

**Aviation Safety Investigation Report
199700537**

**Cessna Aircraft Company
Centurion**

19 February 1997

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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: 199700537 **Occurrence Type:** Accident
Location: 5km W Kalgoorlie/Boulder, Aerodrome
State: WA **Inv Category:** 4
Date: Wednesday 19 February 1997
Time: 1805 hours **Time Zone** WST
Highest Injury Level: Serious
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	0	1	0	0	1
Ground	0	0	0	0	0
Passenger	0	2	1	0	3
Total	0	3	1	0	4

Aircraft Manufacturer: Cessna Aircraft Company
Aircraft Model: 210L
Aircraft Registration: VH-CLL **Serial Number:** 21060271
Type of Operation: Charter Passenger
Damage to Aircraft: Destroyed
Departure Point: Marvel Loch WA
Departure Time: 1715 WST
Destination: Kalgoorlie WA

Crew Details:

Role	Class of Licence	Hours on	
		Type	Hours Total
Pilot-In-Command	Commercial	150.0	1000

Approved for Release: Thursday, April 10, 1997

The pilot commenced duty at 0230 hours for an 0300 departure. He arrived back at Kalgoorlie at approximately 0830 having completed nearly four hours flying. He then departed Kalgoorlie again at 0930 in VH-CLL for a flight to Laverton and return. This was the first flight for the day in CLL, on which a 100 hourly inspection had been completed the previous day. The aircraft left Kalgoorlie on this trip with full fuel tanks which is 337 L and sufficient for up to six hours flying. The planned time for the trip was 104 minutes. The pilot had a four hour break at Laverton in air conditioned sleeping accommodation. He said that he used this time to catch up with paper work.

He arrived back at Kalgoorlie at about 1520 and was asked by the operator if he felt up to completing a flight to Marvel Loch and return, a flight which should have taken about 45 minutes each way. At this time the pilot had completed a split duty period (ie four hours rest at Laverton) of 13 hours. The pilot said that although he was feeling a little tired, he indicated he was happy to do the flight. He later said that he was a little apprehensive as he had not been to Marvel Loch before. Flight planning and departure was completed in a hurry. There should still have been plenty of fuel remaining in the aircraft to complete the trip.

During taxi the pilot tried to load Marvel Loch into the GPS but was unable to do so. The aircraft departed at 1550 but the pilot inadvertently logged an incorrect departure time of 1610. En route the pilot said he was not able to climb as high as he wanted to due to rain showers and the aircraft ADF was erratic due to storm cells in the area. These aspects, in combination with the light conditions resulted in the pilot taking some time to locate Marvel Loch and in his estimation taking some 30 minutes more to do the flight than planned.

After landing at Marvel Loch, the pilot then became concerned about the fuel state of the aircraft. There was no aviation gasoline available to top up but the pilot was able to visually inspect and dip the tanks although the dipstick was not calibrated. However, after dipping the tanks the pilot was satisfied he had sufficient fuel to return to Kalgoorlie. He estimated there was about 30 L in the left tank and 40 to 50 L in the right tank. The return flight was via a direct track at an altitude of 5,500 ft. Power in the cruise was set to 22" MAP and 2400 RPM with the mixture leaned to 80 pounds per hour. The pilot said he had the left tank selected for the first half of the trip. He then selected the right tank.

Approaching Kalgoorlie, the pilot commenced descent, selecting a slightly richer mixture. At 15 NM from Kalgoorlie he called inbound on the MBZ frequency. At 10 NM he broadcast on the MBZ frequency that he would be joining an eight mile final for runway 11. Suddenly the engine started to surge as if out of fuel. The pilot immediately switched the fuel selector back to the left tank believing there was fuel still in that tank. However, the engine did not respond although the pilot thought it was still delivering some power. He became convinced that both fuel tanks were empty.

By this time the aircraft's altitude was low and the pilot believed he had no time left to devote to the engine problem. He concentrated on finding a suitable landing area, being too far out to make the airfield. The pilot then saw the main Kalgoorlie to Coolgardie road and manoeuvred the aircraft to land on that road. At this stage the landing gear had not been lowered. When the aircraft was almost on the road the right wing hit a tree. The aircraft then slid along the road before sliding off the edge and into trees. The occupants were assisted from the wreckage by passers by.

The investigation did not determine why the engine lost power but there could have been a number of reasons such as the mixture not being progressively enriched on descent or the selected fuel tank outlet being momentarily uncovered in turbulence or during unco-ordinated flight. Fuel system vapourisation was also considered, as the manufacturer has published a Service Information Letter warning of this phenomenon and describing the procedure to correct it. Although the temperature was 36 degrees at the time of this accident, the aircraft had been operating in hot conditions with no previous instances of vapourisation.

There was no indication that fuel had been lost in flight and based on fuel usage against time flown, there should have been between 80 and 100 L of fuel on board at the time of the initial power interruption. Post accident inspection revealed that there was fuel in the right tank (30 L were actually drained from the tank). There was also fuel in the cabin which had leaked from a broken fuel line and would have been from the right tank. The aircraft came to rest left wing low and the inspection indicated that the left tank was empty.

The investigation was unable to establish with certainty how long the pilot had fed from each tank during the flights performed that day and therefore it was not possible to calculate how much fuel should have been left in each tank. It is significant however that the pilot at no time selected the electric fuel pump on after experiencing the initial power loss. He was also unsure if he had selected the mixture to full rich.

It may also be significant that the pilot had a long duty day (approx: 15.5 hours to the time of the accident) in hot conditions, during which he flew an estimated 7.8 hours. This may have adversely affected his performance.
