

**Aviation Safety Investigation Report
199805459**

**de Havilland Aircraft
Tiger Moth**

05 December 1998

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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:	199805459	Occurrence Type:	Accident
Location:	Palm Meadows Golf Course, 20km N Coolangatta, Aerodrome		
State:	QLD	Inv Category:	4
Date:	Saturday 05 December 1998		
Time:	1045 hours	Time Zone	EST
Highest Injury Level:	None		

Aircraft Manufacturer: de Havilland Aircraft
Aircraft Model: DH-82A
Aircraft Registration: VH-AQN **Serial Number:** 402
Type of Operation: Charter Passenger
Damage to Aircraft: Substantial
Departure Point: Surfers Gardens ALA Qld
Departure Time: 1035 EST
Destination: Surfers Gardens ALA Qld

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Commercial	5934.0	6762

Approved for Release: Friday, January 21, 2000

The flight by Tiger Moth VH-AQN was the third in a series of 10-minute joy flights that day from the local airstrip. On board with the pilot were one adult and a 7-year-old child. Both passengers occupied the forward single seat, with the child sitting on the adult's lap. A lap type safety harness attached to the adult harness restrained the child.

The pilot reported that the engine appeared to be slightly harder to start than normal; however, once started, the engine performed normally. At about 150 ft above ground level after takeoff, and without warning, the engine began to run roughly and lose power. The pilot banked the aircraft to the right towards a nearby golf course to avoid the residential area directly ahead. He was able to manoeuvre the aircraft to land on a cleared area of the golf course. However, during the landing roll, the aircraft's left wings came into contact with a tree, which spun it sharply to the left. The aircraft then began to slide sideways and the landing gear collapsed. The aircraft continued to slide until the right wings came into contact with several other trees. After it came to rest, the pilot assisted the passengers from the aircraft. There were no injuries.

The aircraft sustained major structural damage to the upper and lower sections of the wings and the main landing gear separated from the fuselage at the upper attach points.

The aircraft was approved to operate on mogas (automotive gasoline). Examination of the aircraft fuel system indicated that sufficient clean fuel should have been available to power the engine. The engine sustained minimal damage in the accident, which allowed the investigator to conduct a test run of the engine. During the test run, the engine started without difficulty and accelerated normally.

Examination of the carburettor found that the float valve, which was made from natural cork covered with a fuel proof varnish seal, had two large blisters in the varnish. Further examination indicated that the larger of these blisters was binding against the float chamber housing walls. This could have caused either an excessively rich or lean mixture, which would have caused the engine to run rough and stop. When the spark plugs were examined immediately after the accident, they exhibited a slight oil wetness and sooting, which indicated that the power loss was probably due to an excessively rich mixture.

The float was removed and sent for specialist examination. This examination revealed that the blistered lacquer was very fragile, and that it broke easily and peeled in flakes without adhering to the cork. These characteristics were consistent with the use of a non-approved type of nitrocellulose dope, as identified in the Hobson carburettor overhauling and servicing manual. The examination was not able to conclusively determine the cause for the blistering of the varnish. The operator advised that the already varnished float, approved part number CHA31267, was purchased from the UK and was fitted to the Claudel Hobson model A148HIM carburettor approximately 160 flight hours prior to the accident. No other information was available regarding its history, or whether it was recently re-doped or re-lacquered with modern equivalent materials.

A search of the Bureau's database was unable to find any record of a similar event. During the investigation, several experienced Tiger Moth operators were contacted to ascertain their experience with this type of problem. These operators advised that they were aware of several incidents where the varnish surrounding the cork float had cracked and the cork float had then absorbed fuel. However, none had any previous experience of the varnish blistering in this manner.

