

**AAIB Bulletin No:** 10/94

**Ref:** EW/G94/07/33

**Category:** 1.3

**Aircraft Type and Registration:** Piper PA-38-112 Tomahawk, G-BSYM

**No & Type of Engines:** 1 Lycoming O-235-L2C piston engine

**Year of Manufacture:** 1982

**Date & Time (UTC):** 27 July 1994 at 1659 hrs

**Location:** Coventry Airport

**Type of Flight:** Private

**Persons on Board:** Crew - 1                      Passengers - 1

**Injuries:** Crew - None                      Passengers - None

**Nature of Damage:** Damage to left main landing gear and left wingtip and aileron

**Commander's Licence:** Airline Transport Pilot's Licence

**Commander's Age:** 53 years

**Commander's Flying Experience:** 2,410 hours (of which 1,132 were on type)  
Last 90 days - 155 hours  
Last 28 days - 59 hours

**Information Source:** Aircraft Accident Report Form submitted by the pilot

The instructional flight had lasted 45 minutes and the student was carrying out what was intended to be a last touch-and-go prior to the final landing. The instructor states that the landing, whilst not perfect, was definitely not heavy but, when the flaps were raised and the power re-applied for the rolling takeoff, the left main wheel began to 'rumble'. He therefore took control and abandoned the takeoff. The rumbling continued for about 100 metres and the aircraft then sagged slightly to the left side. After another 150 metres, the aircraft suddenly lurched to the left, causing the left wingtip to drag along the ground for the remaining 150 metres of its ground roll.

Inspection of the aircraft showed that the left main landing gear had detached and the aircraft had come gently to rest on the right main landing gear, nose gear and left wingtip. Other than the landing gear, damage was limited to the left wingtip assembly and the left aileron. Examination of the landing gear showed that all three bolts securing the left leg had fractured leaving a portion of each bolt in the relevant structure. The bolts had all been fully engaged in the threads at the time of fracture. The inboard bolt showed evidence of fatigue across 60 to 70% of its cross-section, with final failure in overload with some associated bending. The other two bolts had failed entirely in overload and there was clear evidence that the leg assembly had slewed, due to the fracture of the inboard bolt, as these two bolts had failed.

The CAA database revealed a number of related failures, as a result of which Piper Service Bulletins (SB) 673A and 673B (October '86) were issued. Piper considered compliance with these SBs to be mandatory. FAA Airworthiness Directive 90-19-03 also required compliance with the SB 673B. This SB referred to cases where the bolts had become loose or bent and advised that this could lead to separation of the main landing gear. The SB introduced a modification kit which increased the diameter and changed the material of the two outboard bolts. This modification was found not to have been embodied on G-BSYM.