



AIRCRAFT ACCIDENT REPORT AND EXECUTIVE SUMMARY

				Reference:	CA18/2/3/8024	
Aircraft Registration	ZS-PIK	Date of Accident	18 October 2005		Time of Accident	1300Z
Type of Aircraft	Air-Tractor 401B		Type of Operation	Agricultural		
Pilot-in-command Licence Type		Commercial Pilot	Age	31	Licence Valid	Yes
Pilot-in-command Flying Experience		Total Flying Hours	1 299,1		Hours on Type	771,9
Last point of departure		Farm Vrede at Riviersonderend				
Next point of intended landing		Farm Vrede at Riviersonderend				
Location of the accident site with reference to easily defined geographical points (GPS readings if possible)						
14 km west of Riviersonderend in the Western Cape						
Meteorological Information		Wind: South-west at 3 to 5 knots; Temperature: 21 °C; Visibility: CAVOK				
Number of people on board	1 + 0	No. of people injured	1 + 0	No. of people killed	0	
Synopsis						
<p>The pilot, while conducting an agricultural spraying detail, was in the process of taking off after uplifting 1 200 litres of insecticide to spray a field.</p> <p>The pilot stated that he took off at an indicated air speed of 80 mph with 30° flaps on a gravel runway approximately 600 metres long. After a downwind take-off, he made a left turn towards the field and prepared to clear a stand of bluegum trees before descending to spray the field. According to the pilot, approximately 50 metres before the trees he experienced a sudden gust of wind which lifted the left wing and caused the aircraft to bank to the right.</p> <p>He immediately dumped the insecticide, but the aeroplane stalled, its nose dropped and it collided with the trees ahead of it.</p> <p>The aircraft's left wing struck the trees first and the right wing then hit the ground. As a result of the impact, both the empennage section and undercarriage separated from the aircraft. The aeroplane skidded for a distance and came to a halt approximately 20 metres from a farm shed.</p> <p>The aircraft was extensively damaged and the pilot sustained minor injuries.</p> <p>The last MPI (Mandatory Periodic Inspection) was certified on 10 October 2005 at 5 238,0 airframe hours. At the time of the accident, the aircraft had accumulated a further 12,3 airframe hours since the last MPI was certified.</p>						
Probable Cause						
<p>The pilot did not comply with the requirements as stated in the Pilot Operating Handbook and stalled the aircraft.</p> <p>Contributory: The aircraft was overweight.</p>						
IARC Date	23 October 2007		Release Date			

AIRCRAFT ACCIDENT REPORT

Name of Owner/Operator : JSL Trust
Manufacturer : Air Tractor
Model : 401B
Nationality : South African
Registration Marks : ZS-PIK
Place : Farm Vrede at Riviersonderend
Date : 18 October 2005
Time : 1300Z

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, while conducting an agricultural spraying detail, was in the process of taking off after uplifting 1 200 litres of insecticide to spray a field.
- 1.1.2 He stated that he took off at an indicated air speed of 80 mph with 30° flaps on a gravel runway approximately 600 metres long. After a downwind take-off, he made a left turn towards the field and prepared to clear a stand of bluegum trees before descending to spray the field. Approximately 50 metres before the trees, he experienced a sudden gust of wind that lifted the left wing and caused the aircraft to bank to the right.
- 1.1.3 He immediately dumped the insecticide, but the aeroplane stalled, its nose dropped and it collided with the trees ahead.
- 1.1.4 The aircraft's left wing struck the trees first and the right wing then hit the ground. As a result of the impact, both the empennage section and undercarriage separated from the aircraft. The aeroplane skidded for a distance and came to a halt approximately 20 metres from a farm shed.

1.2 Injuries to Persons

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

1.3 Damage to Aircraft

1.3.1 The aircraft was extensively damaged on impact and sustained damage to the wings, fuselage and undercarriage.

1.4 Other Damage

1.4.1 Minimal damage was caused to trees and vegetation.

1.5 Personnel Information

Nationality	South African	Gender	Male	Age	31
Licence Number	0271007734	Licence Type	Commercial Pilot		
Licence valid	Yes	Type Endorsed	Yes		
Ratings	Night Rating, Agricultural Rating				
Medical Expiry Date	12 February 2006				
Restrictions	None				
Previous Accidents	None				

Flying Experience:

Total Hours	1 299,1
Total Past 90 Days	103,7
Total on Type Past 90 Days	103,7
Total on Type	771,9

1.6 Aircraft Information

Airframe

Type	Air Tractor AT-401B	
Serial Number	401B-0958	
Manufacturer	Air Tractor	
Year of Manufacture	1994	
Total Airframe Hours (at time of accident)	5 250,3	
Last MPI (Date & Hours)	5 238	10 April 2005
Hours since Last MPI	12,3	
C of A (Issue Date)	15 July 2004	
C of R (Issue Date) (Present Owner)	8 September 2004	
Operating Categories	Restricted	

Engine

Type	Pratt & Whitney R1340-AN1
Serial Number	19161
Hours since New	9 560,8
Hours since Overhaul	597,6

Propeller

Type	Hamilton Standard 22D40-505
Serial Number	810 012
Hours since New	Unknown
Hours since Overhaul	597,6

Weight and Balance

Item	Weight (lbs)	Arm	Moment
Aircraft Empty Weight	4 507	20,5	90 365,35
Pilot (93kg)	202	74	14 948
Hopper (1 200ℓ)	2 640	12	31 680
Fuel (USG)(200ℓ)	308	33	10 428
Total take-off weight	7 657	19	145 483

The maximum take-off weight for the aircraft, according to the POH (Pilot's Operating Handbook), was not allowed to exceed 6 000lbs and centre of gravity (CG) limits (+16,0) to (+24,0) inches.

The aircraft was not loaded within the allowable CG envelope as stipulated in the POH.

The aircraft was found to be 1 657lbs overweight – an excess of 27%.

1.7 Meteorological Information

1.7.1 Information obtained from pilot's questionnaire:

Wind direction	South-west	Wind speed	3 to 5 kts	Visibility	CAVOK
Temperature	21 °C	Cloud cover	8/8	Cloud base	6 000ft
Dew point	Unknown				

1.8 Aids to Navigation

1.8.1 The aircraft was equipped with standard navigational equipment certified for this type of aircraft and this was reported serviceable at the time of the accident.

1.9 Communications

1.9.1 The aircraft was equipped with standard communication equipment for this type of aircraft and this was reported serviceable at the time of the accident.

1.10 Aerodrome Information

1.10.1 The accident did not occur on an aerodrome but on a farm 14 kilometres from Riviersonderend in the Western Cape Province.

1.10.2 The pilot stated that he took off from a gravel runway 600 metres long on a private runway in a north-easterly direction.

1.11 Flight Recorders

1.11.1 The aircraft was not fitted with a flight data recorder, nor was this required in terms of the Civil Aviation Regulations.

1.12 Wreckage and Impact Information

1.12.1 The aircraft collided with trees with the left wing first before the right wing struck the ground. During the impact sequence, the empennage section and the main undercarriage separated from the aircraft, before the aeroplane came to a halt 20 metres from a farm shed.

1.13 Medical and Pathological Information

1.13.1 The pilot was the holder of a valid aviation class 1 medical certificate with no restrictions.

1.14 Fire

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

1.15 Survival Aspects

1.15.1 Although there were high impact forces associated with this type of accident, the trees absorbed most of the energy during impact. The pilot was properly restrained by the aircraft's four-point safety harness.

1.16 Tests and Research

1.16.1 None was considered necessary.

1.17 Organisational and Management Information

1.17.1 According to available records, the Aircraft Maintenance Organisation (AMO) that certified the last MPI on the aircraft prior to the accident had been in possession of a valid AMO approval – No. 221 with an expiry date of 28 November 2005. The CAA conducted an audit on the AMO on 26 November 2004 and a follow-up inspection on 23 March 2005. Several findings were raised concerning their MOP. All the findings were resolved prior to the issuance of the approval certificate.

1.17.2 The operator was the holder of a valid Air Operating Certificate – no. CAA/G608D – issued on 7 June 2005 with an expiry date of 11 May 2006.

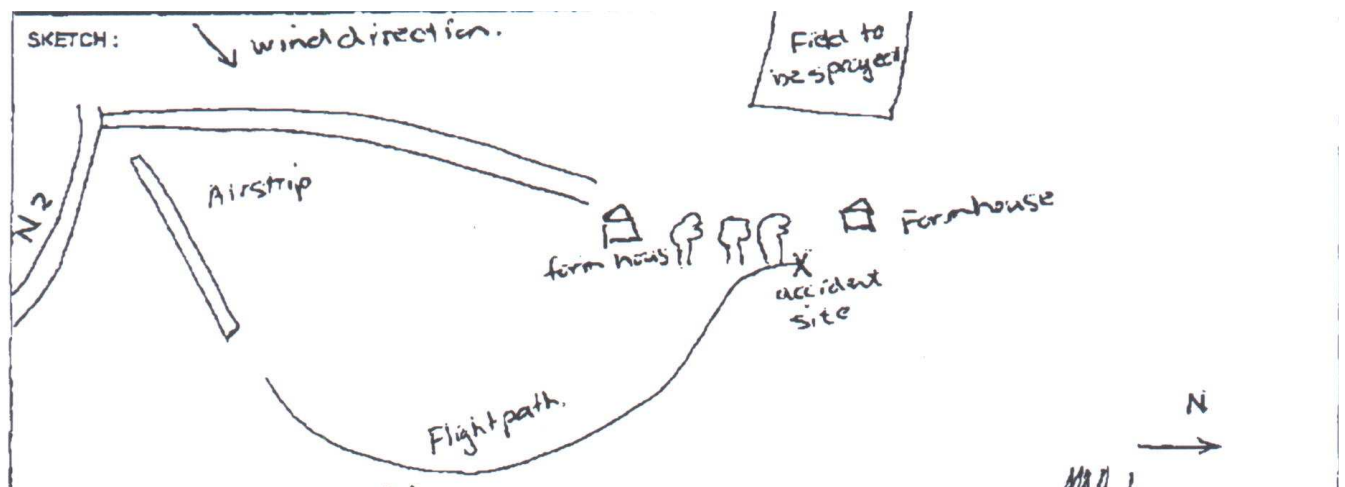
1.18 Additional Information

1.18.1 TAKE-OFF (FULL HOPPER LOAD AND SHORT STRIP)

Use the same procedure as for normal take-off except as follows:

1. Lower flaps to 10° position (first mark).
2. With a full hopper load, apply full power before the brakes are released.
3. After breaking ground, do not retract the flaps until at least 100 mph is reached.

1.18.2 Sketch obtained from the pilot questionnaire indicating the flight path.



1.19 Useful or Effective Investigation Techniques

1.19.1 Not considered necessary.

2. ANALYSIS

- 2.1 The pilot, who was correctly licensed and flew a serviceable aircraft, was conducting an agricultural spraying detail. He stated that after take-off, he experienced a sudden gust of wind which lifted the left wing, causing the aircraft to bank to the right. He immediately decided to dump the insecticide but in the process stalled the aircraft.
- 2.2 Calculations performed indicate that the aircraft was 1 665lbs over its allowable maximum take-off weight. This is a normal deviation within the crop-spraying industry and an acceptable practice by most authorities.
- 2.3 The pilot further stated that he took off with 30° of flap and at an indicated airspeed of 80 mph. The Pilot Operating Handbook (POH), by contrast, recommended taking off with 10° of flap and at an indicated airspeed of 100 mph.
- 2.4 The pilot took off downwind on a relatively short runway (600m) with an overweight aircraft at too slow an airspeed, a situation that was aggravated by the pilot's turning the aircraft to the left after take-off. Moreover, he had to clear a stand of trees before flying to the field to be sprayed. While he was attempting to do this, the aircraft stalled and collided with the trees.

3. CONCLUSION

3.1 Findings

- 3.1.1 The pilot was the holder of a valid commercial pilot's licence with the aircraft type endorsed in his licence.
- 3.1.2 The operator was the holder of a valid Air Operating Certificate – no. CAA/G608D
- 3.1.5 The AMO was in possession of a valid AMO approval certificate and had been audited by the CAA.
- 3.1.6 The accident occurred in daylight conditions.
- 3.1.7 The aircraft sustained damages to the wings, fuselage and undercarriage.
- 3.1.8 The pilot sustained minor injuries.
- 3.1.9 Weather was considered not to have contributed to this accident.
- 3.1.10 The aircraft was found to be 27% overweight.
- 3.1.11 The pilot took off with 30° of flap and at an indicated airspeed of 80 mph. However, the Pilot Operating Handbook (POH) recommended taking off with 10° of flap and at an indicated airspeed of 100 mph.

3.2 Probable Cause/s

- 3.2.1 Having taken off with a higher than normal take-off weight, and whilst in a turn to the left, the pilot stalled the aircraft in an attempt to clear trees.

Contributory:

3.2.2 The aircraft was operated with a higher-than-normal take-off weight.

4. SAFETY RECOMMENDATIONS

4.1 None

5. APPENDICES

5.1 None

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Report reviewed and amended by Office of the EM: AIID
September 2008