AAIB Bulletin No: 10/93 **Ref: EW/G93/08/05** **Category: 1.3**

Aircraft Type and Registration:	Socata TB9 Tampico, G-BIAB
No & Type of Engines:	1 Lycoming O-320-D2A piston engine
Year of Manufacture:	1980
Date & Time (UTC):	6 August 1993 at 1447 hrs
Location:	Halfpenny Green Airfield, Staffordshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - 3
Injuries:	Crew - None Passengers - 2 Minor
Nature of Damage:	Extensive damage to propeller, landing gear and wings
Commander's Licence:	Private Pilot's Licence
Commander's Age:	56 years
Commander's Flying Experience:	279 hours (of which 166 were on type) Last 90 days 22 hours Last 28 days - 9 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and telephone discussions with aircraft engineer and insurance assessor

The pilot had planned to take his son-in-law, together with two others, on a sight-seeing flight. After refuelling, the passengers were embarked and given a careful safety briefing with particular reference to the safety of the one of the passengers, a young disabled woman, for whom the two able bodied male passengers assumed responsibility in the event that an evacuation was required.

All external and pre-flight checks were carried out to the satisfaction of the pilot and the doors were closed and locked. The pilot has stated that subsequent to the fitment of new door seals several years previously the latches had been difficult to close and felt "mushy" , rather than "clicking into place". The pilot considered that on this particular occasion the lock may have felt slightly more 'mushy' than usual, but he was satisfied that the doors were secure and after completion of the remaining checks, which included "harnesses and hatches secure", the aircraft took off from Runway 28.

The lift-off and initial climb were normal, but at a height of about 150 to 200 feet agl the door on the pilot's side suddenly flew open. The pilot tried to close the door but could not reach the handle; the

airspeed was dropping significantly by this stage and he therefore lowered the nose and concentrated on flying the aircraft to avoid a stall, transmitting a brief Mayday call whilst in a gentle right turn towards a field of standing crop, which was the only viable site for a forced landing. The throttle was closed just prior to landing and an attempt made to flare the aircraft, but it sank heavily into the crop, coming to rest after a very short distance. The two male passengers helped the female passenger evacuate and assisted her to get clear of the aircraft whilst the pilot secured the cockpit and located the fire extinguisher, which had broken free of its mounting during the impact and rolled forward under the rudder pedals. Despite a release of fuel from the right wing tank there was no fire, and injuries were limited to slight bruising.

The cabin doors on the Tampico and similar Socata models are secured by a pair of spring loaded hooks, mounted on the lower edges of each door. Each of these hooks engages a steel strap attached to the door lock mechanism at the lower edge of the door aperture. Once the door is lowered into the closed position and the hooks have initially engaged their respective straps, turning the locking handle causes the straps, together with the engaged hooks, to be pulled down into recesses in the lower aperture thereby pulling the door tightly closed.

Previous instances have been reported in which doors on other Socata aircraft have come partially open during flight due to a failure one of the hooks, which are manufactured from light alloy. (A modified hook is now available, manufactured from steel in place of the original aluminium alloy.) However, the door lock mechanism on G-BIAB was examined after the accident by an aircraft engineer and by an insurance assessor, both of whom reported that the hooks on the affected door were intact and the lock mechanism, although possibly distorted slightly due to accident deformation of the fuselage, appeared to function correctly.

An Addendum to this Bulletin will be published later if the cause of this door problem is established.