No: 6/92 **Ref: EW/G92/03/03** **Category: 1c**

Aircraft Type and Registration:	Piper PA-34-200 Seneca, G-BNNB
No & Type of Engines:	2 Lycoming IO-360-C1E6 piston engines
Year of Manufacture:	1973
Date & Time (UTC):	8 March 1992 at 1412 hrs
Location:	Bournemouth International Airport, Christchurch, Dorset
Type of Flight:	Private (training)
Persons on Board:	Crew - 2 Passengers - 1
Injuries:	Crew - None Passengers - None
Nature of Damage:	Propellers, nose-leg mechanism and support structure, nose-gear doors and glass-reinforced plastic nose-fairing.
Commander's Licence:	Commercial Pilot's Licence with Instructor Rating
Commander's Age:	50 years
Commander's Flying Experience:	4,968 hours (of which 452 were on type)
Information Source:	Aircraft Accident Report Form submitted by the pilot and further telephone inquiries. AAIB examination of aircraft and damaged components during subsequent repair.

The aircraft had been flown to Cherbourg for a circuit training detail. The pilot could not confirm that the nose landing gear had retracted on departure from Cherbourg although the indications were that it had. He also stated that all the landings carried out during the detail had been normal. On selecting the landing gear down on approaching Bournemouth, the "Gear Unsafe" warning light illuminated with the main gears indicating locked down and no indication of the state of the nose gear. Using the mirror on the engine nacelle, the student confirmed that the nose gear appeared to be down. The landing gear was recycled twice and a subsequent fly-by of the ATC tower confirmed that the gear appeared to be down. The pilot declared an emergency and carried out a normal landing. During the landing roll, the pilot lowered the nose wheel gently onto the runway, but after a short period of deceleration, the nose landing gear collapsed.

Components from the nose-leg, the support structure and the operating mechanism were examined after the area had been dismantled to facilitate repair. A number of failures were noted which were

consistent with the operating system coming under load whilst the leg was not geometrically locked. These failures in the operating system consisted of compressive failure of the eye-end of the operating rod together with fracture, cracking and distortion of the structure securing the actuating cylinder to the fuselage bulkhead. These are items which can only come under significant compressive load when weight is carried by the nose-gear and it is not in the locked condition.

Two bolts in the leg assembly were also found to be bent but the damage to these was consistent with the effects of a high load occurring with the leg correctly locked.

Consideration of the geometry of the operating and locking mechanism suggested that the only way in which a fully serviceable actuating cylinder and operating rod could have failed to drive the leg to the down and locked position was as a result of incorrect relative positions of the pivot points of the down-lock link. The bolt at the forward end of this over-centring link was one of those found to be bent. A force capable of bending this bolt could only be generated and reacted by a high load being applied to the leg whilst it was down and correctly locked.

It was thus evident that some damage and distortion had been inflicted on the nose-leg/locking mechanism during a landing, with the leg correctly locked, before the aircraft arrived back at Bournemouth.