

**AAIB Bulletin No:** 11/93      **Ref:** EW/G93/08/19      **Category:** 1.3

**Aircraft Type and Registration:** Cessna U206A Super Skywagon, G-ATLT

**No & Type of Engines:** 1 Continental IO-520-A piston engine

**Year of Manufacture:** 1966

**Date & Time (UTC):** 17 August 1993 at 1640 hrs

**Location:** Netheravon Airfield, Wiltshire

**Type of Flight:** Military parachuting

**Persons on Board:** Crew - 1      Passengers - 4

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

**Nature of Damage:** Nose leg collapsed, propeller damaged, engine shock loaded, nose underside structure damaged

**Commander's Licence:** Military pilot on duty

**Commander's Age:** 52 years

**Commander's Flying Experience:** 8,900 hours (of which 90 were on type)  
Last 90 days - 94 hours  
Last 28 days - 20 hours

**Information Source:** Aircraft Accident Report Form submitted by the pilot and examination of failed component by the AAIB

The aircraft was being taxied for take off along an undulating grass taxiway. The pilot heard a 'metallic' snapping noise and the nose leg collapsed. The propeller struck the ground and the engine, which was idling, stopped. The pilot carried out the emergency shut-down drills and he and the passengers evacuated the aircraft through the aft cargo aperture from which the doors had been removed. The nose leg had collapsed forwards as a result of the failure of its drag brace.

The nose leg brag brace (Part No 1243600-1, see Figure) is a steel tube with a transverse boss welded to each end to locate the attachment bolts. The failure had occurred at the aft end within the tube material at the toe of the weld. The weld itself showed no abnormalities. There was a well-defined 'thumbnail' shaped area of fatigue which spanned 12 mm of the tube's periphery and penetrated to the inner surface and a further development of more rapid fatigue around three quarters of the tube's circumference. Within the 'thumbnail' there were multiple origins and, though the paint protection of the outer surface of the tube was not intact and there was some corrosion, there did not appear to be any corrosion pitting associated with the initiation of the fatigue. As no local defect was found the

fatigue would appear to have been caused by high cyclic loads or high usage. The total airframe hours were recorded as 4950 and it is known that during the last 1836 hours the aircraft had been used in the parachute dropping role

Vertical loads on the nosewheel produce tensile loads on the drag brace because of the forward swept angle of the oleo but the fatigue initiation was centred on the right side of the tube and this suggested that bending in the transverse plane had also been a component of the fatigue loading. Each end face of the boss exhibited fretting damage over one half of its surface. These fretted areas were diametrically opposite one another and this implied that there had been some misalignment between the brace and the airframe attachment lugs. There were similar asymmetric fretting marks on the inside face of the lugs. However, the direction of the fretting loads could not be reconciled with the direction of the bending fatigue load and, as none of the nose leg or drag brace attachment bolts showed any unusual degree of play in their locations, the cause of a bending fatigue load in the brace, additional to the normal tensile loads, could not be identified.

