

Aircraft Type and Registration:	Socata TB20 Trinidad, G-FIFI	
No & Type of Engines:	1 Lycoming IO-540-C4D5D piston engine	
Year of Manufacture:	1986	
Date & Time (UTC):	16 August 2004 at 1626 hrs	
Location:	Kemble Airfield, Gloucestershire	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 1
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Propeller and forward fuselage damaged	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	64 years	
Commander's Flying Experience:	7,000 hours (of which 120 were on type) Last 90 days - 100 hours Last 28 days - 28 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

History of flight

The aircraft, having just completed its annual inspection, was flown from Denham Airfield to Kemble and after approximately 90 minutes on the ground at Kemble departed for a local flight. After a normal takeoff, the landing gear was selected up and although the green 'down' lights extinguished, the 'transit/unlocked' light remained illuminated. The aircraft was positioned downwind and the landing gear selected down. The result was that only the two main wheel lights illuminated green. Believing the noseleg to be unlocked, the pilot made a low pass in front of the ATC tower for a visual inspection. ATC confirmed that the two main wheels appeared to be in the down and locked position but that the noseleg was partially down positioned at approximately 45° from the vertical.

The aircraft was climbed to 2,000 feet agl and kept within the airfield air traffic zone (ATZ) whilst the pilot's operating handbook was consulted and emergency checklists items were actioned. The problem however, could not be rectified and a second visual inspection from ATC confirmed that the noseleg still appeared unlocked. The pilot declared an emergency and carried out two orbits whilst

the emergency services were activated. After consultation with engineers, the pilot elected to make an approach to asphalt Runway 26 at Kemble, which has a landing distance available of 1,594 metres. The landing was made from a shallow approach and the nosewheel held off the ground as long as possible. Shortly after landing, the noseleg collapsed and the aircraft skidded a further 130 metres before stopping. Both the pilot and passenger were able to vacate the aircraft without injury.

Engineering Investigation

The primary method for lowering the landing gear uses hydraulic power from a motor driven hydraulic generator. There is also an emergency system that uses compressed gas struts to lock the noseleg down in the event of hydraulic failure.

Engineering investigation following this incident revealed that the compressed gas struts, used in the emergency lowering system, are not rechargeable and it appeared that there was not enough pressure in these struts to fully lock the noseleg in the down position. It also revealed that the brushes on the generator were worn to the extent that their condition probably rendered the hydraulic system inoperable. The Socata TB20 maintenance manual recommends that the brushes of the hydraulic generator should be checked every 1,000 hours. The aircraft had completed 1,030 hours at the time of the accident and had just completed its annual inspection. During this inspection however, the brushes on the hydraulic generator had not been inspected as the maintenance organisation believed that this was not required under the Light Aircraft Maintenance Schedule (LAMS).

Light Aircraft Maintenance Schedule

The LAMS is approved by the CAA for maintenance of light piston aircraft and is described in CAP 411. This schedule however, is generic in nature thus there remains a requirement for maintenance, overhaul and inspections of specified items recommended by the specific type design authority. The requirements specified in service bulletins and service letters issued by the type design authority must also be adopted to ensure continued operational safety and reliability. At present, 'inspections' recommended by the design authority are not referenced in CAP 411; these are completed at the judgement of the certified engineer. The inspection of the hydraulic generator brushes was therefore not mandatory and as the maintenance organisation believed there to be no known problem with the generator brushes, an inspection was not carried out.

The CAA are currently reviewing the contents of CAP 411.