SOUTH AFRICAN CIVIL AVIATION AUTHORITY

Section/division **Occurrence Investigation**

Form Number: CA 12-12a

AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8461		
Aircraft Registration	**ZS-FAC**	**Date of Accident**	20 March 2008		**Time of Accident**	1250Z	
Type of Aircraft	Piper PA-28-140 (Aeroplane)		**Type of Operation**		Training		
Pilot-in-command Licence Type		Commercial	**Age**	31	**Licence Valid**	Yes	
Pilot-in-command Flying Experience		Total Flying Hours	950		Hours on Type	59	
Last point of departure	Brakpan Benoni Aerodrome (FABB)						
Next point of intended landing	Brakpan Benoni Aerodrome (FABB)						
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)							
During landing on Runway 18 at Brakpan Aerodrome S 26˚13'986" E 028˚17' 966"							
Meteorological Information	Fine weather. Temperature 27˚C.						
Number of people on board	2 + 0	**No. of people injured**	0	**No. of people killed**	0		

Synopsis

On the 20th of March 2008, the instructor and the student pilot were on a circuit training flight at Brakpan Benoni Aerodrome.

During the second approach, the student pilot abruptly applied the full left rudder which caused the aircraft to yaw and roll to the left. The instructor applied some corrective right rudder to get the aircraft back onto the runway centre line without informing the student that she had control of the aircraft.

The student, in an attempt to correct the left yaw, had also applied right rudder. This induced an abrupt right yaw as the instructor had already applied right rudder to some point before the student applied full right rudder.

The aircraft landed hard on the nose gear, resulting in a nose gear collapse and the aircraft veered off to the right-hand side of the runway and the propeller subsequently struck the ground.

Probable Cause

Hard landing as a result of the pilots manipulating controls simultaneously.

IARC Date		Release Date	

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Section/division **Occurrence Investigation**
Telephone number: **011-545-1000**
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AIRCRAFT ACCIDENT REPORT

Name of Owner	**:** F Swart
Name of Operator	**:** Airborne Aviation cc.2
Manufacturer	**:** Piper Aircraft Corporation
Model	**:** PA-28-140
Nationality	**:** South African
Registration Marks	**:** ZS-FAC
Place	**:** Brakpan Benoni Aerodrome
Date	**:** 20 March 2008
Time	**:** 1250Z

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 On the 20th of March 2008, the instructor and the student pilot were on a circuit training flight at Brakpan Benoni Aerodrome. According to the instructor, the speed and the power setting were within the limits on this, the first approach.

1.1.2 The student was not using coordinated rudder and aileron to maintain the centre line. On the first round out to touchdown, the student rounded out at a good height, but on touch- down the student lost control of the aircraft and it veered off to the left of the runway centreline and they were able to recover from the situation.

1.1.3 On the second approach, the instructor advised the student of the importance of maintaining the centre line, using coordinated rudder and aileron. During the second round out the student applied full left rudder, causing an abrupt yaw to the left. They heard a loud bang and the instructor applied the right rudder to get the aircraft to the centre line. The student abruptly applied full right rudder as well and the aircraft landed hard and veered to the right. The instructor called out for brakes but the nose wheel collapsed and the propeller struck the ground.

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft sustained damages to the nose landing gear, the bottom nose section and the propeller.

1.4 Other Damage

1.4.1 There were negligible scratch marks on the runway surface.

1.5 Personnel Information

1.5.1 Information of the instructor

Nationality	South African	Gender	Female	Age	31
Licence Number	**********	Licence Type	Commercial		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Instrument and Instructor Rating Grade III				
Medical Expiry Date	31 August 2008				
Restrictions	None				
Previous Accidents	None				

Flying Experience :

Total Hours	950
Total Past 90 Days	80
Total on Type Past 90 Days	0.3
Total on Type	59

1.5.2 Information of the student pilot

Nationality	India	Gender	Female	Age	19
Licence Number	**********	Licence Type	Student		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	None				
Medical Expiry Date	30 November 2009				
Restrictions	None				
Previous Accidents	None				

Flying Experience:

Total Hours	25.8
Total Past 90 Days	18.5
Total on Type Past 90 Days	9.0
Total on Type	15.2

1.6 Aircraft Information

Airframe :

Type	Piper PA 28-140	
Serial Number	28-23625	
Manufacturer	Piper Aircraft Corporation	
Year of Manufacture	1967	
Total Airframe Hours (At time of Accident)	10149.57	
Last MPI (Date & Hours)	28/11/2008	10053.86
Hours since Last MPI	95.7	
C of A (Issue Date)	13 February 2008	
C of R (Issue Date) (Present owner)	08 September 1971	
Operating Categories	Standard	

Engine:

Type	Lycoming O-360 – E3D
Serial Number	28-23625
Hours since New	5328.35
Hours since Overhaul	1578.21

Propeller:

Type	Sensenich 74 DM6. 0. 58
Serial Number	A 43930
Hours since New	1085. 42
Hours since Overhaul	989.71

1.7 Meteorological Information

1.7.1 Weather information as obtained from the pilot's questionnaires:

Wind direction	180˚C	Wind speed	06 kts	Visibility	CAVOK
Temperature	27˚C	Cloud cover	Nil	Cloud base	Nil
Dew point	Unknown				

1.8 Aids to Navigation

1.8.1 The aircraft was fitted with standard navigation equipment certified for this type and none were reported unserviceable before or during the flight.

1.9 Communications

1.9.1 Brakpan Aerodrome was unmanned; therefore the crew was monitoring the traffic on the frequency of 122.7MHz.

1.9.2 There were no anomalies reported with regards to the communication.

1.10 Aerodrome Information

Aerodrome Location	Brakpan Benoni Aerodrome
Aerodrome Co-ordinates	S 26˚14’17.0” E 028˚18’21.0”
Aerodrome Elevation	5300 ft
Runway Designations	18 / 36
Runway Dimensions	1440m x 15m
Runway Used	18
Runway Surface	Tar
Approach Facilities	None
Aerodrome Status	Unregistered

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 During the landing and on round out, the student applied full left rudder, resulting in a left yaw. The instructor then applied right rudder and the student also applied full right rudder, resulting in an abrupt right yaw. By applying full right rudder the aircraft made a right yaw followed by a hard landing on the nose gear, which resulted in the nose gear collapsing and the propeller striking the ground.

Photo 1: shows the aircraft after the nose wheel had separated from the aircraft.

1.13 Medical and Pathological Information

1.13.1 The instructor and the student sustained no 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 the cabin areas sustained no damage. Also both occupants used the three-point harness ~~and it had not failed~~ which did not fail and provided the intended protection.

1.16 Tests and Research

1.16.1 None

1.17 Organisational and Management Information

1.17.1 The training school had a valid Aviation Training Organisation accreditation and approval issued on 01 February 2008 with an expiry date of 17 January 2009. The Flight Operations department had conducted an audit on the 30th of January 2007

and on the 10th of October 2006; the inspections revealed that the ATO presented high standard as well as the required awareness level of flight safety.

1.18 Additional Information

1.18.1 It was noted during investigation that the aircraft did not have brakes on the instructor's side.

1.19 Useful or Effective Investigation Techniques

1.19.1 None.

2. ANALYSIS

2.1 The instructor and the student were conducting circuit training when the accident occurred. There was no evidence of any aircraft system or engine malfunction.

2.2 During the second approach, the student pilot abruptly applied the full left rudder which caused the aircraft to yaw and roll to the left. The instructor applied some corrective right rudder to get the aircraft back onto the runway centre line without informing the student that she had control over the aircraft.

2.3 The student, in an attempt to correct the left yaw, had also applied right rudder. This induced an abrupt right yaw as the instructor had already applied right rudder to some point before the student applied full right rudder.

2.4 The aircraft landed hard on the nose gear, resulting in the nose gear collapsing and the aircraft veered off to the right-hand side of the runway. Subsequently the propeller struck the ground.

3. CONCLUSION

3.1 Findings

3.1.1 The instructor had a valid licence and was properly rated at the time of the accident. The student had a valid student pilot's licence at the time of accident. The instructor had not flown the aircraft type for the previous ninety days.

3.1.2 The student pilot applied too much of the left rudder and the aircraft yawed and rolled to the left. The instructor applied the right rudder to bring the aircraft to the centre line without informing the student that she was in control of the aircraft.

3.1.3 The student overcorrected by applying too much right rudder.

3.1.4 The instructor and student were both in control of the aircraft moments before landing.

3.1.5 The instructor did not inform the student that she had control before she corrected for the left yaw.

3.1.6 The aircraft landed hard on the nose gear, and as a result the nose gear separated.

3.1.7 There was no system malfunction on the aircraft.

3.1.5 According to the available CAA records, the aircraft was properly maintained.

3.1.6 The aircraft did not have brakes from the instructor's side, though the aircraft was being used for training.

3.1.6 Weather was not a contributory factor to the accident.

3.2 Probable Cause/s

3.2.1 Hard landing as a result of the pilots manipulating controls simultaneously and both applying right rudder.

3.3 Contributory

3.3.1 Instructor's failure to intervene in time to rectify the situation when the student was losing control.

4. SAFETY RECOMMENDATIONS

4.1 It is recommended that the Commissioner reviews the need and effectiveness of introducing regulations requiring the that an instructor shall have flown the aircraft type within the preceding 90 days and be familiar with its characteristics prior providing any flight instructor on the applicable type of aircraft.

5. APPENDICES

5.1 None.

-END-

Report reviewed and amended by Office of the EM:AIID
29 April 2009