

# Socata TBM 700B N700VA

<b>AAIB Bulletin No:</b> 8/2003	<b>Ref:</b> EW/G2003/02/10	<b>Category:</b> 1.2
Aircraft Type and Registration:	Socata TBM 700B, N700VA	
No & Type of Engines:	1 PT6A-64 turboprop engine	
Year of Manufacture:	2002	
Date & Time (UTC):	13 February 2003 at 1615 hrs	
Location:	Oxford Airport, Oxfordshire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - None
Injuries:	Crew - 1 (Serious)	Passengers - N/A
Nature of Damage:	No damage to aircraft	
Commander's Licence:	FAA Airline Transport Pilot's Licence	
Commander's Age:	41 years	
Commander's Flying Experience:	4,437 hours (of which 75 were on type)	
	Last 90 days - 52 hours	
	Last 28 days - 31 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

## History of the incident

Upon arrival at the airport the pilot taxied the aircraft to a hangar where he parked it outside. The engine was shut down and the parking brake was reportedly applied although the aircraft was not chocked. The pilot left the aircraft and then returned to it approximately 50 minutes later. As he approached the aircraft he noticed that it was rolling forwards at a walking pace. He positioned himself in front of the aircraft and pushed against the propeller to try and stop its forward movement. He was succeeding in slowing the aircraft down until suddenly he walked backwards into a tree on the edge of the paved surface. The aircraft's momentum forced the pilot against the tree and trapped him. The force fractured one of the pilot's shoulder blades. A number of people who heard an appeal for help arrived on the scene and managed to push the aircraft away from the pilot. Staff from a nearby office activated the crash alarm.

## TBM 700 braking system

The parking brake in a TBM 700 is activated by turning a control knob whilst applying pressure to both toe brake pedals mounted on the rudder pedals. The aircraft's Flight Manual notes: '*Operating the parking brake knob without applying pressure on rudder pedals does not cause the wheels to be braked.*'

The organisation responsible for the maintenance of the aircraft checked the parking brake system after the accident but did not find any faults. The maintenance organisation reported that when the

parking brake knob is operated without applying full pressure to the brake pedals then only partial braking is activated. The pilot, who was experienced on this type of aircraft, was certain that he had applied the parking brake using full pressure.

The aircraft manufacturer was consulted about this accident but the company could not explain why the parking brake might start to slip after 50 minutes. They were not aware of any similar occurrences in the past although a few incidents had been reported where the aircraft operator had forgotten to apply pressure on the brake pedals while turning the knob which had resulted in the aircraft moving in windy conditions. The aircraft manufacturer discounted the possibility that applying the parking brake with hot brakes might result in brake slippage after the brake discs cooled down. To confirm this statement, the maintenance organisation carried out a practical test on the aircraft whereby they applied the parking brake after a flight and then left the aircraft overnight. The following morning a pull test confirmed that the parking brake was still holding the aircraft securely.

### **Analysis**

The pilot assessed the cause of the accident to be due to a slipping brake; he also remarked that he was unaware of the presence of the tree as it was getting dark. Although the cause of the brake slippage could not be determined, it should be noted that the average empty weight of a TBM 700 is 1,860 kg (almost three times the empty weight of a Cessna 172) and the aircraft was parked on a slight slope without any chocks applied to the wheels.