Aviation Safety Investigation Report 199001154

Beechcraft D55

15 August 1990

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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: 199001154 **Occurrence Type:** Accident
Location: 9 km WNW of Lilydale Airfield VIC
Date: 15 August 1990 **Time:** 30
Highest Injury Level: Fatal
Injuries:

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

Aircraft Details: Beechcraft D55
Registration: VH-MKE
Serial Number: TE-592
Operation Type: Charter
Damage Level: Destroyed
Departure Point: Sydney NSW
Departure Time: 2150
Destination: Melbourne VIC

Approved for Release: 14th August 1991

Circumstances:

The aircraft was on a night freight flight from Sydney to Melbourne, with a planned route via Canberra, Albury and Eildon Weir, at 8000 feet. Over Canberra the pilot was cleared to climb to 10,000 feet. South of Canberra he amended his plan to proceed via Corryong due to unsuitable weather on the planned route. When the pilot transferred to Melbourne Flight Service frequency south of Corryong at 2329 hours, he advised the aircraft had a partial engine failure and to stand by. Subsequently at 2333 hours he said he had regained the engine. At this time the aircraft was about 30 miles to the southeast of Albury. Approaching Eildon Weir the pilot descended to cruise at 8000 feet and shortly after was cleared to commence descent into Melbourne. At 0027 hours when about 20 miles from Melbourne, while descending from 4000 to 3000 feet, he made a mayday call advising that he had a "dual engine failure" and requesting any available assistance. As the aircraft was too far from the lighted airfields at Melbourne and Essendon, the pilot was given radar headings towards Lilydale airfield. The pilot asked about lights at Lilydale and was advised that action was being taken to get them on. At 0028 hours he reported the right engine surging. He subsequently advised at 0029 hours that the altitude was now 1000 feet and when told Lilydale was 5 miles away said he was not going to make it. Radar contact with the aircraft was lost shortly thereafter. Apart from possible patches of ground fog the weather in the Melbourne area was fine, with no significant low cloud or wind. An on-site investigation revealed the aircraft had impacted heavily against the northern face of a road cutting. It was determined that both engines had lost power due to fuel exhaustion. A fuel stain found on the left wing was consistent with an inflight loss of fuel from the left main fuel tank cap. Further examination revealed that, although apparently fastened correctly, the fuel tank cap had been prevented from sealing due to interference from a wire clip attached to the fuel cap securing chain. This resulted in fuel being sucked past the tank cap during flight due to the difference between fuel tank and overwing air pressures. This in turn caused the floor of the bladder type fuel tank to be lifted, resulting in false gauge indications. The aircraft had departed Sydney with adequate fuel to complete the

planned flight. It is probable that the engine partial power loss reported by the pilot at 2329 hours was due to fuel exhaustion in the left main tank, resulting from a combination of loss of fuel and normal fuel consumption. The pilot would have been able to regain normal engine operation by moving the left engine fuel selector to cross feed fuel from the right main fuel tank. However, because of the loss of fuel from the left tank, the endurance was significantly reduced. Continued use of fuel from the right main tank by both engines, would have led to total fuel exhaustion of the right tank at about the time the pilot reported the double engine failure. Inspection of other aircraft with similar tank cap systems indicated that it was not possible to lock the tank cap with the pin lodged under it. However, it was noted that the clip could inadvertantly be caught under the cap and have force applied to it, such as was likely to cause the clip to become deformed in service. The pin attached to the left main fuel tank cap was found to have been deformed.

Significant Factors:

The following factors were considered relevant to the development of the accident

1. Design of tank clip and fuel tank system.

2. Undetected deformation of clip in service.

3. Clip inadvertantly lodged under left main tank cap, probably during pre-flight inspection of the tank contents.

4. Undetected loss of fuel in flight and collapse of the left main fuel cell, leading to a false fuel contents indication and fuel exhaustion of the left main tanks.

5. Pilot decision to continue towards destination, rather than divert.

6. Double engine failure at night, following total fuel exhaustion.