



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/3/2/0521	
Aircraft Registration	ZS-MNJ	Date of Incident	30 September 2006		Time of Incident	0930Z
Type of Aircraft	Piper PA 34		Type of Operation	Private Flight		
Pilot-in-command Licence Type		Private Pilot	Age	55	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	256.8		Hours on Type	130.4
Last point of departure		Rand Aerodrome (FAGM)				
Next point of intended landing		Lanseria Aerodrome (FALA)				
Location of the incident site with reference to easily defined geographical points (GPS readings if possible)						
At Lanseria Aerodrome, on the grass to the left side of Runway, S 25°56.451 E 027°55.416						
Meteorological Information		Wind direction: 360°/8 kts, Visibility: Clear Skies, Temperature: 20°C.				
Number of people on board	1 + 3	No. of people injured	0		No. of people killed	0
Synopsis						
<p>The pilot was engaged on a private flight in daylight conditions from Rand Aerodrome to Lanseria Aerodrome. After take-off, the pilot retracted the undercarriage, but the right hand main gear failed to retract. The pilot then recycled the undercarriage with the normal system and extended it again with the normal and emergency system, but the right hand-main gear indication light showed that the right-hand main gear had failed to lock down properly. The pilot decided to continue to FALA, in order to execute a landing with the right-hand main gear in an unsafe condition. When the aircraft landed on Runway 06L, the right-hand side main gear collapsed and aircraft veered off the runway onto the grass.</p> <p>During the onsite investigation and recovery of the wreckage, evidence showed that the Link Assembly – main gear downlock mechanism of the right-hand side main gear had failed, due to the link assembly bearing that was worn to the limit. This resulted in the right-hand side main gear not retracting and extending properly.</p>						
Probable Cause						
The right-hand side main gear of the aircraft collapsed.						
Contributory						
The Link Assembly – main gear downlock failed, due to link assembly bearing was worn to limits .						
<i>Include under carriage information in the report</i>						
IARC Date			Release Date			

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : Pleasure Air Partnership
Manufacturer : Piper Aircraft Corporation
Model : PA 34
Nationality : South African
Registration Marks : ZS-MNJ
Place : Lanseria Aerodrome
Date : 30 September 2006
Time : 0930Z

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 interests 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 and three passengers were engaged on a visual flight rules (VFR) private flight by day from Rand Aerodrome (FAGM) to Lanseria Aerodrome (FALA). After take-off the pilot retracted the undercarriage, but the right hand main gear failed to retract. The pilot then recycled the undercarriage with the normal system and extended it again with the normal and emergency system, but the right-hand main undercarriage indication light showed that the right-hand main gear had failed to lock down properly. The pilot advised the FAGM ATC of the right hand undercarriage problem and decided to continue to FALA, in order to execute a landing with the right hand main gear in an unsafe condition. When the aircraft landed on Runway 06L, the right hand side main gear collapsed and the aircraft veered off the runway onto the grass.

1.1.2 The aircraft sustained only minor damage in the incident. The pilot and passengers were not injured.

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft sustained minor damage in the accident.



R/H main gear collapsed after landing

1.4 Other Damage

1.4.1 There was no other damage.

1.5 Personnel Information

Nationality	South Africa	Gender	Male	Age	55
Licence Number	*****	Licence Type	Private Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating				
Medical Expiry Date	30 November 2006				
Restrictions	Corrective Lenses				
Previous Accidents	None				

Flying Experience:

Total Hours	256.8
Total Past 90 Days	6.9
Total on Type Past 90 Days	6.9
Total on Type	130.4

1.6 Aircraft Information

Airframe:

Type	Piper PA-34-220T	
Serial No.	34-8133002	
Manufacturer	Piper Aircraft Corporation	
Date of Manufacture	1981	
Total Airframe Hours (At time of Incident)	4118.4	
Last MPI (Date & Hours)	31 April 2006	4096.1
Hours since Last MPI	22.3	
C of A (Issue Date)	15 June 2006	
C of R (Issue Date) (Present owner)	03 March 2003 Pleasure Air Partnership	
Operating Categories	Standard	

- 1.6.1 There were no defects identified with the aircraft maintenance records and/or current airworthiness status of the aircraft.
- 1.6.2 During the onsite investigation, it was found that the Link Assembly – main gear downlock: P/N 39472-03 of the right-hand main gear had become inoperative, due to the link assembly bearing that was worn beyond safe limits. According to the maintenance records, the identified part was last inspected when the MPI was performed at 4096.1 hours by the AMO responsible for its maintenance. However, it appears as if the extend that the bearing had worn to, was not noticed.

Engine:

Type	Continental TSIO-360-KB
Serial No.	315006
Hours since New	4118.4
Hours since Overhaul	885.9

Engine:

Type	Continental TSIO-360-KB
Serial No.	319280
Hours since New	unknown
Hours since Overhaul	571.9

Propeller:

Type	Hartzel PHC-C3YF-2LKUF
Serial No.	EB-3664A
Hours since New	22.3
Hours since Overhaul	TBO not reached

Propeller:

Type	Hartzel PHC-C3YF-2LKUF
Serial No.	EB-4776A
Hours since New	22.3
Hours since Overhaul	TBO not reached

1.7 Meteorological Information

Wind direction	360°	Wind speed	8 kts	Visibility	
Temperature	20°C	Cloud cover	unknown	Cloud base	unknown
Dew point	unknown				

1.7.1 The meteorological information in the block diagram above was submitted by the pilot in the returned Pilot Questionnaire.

1.8 Aids to Navigation

1.18.1 The navigation and landing aids available at the aerodrome were not related to the cause of this accident. The pilot flew the aircraft on a visual flight rules (VFR) private flight by day. The pilot was cleared by ATC to do a visual approach.

1.18.2 The aircraft had standard navigational aids installed. Other additional navigational equipment found installed in the aircraft was approved and included on the equipment list of the aircraft. The pilot did not report any defects experienced with the aircraft navigational equipment during the flight.

1.9 Communications.

1.9.1 The aircraft had a VHF type of radio equipment installed, which was in a serviceable condition. The pilot broadcasted on radio frequency 124.0 MHz to FALA ATC, informing the tower of his emergency and requested permission to perform the forced landing. The aircraft was cleared to land on Runway 06L and Fire and Rescue Fighting Services were dispatched to assist.

1.10 Aerodrome Information

Aerodrome Location	Lanseria Aerodrome	
Aerodrome Co-ordinates	S 25°56'23.0 E 027°55'28.8	
Aerodrome Elevation	4517 FT	
Runway Designations	06L/24R	24L/06R
Runway Dimensions	2910 x 30	1760 x 23
Runway Used	06L	
Runway Surface	ASPH	
Approach Facilities	NDB, ILS, VOR & DME	

1.10.1 The above information included in the block diagram was extracted from Aeronautical

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with a Cockpit Voice Recorder (CVR) or a Flight Data Recorder (FDR) and neither was required by regulations to be fitted to this type of aircraft.

1.12 Wreckage and Impact Information

1.12.1 When the aircraft landed on Runway 06L, the right-hand side main gear collapsed and the aircraft veered off the runway onto the grass. The location of the wreckage was found at Lanseria Aerodrome, GPS co-ordinates reading: S 25°56.451 E 027°55.416. The aircraft was still intact at the accident site. The damage caused was to the bottom skin of the right-hand side wing and main gear.



1.13 Medical and Pathological Information

1.13.1 The pilot and passengers did not sustain any injuries.

1.14 Fire

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

1.15 Survival Aspects

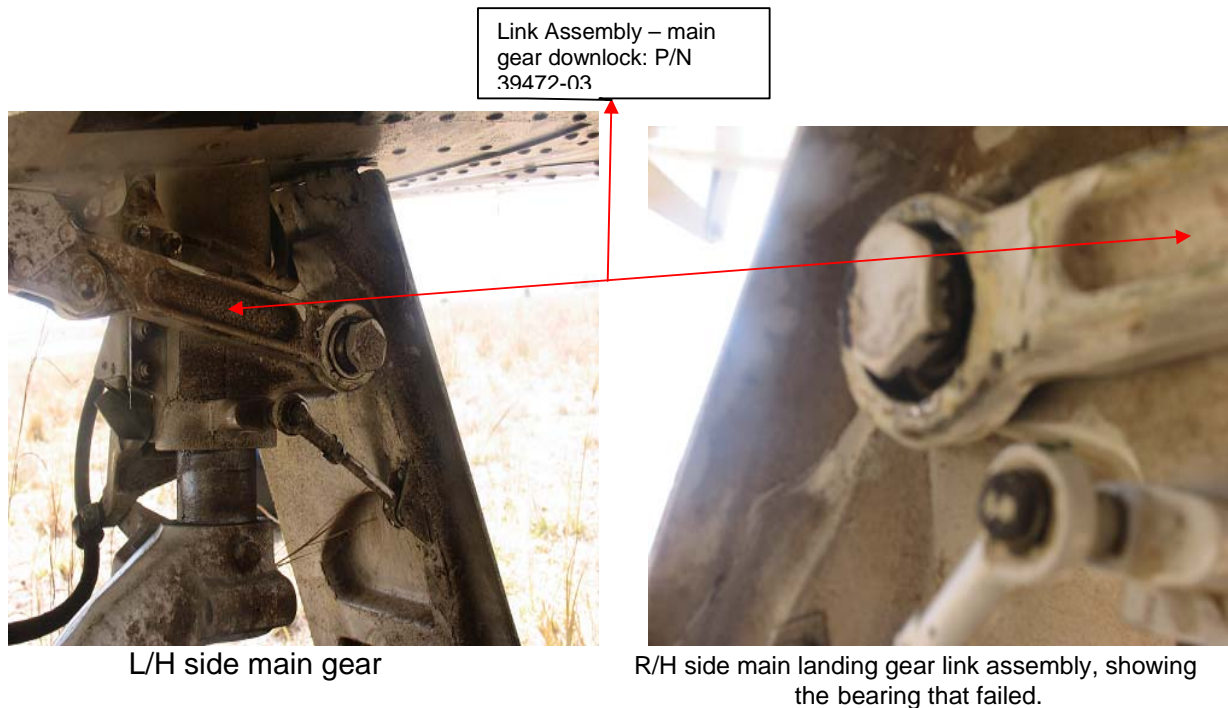
1.15.1 The accident was considered survivable as there was minor damage caused to the aircraft. All the occupants in the aircraft had their safety belts properly fastened and as a result did not sustain any injuries.

1.15.2 The Fire and Rescue Services at FALA were dispatched to the incident site. When they

arrived at the incident site, the fire-fighting personnel first ensured the safety of the aircraft and its occupants. The fire and rescue services also assisted in the recovering of the aircraft from the accident site to the hangar of the AMO responsible for its maintenance.

1.16 Tests and Research.

1.16.1 The aircraft was lifted on jacks and the undercarriage was examined. The evidence found showed that the following parts; Bearing: P/N 452793, x2 Bushings – tapered, truss assembly: P/N 39487-02 of the Link Assembly were worn to the limit, which resulted in the Link Assembly installation of the Gear Assembly – main, right: P/N 39484-09 to move over the Bolt: P/N 402978. (See photo below)



1.6.3 1.16.2 The maintenance requirement of the identified parts was determined to be “on condition”. Such a categorization would only require a visual inspection of the part during the inspection. Corrective action would then only be taken if mechanical defect or malfunction was detected. However, it appears as if the fact that the bearing had worn to beyond safe limits, was not noticed. It is also a normal practise to expect pilots to check undercarriage linkages during the preflight inspection.

1.17 Organisational and Management Information

1.17.1 The aircraft was privately operated by the owner on the day of the incident.

1.17.2 The Aircraft Maintenance Organisation (AMO) responsible for the maintenance of the aircraft had a valid AMO Licence. The privileges on the licence indicated the appropriate Category and Group ratings, which included aircraft and engine types.

1.18 Additional Information

- 1.18.1 The pilot communicated with FAGM ATC and it was decided to perform an emergency landing at FALA. Due to the close proximity of the aircraft to the right side edge of Runway 06L, the FALA ATC temporarily closed the runway and used Runway 06R/24L as the alternative runway. There was no need for a NOTAM, because there was no major delay in the recovery of the aircraft from the incident site or the re-opening of Runway 06L/24R.
- 1.18.2 The Fire and Rescue Services of FALA responded promptly and assisted with the recovery of the wreckage from the incident site. They had appropriate technical equipment to lift the right-hand side wing of the aircraft from the ground. No further damage was caused to the aircraft and the Fire and Rescue Services executed their duties professionally.

1.19 Useful or Effective Investigation Techniques

- 1.19.1 None.

2. ANALYSIS

- 2.1 The pilot was engaged on a private flight in daylight conditions from Rand Aerodrome to Lanseria Aerodrome. After take-off, the pilot retracted the undercarriage, but the right hand main gear failed to retract. The pilot then recycled the undercarriage with the normal system and extended it again with the normal and emergency system, but the right hand main gear indication light showed that the right hand main gear failed to lock down properly. The pilot decided to continue to FALA, in order to execute a landing with the right-hand main gear in unsafe condition.
- 2.2 During the onsite investigation and recovery of the wreckage, evidence showed that the Link Assembly – main gear downlock mechanism of the right-hand side main gear had failed; due to the link assembly bearing that was worn beyond safe limits. The link assembly installation became inoperative, resulting in the right-hand side main gear not retracting and extending properly.

3. CONCLUSION

3.1 Findings

- 3.1.1 The pilot and passengers were engaged on a visual flight rules (VFR) private flight in daylight conditions.
- 3.1.2 The pilot had a valid Private Pilot's Licence and the aircraft (PA 34) type rating was endorsed on the licence.
- 3.1.3 The pilot had a valid flight Medical Certificate on the day of the incident.
- 3.1.4 A right-hand side main gear light illuminated in the cockpit, showing that the gear had not retracted and was in an unsafe condition.
- 3.1.5 The pilot flew to Lanseria Aerodrome to perform an emergency landing.
- 3.1.6 The aircraft only sustained minor damage in the incident.
- 3.1.7 The Aircraft Maintenance Organisation (AMO) responsible for maintenance of the

aircraft had a valid AMO Licence and was appropriately rated to do maintenance on the aircraft type.

- 3.1.8 During the onsite investigation the evidence found showed that the Link Assembly – main gear downlock of the right-hand side main gear had failed, due to the fact that the link assembly bearing was worn to the limit.

3.2 Probable Cause/s

- 3.2.1 The main right-hand side gear of the aircraft had collapsed.

Contributory

- 3.2.2 The Link Assembly – main gear downlock failed, due to the link assembly bearing having been worn to the limit.

4. SAFETY RECOMMENDATIONS

4.1 Commissioner should require the Airworthiness Department of the SACAA to review the adequacy of the current inspection requirements and guidance material in respect of on condition parts to Aircraft Maintenance Organizations

4.2 It is recommended that the SACAA publish an article in the Safety Link magazine stressing the importance of verifying the servicability of undercarriage on condition items, such as linkages, during inspections, as well as during a preflight

5. APPENDICES

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Report reviewed and amended by the office of the EM:AIID
28 April 2009.