

Socata TB10 Tobago, G-BNIJ

AAIB Bulletin No: 11/2003	Ref: EW/G2003/08/10	Category: 1.3
Aircraft Type and Registration:	Socata TB10 Tobago, G-BNIJ	
No & Type of Engines:	1 Lycoming O-360-A1AD piston engine	
Year of Manufacture:	1987	
Date & Time (UTC):	5 August 2003 at 1200 hrs	
Location:	South East of Sandtoft Airfield, Doncaster, Yorkshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Substantial	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	72 years	
Commander's Flying Experience:	1,223 hours (of which 797 were on type)	
	Last 90 days - 49 hours	
	Last 28 days - 17 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot, and telephone inquiries to the engineer who recovered the aircraft	

Approximately one hour after landing at Sandtoft on completion of an uneventful flight from Kemble, the aircraft was prepared for the next leg of the planned trip to Skegness. One litre of oil was added and, after an uneventful engine start, the checklist was completed normally.

After backtracking down the runway and the satisfactory completion of power checks, including carburettor heat and magneto checks, 10 degrees of flap was selected in preparation for the takeoff from Runway 05. For the takeoff, full power was applied, which gave 2,500 RPM indicated, and the pilot reported that after a normal take-off roll the aircraft lifted off and he began the climb out, as usual, at 80 kt. The engine reportedly sounded normal but, at approximately 100 feet and 86 kts in the climb, the engine suffered about a 90% power reduction. By this stage the aircraft was passing over a trading estate bounding the upwind end of the airfield.

The pilot's wife, who was also a PPL holder and had flown the aircraft on the previous leg of the journey that day from Kemble, checked and confirmed that the mixture, throttle, and propeller levers were all forward, and that the carburettor heat control was fully in. The pilot checked and confirmed the magneto switch, and then changed tanks in an effort to restore power. However, with the aircraft by that stage close to the point of stalling, a forced landing was made into a field located some

800 metres beyond the upwind end of the runway, and to the right of the trading estate. The aircraft touched down heavily and struck a wire fence strung across the field, which brought it rapidly to rest. Neither occupant was injured, but the aircraft sustained severe damage to the wings, landing gear, nose, engine and propeller.

The pilot of the aircraft was unable to offer any explanation for the loss of power but believed that, with a temperature of 25°C and a relative humidity of 43%, carburettor icing was unlikely to be the cause. According to the icing probability chart, contained in CAA *'General Aviation Safety Sense leaflet No. 14A, Piston Engine Icing'*, the ambient temperature of 25°C and relative humidity of 43% reported by the pilot would place the engine operating conditions firmly within the *'Serious icing at descent power'* envelope. This is close to the *'Moderate icing at cruise power/Serious icing at descent power'* envelope, but the reported conditions were well outside the *'Serious icing at any power'* envelope.

The pilot also expressed the view that a fuel vapour lock was a possible explanation, but commented that it was "not that hot outside" and reported that an engineer who examined the aircraft after the accident found nothing obviously wrong with the throttle linkage or other engine controls.

AAIB telephone inquiries to the engineer who recovered the aircraft established that he found the right fuel tank, the tank selected at the time the aircraft touched down, had split in the impact and was empty. The carburettor had been torn off the bottom of the engine but was still connected to the fuel feed pipe, which appeared to be intact. Operation of the electric fuel pump, however, produced no fuel pressure. After disconnecting the fuel line from the carburettor, and changing the tank selector to left tank, which was intact and which still contained fuel, the pump was again operated. It appeared to be on the point of delivering fuel, but it failed to actually establish a flow, despite the presence of fuel in the left tank and the apparently intact pipe work between the tank and the pump, and between the pump and the carburettor inlet. The carburettor itself contained some fuel, but it was not full. The fuel had the characteristic odour of 100LL, and the engineer was confident that it was not Mogas.

To date, it has not been possible to establish with any certainty why the power reduction occurred. If during the aircraft repair or dismantle any further evidence of significance comes to light, it will be reported upon in a subsequent publication of the AAIB Bulletin.