Aviation Safety Investigation Report 198903803

Piper PA32-260

1 September 1989

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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: 198903803 **Occurrence Type:** Accident
Location: Toowoomba QLD
Date: 1 September 1989 **Time:** 715
Highest Injury Level: Serious
Injuries:

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

Aircraft Details: Piper PA32-260
Registration: VH-PAZ
Serial Number: 32-273
Operation Type: Private
Damage Level: Destroyed
Departure Point: Archerfield QLD
Departure Time: 0635
Destination: Charleville QLD

Approved for Release: 11 January 1990

Circumstances:

The pilot had hired the aircraft to fly some friends to the Birdsville races. His only previous experience on the PA32-260 was a one hour check flight two days prior to the accident, carried out with with an instructor from the hiring company. The pilot reported that during his preflight inspection on the day of the accident, he had found water in fuel samples from all four fuel tank drains. After submitting his flight plan, he carried out a further water drain check to ensure that no water remained in the tanks. After he was satisfied, the aircraft was boarded and a normal DEPARTURE from Archerfield was accomplished. The aircraft was climbed to 4500 feet enroute to Charleville, where a refuelling stop was planned. The pilot stated that he had leaned the mixture during the climb, and after levelling off he noticed that the aircraft was not performing as well as he had expected. He also noticed that the engine temperature indications were at the high end of the normal range. Approaching north of Toowoomba, the pilot became increasingly concerned about the performance of the engine, and was contemplating a diversion to Oakey, which was visually ahead and on track. The pilot stated that he had changed from the left main tank to the right main tank at about this time, and shortly afterwards the engine stopped. He carried out checks and attempted to restart the engine without success. During the subsequent forced landing in mountainous terrain, the aircraft struck a tree which tore off the left wing, and the aircraft overturned before coming to rest in a clear area. The engine was subsequently placed in a test rig, and with only minor preparation, the engine was started and ran normally. The fuel system on this aircraft is fitted with an engine driven fuel pump, and two electric pumps connected in parallel. The electric pumps are controlled by a single switch and are used if the engine driven pump fails. The manufacturer also recommends their use during takeoff, landing, and while making fuel tank selections to ensure constant fuel flow to the engine. One of the electric fuel pumps was found to be inoperative, but it is not considered that this would have contributed to the engine failure. The fuel pump switch was found in the on position at the accident site, and the pilot does not recollect turning it off after DEPARTURE from Archerfield. It is

therefore likely that at least one of the pumps was operating when the fuel selection was made, prior to the engine malfunction. It is not known when the electric fuel pump failure occurred. The engine manufacturer recommends that the engine should not be leaned below 5000 feet at power settings above 75 per cent power. Leaning within this area increases engine operating temperatures. The high engine temperatures that the pilot observed may have led to fuel vapourisation. The incorporation of the electric fuel pumps is to assist in purging the fuel system in these circumstances, and the unserviceability of one of these pumps may have prolonged the restoration of normal fuel flow to the engine. The aircraft had not been flown prior to 30 August 1989 since 14 June 1989. On 30 August, the aircraft flew one hour on the check flight, on the left main tank and no fuel tank selections were made. As far as is known, the next time the fuel selection was changed, was just prior to the engine failure. The possibility exists that air or water may have been present in the system when the pilot selected the right main tank. The pilot was not aware of the existence of the fuel sump drain, and as a result had not carried out the correct water drain procedure during his preflight inspection. No evidence of water was found in the fuel system after the accident, but the aircraft came to rest inverted and any water present may have escaped. The investigation did not reveal any defect with the engine or the airframe fuel system that may have contributed to the engine failure. From the available information, it is considered that a possible cause of the engine failure was fuel vapourisation and water or air contamination in the fuel system, which could not be purged in the time available before the aircraft struck the ground. The nature of the terrain, and the altitude of the aircraft when the engine failed, precluded the pilot from reaching a suitable forced landing area.

Significant Factors:

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

1. The pilot had only limited experience on the aircraft type.

2. The engine failed due to reasons which could not be positively determined. The most likely cause was an interruption of normal fuel supply to the engine, and power was unable to be restored before the aircraft reached the ground.

3. The pilot was committed to a forced landing on unsuitable terrain.