

**Aviation Safety Investigation Report
198802373**

Piper PA31-P

25 June 1988

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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: 198802373 **Occurrence Type:** Accident
Location: Sydney (Kingsford Smith) Airport NSW
Date: 25 June 1988 **Time:** 1510 approx
Highest Injury Level: Serious
Injuries:

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

Aircraft Details: Piper PA31-P
Registration: VH-DRE
Serial Number: 31P-56
Operation Type: Private
Damage Level: Substantial
Departure Point: Sydney NSW
Departure Time: N/A
Destination: Brisbane Qld

Approved for Release: 16th September 1991

Circumstances:

The aircraft landed at Sydney to refuel after an uneventful flight from Hobart. After landing it was found that maintenance was required to rectify a flat battery. Subsequently, the aircraft was refuelled on a concrete apron adjacent to the maintenance hangar. In order to prevent fuel venting, the pilot had instructed the refuellers not to completely fill the right inner tank. Fuel was later observed leaking from the aircraft centre section on completion of the refuelling. The leak diminished when the refuellers had about 10 L of fuel syphoned from the right inner tank. Fuel was observed to drain from both engine nacelles and pool on the apron whilst the pilot was preparing to start the engines. The flow diminished when the fuel mixture controls were selected to the cut-off position. The pilot decided to start the left engine after an attempt to start the right engine was unsuccessful. Immediately after the engine fired, there was a violent explosion in the underfloor area, igniting the fuel which lay beneath the aircraft. Flames entered the cockpit through the damaged floor, causing minor fire damage before aircraft engineers extinguished the fire with portable extinguishers. Although injured, the occupants were able to vacate the aircraft without outside assistance. An investigation revealed a significant pre-existing fuel leak from the right inner fuel tank. The leak resulted from deterioration of the top rear seam of the fuel bladder. As the fuel tank compartment was not fitted with a discrete fuel drain, fuel leaking from the bladder flowed along the inner skin of the wing and entered the underfloor area of the fuselage. The aircraft had been inspected for the re-issue of a Certificate of Airworthiness three months prior to the accident. That inspection had failed to detect the deterioration of the right inner fuel tank. Fuel loss had been observed after previous refuellings but was assumed to have emanated from the fuel tank vent.

Significant Factors:

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

1. The deteriorated condition of the right inner fuel tank bladder resulted in a fuel leak when there was a significant quantity in the tank.
2. An inspection for the issue of a Certificate of Airworthiness, three months prior to the accident, did not detect the deteriorated condition of the right inner fuel tank.
3. The right inner fuel tank compartment in which the tank bladder was located, was not fitted with a discrete drain system.
4. Fuel leaked from the right inner fuel tank compartment into the cabin underfloor area.
5. Pre-flight inspection by the pilot-in-command was inadequate.
6. The engines were inadvertently overprimed during the pre-start procedure, resulting in a loss of fuel.
7. The pilot-in-command attempted an engine start in an area where a fuel spill had occurred. SAFETY

Reccomendations:

1. The Civil Aviation Authority review the certification requirements for PA31-P aircraft in respect of the provision of discrete drains in fuel tank compartments.