Aviation Safety Investigation Report 199703901

American Aircraft Corp AA-1C

30 November 1997

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Aviation Safety Investigation Report

199703901

Occurrence Number: 199703901 **Occurrence Type:** Accident
Location: 19km S Mandurah
State: WA **Inv Category:** 4
Date: Sunday 30 November 1997
Time: 1315 hours **Time Zone** WST
Highest Injury Level: Minor
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	0	0	1	0	1
Ground	0	0	0	0	0
Passenger	0	0	1	0	1
Total	**0**	**0**	**2**	**0**	**2**

Aircraft Manufacturer: American Aircraft Corp
Aircraft Model: AA-1C
Aircraft Registration: VH-IFU **Serial Number:** AA1C-0108
Type of Operation: Non-commercial Pleasure/Travel
Damage to Aircraft: Substantial
Departure Point: Lake Clifton WA
Departure Time:
Destination: Lake Clifton WA

Approved for Release: Friday, February 13, 1998

The aircraft was being used for a private flight from Jandakot to the Lake Clifton airstrip. The pilot had opened the canopy to cool the cockpit. Passing Peel Inlet, the pilot commenced descent from 3,500 ft to land at the airstrip. At approximately 1,500 ft with the airspeed at between 110 and 120 knots, the pilot reported hearing a loud explosion and then experiencing intensive wind-blast in the cockpit. The pilot's headset and hat were blown off and the passenger suffered cuts and abrasions to his face and scalp. The windscreen and canopy perspex had separated from the aircraft. The pilot reported that the airspeed was reducing through 80 knots before he managed to regain level flight and eventually make a safe landing at the airstrip.

The subsequent inspection revealed that the windscreen and canopy perspex had fractured and broken up. There was no evidence of any external impact. A few shards of perspex remained in the cockpit but most had departed, some piercing the aircraft's wings and elevators during their travel rearwards. Three bolts secure the forward part of the windscreen and a shard of perspex found secured by the centre bolt had evidence of fatigue cracking prior to the ultimate failure. There was also some evidence of fretting of the hole through which the centre bolt was located. The aircraft documentation indicated that the windscreen had not been replaced since the aircraft was assembled in 1978. However, the windscreen had been stop drilled to control cracking in 1986 and 1997 although during that period the aircraft had only flown approximately 94 hours. The aircraft documentation does not indicate where the cracks were in the windscreen. The aircraft had flown approximately 41 hours since the last crack repair.

Evidence indicates that it is probable that the windscreen perspex had failed at or near the front securing bolts. The low pressure generated by the airflow over the windscreen would have caused the perspex to lift from the front causing the windshield-bow assembly to bend rearwards onto the canopy-bow assembly before the windshield perspex ultimately failed and broke-up. Before the windshield perspex had broken up, the pressure on the canopy-bow assembly probably caused the canopy perspex to bow beyond limits to also eventually fail and break-up.

The investigation could not determine the cause of the fatigue that appeared to have led to the failure of the windscreen.