Aviation Safety Investigation Report 199503537

de Havilland Aircraft Tiger Moth

20 October 1995

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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.

The Bureau did not conduct an on scene investigation of this occurrence. The information presented below was obtained from information supplied to the Bureau.

J 1	riccident
V Category:	4
ne Zone	WST
Serial Nun ivel	iber: 1375
1	Serial Nun vel

Crew Details:

	Hours on		
Role	Class of Licence	Туре Н	lours Total
Pilot-In-Command	Private	573.0	1435

Approved for Release: Thursday, August 22, 1996

The pilot reported that shortly after departure from Jandakot the engine lost power and then stopped altogether. He attempted to carry out a forced landing in a grassed paddock but the aircraft was damaged in the process.

An inspection of the aircraft's fuel system disclosed that the fuel filter, lines and carburettor were contaminated by a significant amount of rust-coloured water. However, no water was evident in fuel obtained from the drain points on either the main or auxiliary fuel tanks. The pilot reported that he had drained a significant amount of water from the main fuel tank prior to departure.

The main fuel tank was constructed of corrugated metal. The longitudinal corrugations were not connected to each other and most were not connected to the single drain-sump. Water had collected in the corrugations and some was still evident after the accident. The drain-sump was not located on the lowest part of the tank and undrainable water could accumulate in the tank, aft of the sump, with the aircraft in the ground attitude.

An experienced Tiger Moth engineer reported that inadequate fuel tank drain systems was a known problem and an Airworthiness Directive (AD) had been issued which required that fuel-drain points, fitted to some aircraft types (including the Tiger Moth), be designed so that water could not be conveyed to the engine in any normal attitude for the aircraft. These drain points were usually fitted to the lowest point on the tank. That is, along the rear edge. The AD was withdrawn when a number of requirements, covered by several ADs, were incorporated into Civil Aviation Orders Part 100. Transfer of the fuel-drain requirements to the CAOs was incomplete because, whilst similar fuel-drain requirements exist for aircraft constructed in accordance with the amateur-built category of aircraft there is no longer any requirement to retro-fit similar systems to existing aircraft, such as the Tiger Moth.

Two Tiger Moth fuel tank modifications, designed to meet the requirements of the AD before it was withdrawn, were available to overcome the lack of drainage found in this tank. Both incorporated drain points along the rear edge. Neither of these modifications had been incorporated in VH-HPH's fuel tank. It is probable that in-flight aircraft movement allowed some of the water that had collected in the corrugations, and at the rear of the tank, to make its way into the fuel system and cause the engine stoppage.

An inspection of the ground marks at the accident site indicated that the aircraft touched down whilst it was still in a sideslip to the left. Touchdown was followed by a partial ground-loop as the aircraft tipped up onto its nose and left upper wing. The aircraft was approaching a fence on touchdown. It is possible that the pilot used the sideslip manoeuvre in an attempt to loose height quickly and touchdown earlier, but did not stop the sideslip in time for the landing.

An inspection of the lower left wing during the post-accident investigation disclosed that one spar had fractured some time prior to the accident. It was also evident that reconstruction of the wing, also carried out some time prior to the accident, was not in accordance with the manufacturer's specifications.