

SOCATA TB10 Tobago, G-BOIT

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Aircraft Type and Registration:	SOCATA TB10 Tobago, G-BOIT
No & Type of Engines:	1 Lycoming O-360-A1AD piston engine
Year of Manufacture:	1988
Date & Time (UTC):	28 November 1997 at 1255 hrs
Location:	Compton Abbas airfield near Shaftesbury, Dorset
Type of Flight:	Instructional
Persons on Board:	Crew - 2 - Passengers - 1
Injuries:	Crew - None - Passengers - None
Nature of Damage:	Nose leg collapsed causing damage to engine mount and firewall
Commander's Licence:	Basic Commercial Pilot's Licence with IMC and Instructor Ratings
Commander's Age:	36 years
Commander's Flying Experience:	6,765 hours (of which 12 were on type) Last 90 days - 75 hours Last 28 days - 35 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot plus telephone enquiries and Meteorological aftercast

Compton Abbas has an 803 metre long grass strip aligned 08/26; the airfield elevation is 810 feet amsl. At the time there was an atmospheric depression moving steadily north-eastwards across Wales and an associated occlusion crossed the Compton Abbas area at 0600 hrs with associated moderate rain fall. The surface wind was from 250° at 15 to 20 kt with gusts between 30 and 40 kt. There was stratus cloud at about 1,500 feet agl; the outside air temperature was +13°C, the dew point was +8°C and the airfield QFE was 971 mb. The instructor reported that the grass was wet with areas of standing water.

The aim of the flight was to instruct the aircraft's owner but bearing in mind the airfield conditions, the instructor decided to carry out the take off himself. He began the take-off run from the threshold of Runway 26. The aircraft briefly became airborne in a gust of wind but settled back onto the

ground at low airspeed. Thereafter acceleration was apparently very poor and the instructor decided to abort the take off, he reports, approximately 200 metres from the threshold of Runway 26 whilst travelling at about 60 kt airspeed. He closed the throttle and applied back pressure to the control column but deceleration was poor and the aircraft skidded for some considerable distance. Eventually it overran the grass strip, penetrated the boundary fence and entered a ploughed field at low speed. The nose leg collapsed almost immediately and the engine stopped when the propeller struck the ground. The instructor shut down the aircraft before all three occupants evacuated through the normal doors without any injuries.

The instructor attributed the accident to a combination of runway condition, aircraft performance and the timing of his decision to abort the take off which, although made earlier than a "normal decision", was too late for the prevailing conditions.

The Tobago has a published take-off ground roll at MTOW in ISA conditions from a tarmac runway of 325 metres and a landing roll distance of 190 metres. The aircraft was loaded close to MTOW and after taking account of the pressure altitude, wet grass and soft ground after rain, the predicted take-off ground run increases to 592 metres according to the factors contained in the CAA's General Aviation Safety Sense Leaflet No 7B on aeroplane performance. The predicted landing ground roll under the same conditions would have been 327 metres. However, these figures are derived from base data achieved in a new aircraft by the manufacturer's testpilots. For these and other reasons, Leaflet 7B states that a safety factor of 1.33 should be applied to the take-off figure to calculate the required take-off ground roll which would have been 787 metres. Similarly the required landing ground roll distance when factored by 1.43 would have been 468 metres.

Given the fact that the aircraft had to clear a boundary fence at the end of the 803 metre strip the available take-off distance would appear to be marginal but the Leaflet 7B calculations make no allowance for headwind component. In this case, the component would have been 15 to 20 kt which would have shortened the required distance significantly. Nevertheless, if the pilot decided to abort the take off at a speed equivalent to touchdown speed (about 60 kt), to be sure of stopping on the runway he would have had to do so after travelling not more than 332 metres.

In summary the aircraft should have been able to take off or stop in the distances available were it not for the additional and unquantifiable effect of the areas of standing water. Commercial aircraft which conform to Scheduled Performance Group A have tables which can be used to calculate required take-off distances for contaminated runways. The factors used are quite restrictive and related to the depth of contaminant but the maximum allowable depth of standing water is usually 12.5 mm. If the depth of standing water is greater, the commander must not attempt to take off.