

**Aviation Safety Investigation Report
199001162**

Cessna 210 L

28 October 1990

Readers are advised that the Australian Transport Safety Bureau investigates for the sole purpose of enhancing transport safety. Consequently, Bureau reports are confined to matters of safety significance and may be misleading if used for any other purposes.

Investigations commenced on or before 30 June 2003, including the publication of reports as a result of those investigations, are authorised by the CEO of the Bureau in accordance with Part 2A of the Air Navigation Act 1920.

Investigations commenced after 1 July 2003, including the publication of reports as a result of those investigations, are authorised by the CEO of the Bureau in accordance with the Transport Safety Investigation Act 2003 (TSI Act). Reports released under the TSI Act are not admissible as evidence in any civil or criminal proceedings.

NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 199001162
Location: Lilydale VIC
Date: 28 October 1990
Highest Injury Level: Nil
Injuries:

Occurrence Type: Accident

Time: 1720

	Fatal	Serious	Minor	None
Crew	0	0	1	1
Ground	0	0	0	-
Passenger	0	0	0	4
Total	0	0	0	5

Aircraft Details: Cessna 210 L
Registration: VH-IBJ
Serial Number: 210-60489
Operation Type: Private
Damage Level: Substantial
Departure Point: Mallacoota VIC
Departure Time: 1535
Destination: Lilydale VIC

Approved for Release: 10th April 1991

Circumstances:

The pilot was conducting a travel flight over two days, from Lilydale to Essendon, Merimbula, Mallacoota and returning to Lilydale. Pre- DEPARTURE, he checked the fuel tanks and established they were full. The left tank gauge was indicating full, while the right tank gauge was showing less than half. On setting course for Essendon he noticed the cylinder head temperature gauge was indicating a high temperature so decided he would use a cruise mixture setting richer than normal. He selected a fuel flow of 105 pounds an hour (68.6 litres per hour.) On the subsequent legs the pilot adopted a similar procedure. Before departing Merimbula the next morning he checked the tank levels by putting his finger in the tank aperture and ascertaining the fuel was about 7.5 centimetres below the top. He decided there was adequate fuel for the rest of the flight and did not refuel. On the flight plan he recorded an endurance of 240 minutes, with a plan time for the two legs of 110 minutes. The flights proceeded normally and the pilot again used the higher cruise fuel flow. After passing the East Sale area and when heading towards Warragul he noted the right tank fuel gauge was on empty and the left was on one quarter. He decided that the time flown and his preflight determination of tank contents meant there was adequate fuel for the rest of the flight and continued. About 10 minutes out of Lilydale the engine failed, apparently due to fuel exhaustion in the left tank. The right tank was selected and the engine regained power. The aircraft approached Lilydale for an entry on the dead side of the circuit. While at circuit height for a landing into the north, the engine failed. The pilot manoeuvred the aircraft via an "S" turn onto a final approach to the right hand northern runway. The wind was from the north at 15-20 knots and on turning onto final the pilot realised the aircraft would not make the strip. The aircraft contacted the ground 50 metres short of the airfield boundary with the landing gear up. The VDO time meter recorded a total engine running time of 4.9 hours since departing Lilydale. There was no fuel left in the tanks. In his flight plan considerations for endurance the pilot did not make any allowance for the extra fuel required for each takeoff and climb to cruise altitude. In addition, he did not revise his fuel endurance to take account of the use of a higher than

planned cruise fuel flow. Calculations made during the investigation showed that when these factors were taken into account, planned fuel useage was consistent with actual fuel used.

Significant Factors:

1. The pilot's fuel planning did not take account of the extra fuel required for several take offs and climbs.
2. The pilot used a different fuel flow in flight to that which he had used for calculating the flight plan endurance, but he did not recalculate endurance.
3. The pilot continued the flight after he had observed fuel gauge indications that were abnormal.
4. Engine failure due to fuel exhaustion.
5. The pilot misjudged the forced landing approach.