



**AIRCRAFT ACCIDENT REPORT
OCCURRENCE NUMBER 00/1179**

AESL AIRTOURER 115

ZK-DDP

NEAR KAITAIA

1 MAY 2000

Glossary of abbreviations used in this report:

AESL	Aero Engine Services Limited
agl	above ground level
CAA	Civil Aviation Authority
CAR	Civil Aviation Rule(s)
CPL(A)	Commercial Pilot Licence (Aeroplane)
E	east
ft	feet
km	kilometre(s)
m	metre(s)
NZST	New Zealand Standard Time
S	south
UTC	Coordinated Universal Time
VFR	Visual Flight Rules

AIRCRAFT ACCIDENT REPORT

OCCURRENCE No 99/466

Aircraft type, serial number and registration:	AESL Airtourer 115, 568, ZK-DDP
Number and type of engines:	One Lycoming O-235-C2A
Year of manufacture:	1971
Date and time:	1 May 2000, 0856 hours* (approx)
Location:	4 km east of Kaitaia Latitude: S 35° 06.5' Longitude: E 173° 18.2'
Type of flight:	Private
Persons on board:	Crew: 1
Injuries:	Crew: 1 fatal
Nature of damage:	Aircraft destroyed
Pilot-in-command's licence	Commercial Pilot Licence (Aeroplane)
Pilot-in-command's age	26
Pilot-in-command's total flying experience:	743.3 hours, 80.9 on type.
Information sources:	Civil Aviation Authority field investigation
Investigator in Charge:	Mr S J Walker

* Times are NZST (UTC + 12 hours)

Synopsis

The National Rescue Coordination Centre was notified of the accident at 0857 hours on Monday 1 May 2000. The Transport Accident Investigation Commission was in turn notified shortly thereafter, but declined to investigate. A CAA site investigation was commenced next day.

The aeroplane was on a private flight in the vicinity of Kaitaia. In the last few seconds of the flight the aeroplane was seen in a vertical climb, which was followed by a manoeuvre resembling a stall turn to the right, and an almost vertical dive toward the ground. The height at which this manoeuvre occurred precluded recovery before the aeroplane struck the ground. The pilot was killed. The aircraft was destroyed by impact forces and fire.

1. Factual information

1.1 History of the flight

- 1.1.1 On Monday 1 May 2000 at approximately 0830 hours, ZK-DDP took off from Kaitaia Aerodrome. The aeroplane was operated by the local aero club at which the pilot was an instructor.
- 1.1.2 No flight plan or SARWATCH was filed. The pilot left no indication at the aero club that he had taken the aircraft, or any information about his intended flight. However, personnel from the aero club reported that the pilot had been due to take some aerial photographs of a Church Road property, some 4 km south of the aerodrome.
- 1.1.3 The total fuel endurance at commencement of the flight was estimated to be about 1.5 hours. A student on the last flight of the previous day recalled that when they checked the level of fuel in the tank prior to their flight, there was 2 hours' worth of fuel remaining. The duration of this previous flight was reported by the student to have been about half an hour.
- 1.1.4 Between 0835 hours and 0845 hours, the aircraft was seen by people on the ground to circle "at normal height" over properties on Church Road.
- 1.1.5 At approximately 0855 hours the aeroplane was observed by the occupant of a Church Road property to fly low over Church Road into the adjacent valley to the east, tracking in a south-easterly direction. The witness reported that a few seconds after this sighting she saw smoke rising from a location to the north east of her position which she discovered later to be the site of the accident.
- 1.1.6 At 0856 hours the aeroplane was seen in a vertical climb with the underside of the fuselage facing the north and the wings parallel to Church Road. At the top of the climb the engine note reduced; the aeroplane then yawed to the right about its vertical axis, which resulted in the nose pointing directly toward the ground. The location of this manoeuvre was estimated to be between 50 and 100 m to the south of Church Road.

- 1.1.7 This final manoeuvre was seen by two witnesses, a builder who was known to the pilot, working on a house about 100 m north of the accident site and a farmer about 400 m to the north east. The witness to the north described the height of the manoeuvre to be “two telegraph poles” above the road. However, this does not indicate the actual height of the aeroplane agl, as the position of this witness was slightly below the level of the road, which was between him and the aeroplane. He was not aware of the aeroplane prior to it appearing from the south and below the ridge over which the road passes. The witness to the northeast described how he saw the aeroplane through a gap in some trees situated between his property and the area where the aeroplane was flying just prior to impact.
- 1.1.8 The aeroplane dived below the line of sight of both of the witnesses. A loud “thud” was heard as the aircraft impacted the ground, and a plume of smoke was seen immediately afterward.
- 1.1.9 The accident occurred in daylight at 0856 hours NZST 4 km east of Kaitaia. Latitude S 35° 06.5', longitude E 173° 18.2', grid reference 260-O01-385771.

1.2 Injuries to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Other</i>
Fatal	1	0	0
Serious	0	0	0
Minor/None	0	0	

1.3 Damage to aircraft

- 1.3.1 The aeroplane was destroyed

1.4 Other damage

- 1.4.1 Nil.

1.5 Personnel information

- 1.5.1 The pilot held a CPL(A) and a C category instructor rating. He held a current Class 1 medical certificate.
- 1.5.2 His total flight time was 743.3 hours. He had flown 43.10 hours in the 90 days preceding the accident, and had a total of 80.90 hours on the Airtourer 115.
- 1.5.3 The pilot did not hold an aerobatic rating issued under rule part 61.

1.6 Aircraft information

- 1.6.1 AESL Airtourer 115, serial number 568, ZK-DDP had accrued a total of 5854.15 hours in service up to the date of the accident. The last 100-hour inspection was carried out on 29 April 2000, at 5842.37 airframe hours.
- 1.6.2 The aeroplane had a non-terminating Airworthiness Certificate issued on 20 December 1995, and the last Annual Review of Airworthiness was carried out on 5 May 1999.
- 1.6.3 The Lycoming 0-235-C2A engine had run 3535.35 hours total time since new and 915.35 hours since overhaul.

1.7 Meteorological information

- 1.7.1 At the time of the accident flight, the weather in the Kaitia region was reported by witnesses as clear sky, good visibility and light winds. The weather was determined not to have been a factor in this accident.

1.8 Aids to navigation

- 1.8.1 Not applicable

1.9 Communications

- 1.9.1 Not applicable

1.10 Aerodrome information

- 1.10.1 Not applicable.

1.11 Flight recorders

- 1.11.1 Not applicable.

1.12 Wreckage and impact information

- 1.12.1 The aeroplane had impacted the ground in a southerly heading on the apex of a 20-degree downward sloping spur.
- 1.12.2 The ground impact marks and damage to the aeroplane indicated that the aeroplane had struck in a flat, wings-level attitude relative to the ground.
- 1.12.3 The direction of the of the wreckage trail suggests that the aeroplane had almost completely reversed its direction of flight immediately prior to the impact with the ground.
- 1.12.4 Initially, the right wing impacted with one post in a fence running parallel to the debris trail. At the point of impact with the ground the main and nose gear and propeller sheared off and the aircraft fuel ignited.
- 1.12.5 The aeroplane came to rest inverted, 65 m downhill from the first impact point.

- 1.12.6 The nature of the propeller blade damage indicated that the engine was probably producing low power at impact.
- 1.12.7 Destruction by fire made it impossible to obtain any useful information from the cockpit instruments and control positions but pre-impact integrity of the elevator and rudder controls was positively established.
- 1.12.8 The engine was transported to an engine overhaul shop, stripped and inspected. This revealed no pre-impact abnormalities.
- 1.21.9 The centre of gravity of the aeroplane was not calculated, however there was nothing to indicate that it was outside the prescribed limits.
- 1.21.10 A camera and film was found in the wreckage. The film, when developed, showed aerial pictures of a local property. The pictures appear to have been taken from a height of approximately 500 feet agl.

1.13 Medical and pathological information

- 1.13.1 Post-mortem examination of the pilot revealed that he had died of traumatic injuries sustained at the time of impact. It was reported that the post-mortem examination did not reveal any incapacitating condition that may have contributed to the accident.

1.14 Fire

- 1.14.1 An intense post-impact fire consumed most of the centre fuselage of the aircraft.

1.15 Survival aspects

- 1.15.1 The accident was not survivable.

1.16 Tests and research

- 1.16.1 Not applicable.

1.17 Organisational and management information

- 1.17.1 Not applicable.

1.18 Additional information

- 1.18.1 The Civil Aviation Rules prescribe safe minimums relating to aerobatic and low flying:
 - ❑ Rule 91.311 prescribes that no pilot-in-command of an aircraft shall operate an aircraft under VFR at a height of less than 500 feet above the surface unless conducting a take off, approach or a bailed or discontinued approach.
 - ❑ Rule 91.701 prescribes that no pilot shall operate an aircraft in aerobatic flight below 3000 feet unless the holder of a rating issued under CAR Part 61 and then only above 1500 feet. Aerobatic flight is defined in CAR Part 1:

“manoeuvres such as rolls, loops, spins, upward vertical flight culminating in a stall turn, hammerhead or whip stall, or a combination of such manoeuvres”.

- Rule 91.201 prescribes that each pilot-in-command of an aircraft shall—ensure the safe operation of the aircraft and the safety of its occupants during flight time.

1.19 Useful or effective investigation techniques

1.19.1 Nil.

2. Analysis

- 2.1 Damage caused by the fire meant that mechanical failure of the aircraft systems, other than the engine, could not be completely eliminated, however there was nothing found during the investigation to suggest that mechanical failure contributed to the accident.
- 2.2 On the day of the accident it is apparent that the pilot breached the requirements of various Civil Aviation Rules
- 2.3 The significance of the proximity of the accident to where the builder was working cannot be disregarded.
- 2.4 This accident appears to have been as a consequence of the pilot performing a vertical reversal stall turn at such a low height above the ground that safe recovery was not possible.

3. Conclusions

- 3.1 The pilot was appropriately licensed, experienced and fit to make the planned flight.
- 3.2 The aeroplane was airworthy and had been maintained in accordance with the CARs.
- 3.3 It appears that the aeroplane was flying in an aerodynamically stalled condition at the time of impact with the ground.
- 3.4 It is probable that the pilot attempted an aerobatic manoeuvre at a height above the ground from which recovery was not possible.

4. Safety actions

- 4.1 The CAA will issue an article in its safety education publications explaining the hazards resulting from knowingly violating the rules and accepted procedures and how this can contribute to fatal aircraft accidents. This article will offer information about the preventative and corrective actions that can be taken when it is discovered that violations have occurred.

(Signed)
A Buckingham
for Richard White
Manager Safety Investigation
18 October 2000