Cessna 140, N76402

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Aircraft Type and Registration:	Cessna 140, N76402
No & Type of Engines:	1 Continental C85-12F piston engine
Year of Manufacture:	1947
Date & Time (UTC):	9 August 1998 at 1219 hrs
Location:	Field just North of Meppershall Airfield, Bedfordshire
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - 1
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Right main gear collapsed, forward fuselage badly distorted
Commander's Licence:	Private Pilot's Licence with IMC and Night Ratings
Commander's Age:	33 years
Commander's Flying Experience:	236 hours (of which 36 were on type) Last 90 days - 33 hours Last 28 days - 23 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and visit to view recovered aircraft & stripped carburettor

After about 50 minutes flying in the Cranfield area at altitudes between 1,500 and 2,000 feet in good visual flying conditions, during which the engine had performed normally, the pilot was preparing to return to Henlow. In compliance with standard procedures, overhead Chicksands the pilot radioed Henlow for rejoin and was informed he was clear for a straight in approach to Runway 09L. After a descent to 1,000 feet agl the aircraft was established on long finals for a normal powered approach. Shortly after the selection of carburettor heat and a reduction in power to set up for a normal approach at 70 mph, the engine note dropped. The propeller continued to windmill but the engine was not producing any significant power. The pilot immediately checked the throttle position and that carburettor heat was selected on and then switched from the right to the left fuel tank. Realising that he may not be able to restore power the pilot decided to carry out a forced landing.

As he was beyond gliding range from Henlow, and he knew of and could see the strip at Meppershall the pilot elected to land there. A MAYDAY call was made on the Henlow frequency stating the nature of the emergency and the pilot's intentions. Whilst establishing in the pattern for Meppershall attempts were made to restore power by reselection of the fuel tank in use and deselecting and reselecting carburettor heat.

Having turned onto finals for Runway 02 at Meppershall the pilot realised that he was high and attempted to lose height by lowering full flap and side slipping. However, as he passed the mid-point of the strip still airborne it was apparent to the pilot that he would not be able to land before the hedge at the far end of the strip. As the aircraft approached the northern boundary he pitched the nose up and turned the aircraft to the left to clear the trees and cables. He also instinctively pushed forward on the throttle and the engine responded with a short burst of power.

Clearing the trees the pilot pitched the aircraft nose down and turned to the right away from a further set of power cables. Close to the ground and at low speed he levelled the wings and attempted to flare. Immediately after touch down the right main landing gear collapsed and the aircraft turned to the right and the nose impacted heavily.

Both occupants had remained restrained by their four point harnesses and were able to leave the aircraft uninjured.

Following recovery of the aircraft to Meppershall investigations were conducted to determine the cause of the power loss. During an initial assessment of the fuel system it was established that the inlet to the carburettor was blocked. The carburettor, a Stromberg type NA-S3A1, Part No 3801672, was stripped to investigate further.

On this type of carburettor the float chamber is fed with fuel through a needle valve assembly; the seat is mounted in the bottom of the float chamber and the needle is moved vertically in and out of the seat by a single hinge type float. ie:- Increased fuel level lowers the needle into the seat. Correct fuel level in the float chamber is achieved by adjusting the thickness of the gasket beneath the needle valve seat. The seat was observed to have come unscrewed from the float chamber housing to a point where, with the float chamber nearly empty of fuel and the float 'grounded' the needle valve was closed preventing any fuel from entering the carburettor. The seat and housing had wire locking holes provided but no locking was present.

The aircraft technical records indicated that the carburettor had been worked on in November 1997 as part of a work pack associated with an annual check. This work included:-

Carburettor Repair

Float chamber found to overflow when fuel switched on. Carb removed and disassembled. Tool made with 27_ hardened steel cone and needle valve seat re-faced with mild abrasive. Pitting and irregularities polished out of needle valve neoprene tip. Valve and seat lapped together until 100% contact obtained. Carb flushed and float chamber level set. New gaskets made and carb reassembled and refitted.

The manufacturers 'Technical Manual Overhaul' for the carburettor, in the section, 2-20 General Reassembly, states:-

> d. Torque the float needle seat to 90-100 inches. Do not lockwire the float needle seat until after the float level has been set.
>
> f(6) When the correct float level is obtained, remove the float and needle and lockwire the float needle seat to the main body.