs of any pre-existing fatigue cracking or corrosion damage could be found.

3.2 Probable Cause/s

- 3.2.1 The aircraft experienced an in-flight break-up due to aerodynamic overstress failure as a result of excessive speed.

4. SAFETY RECOMMENDATIONS

- 4.1 None.

5. APPENDICES

- 5.1 None.

Submitted through the office of the SM.