AAIB Bulletin No: 7/93 **Ref: EW/G93/03/14** **Category: 1c**

Aircraft Type and Registration:	Taylor Monoplane, G-BDNC
No & Type of Engines:	1 Walter Mikron 3 piston engine
Year of Manufacture:	1984
Date & Time (UTC):	21 March 1993 at 1415 hrs
Location:	Little Gransden, Cambridgeshire
Type of Flight:	Private
Persons on Board:	Crew - 1 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Left main landing gear collapsed, left wing spar damaged
Commander's Licence:	Private Pilot's licence with IMC and Night ratings
Commander's Age:	47 years
Commander's Flying Experience:	525 hours (of which 325 were on type) Last 90 days - 48 hours Last 28 days - 19 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Having performed a normal landing on a temporary grass runway at little Gransden airfield, the pilot was taxiing the aircraft at walking pace when the left main landing gear collapsed. The aircraft slewed to the left and stopped.

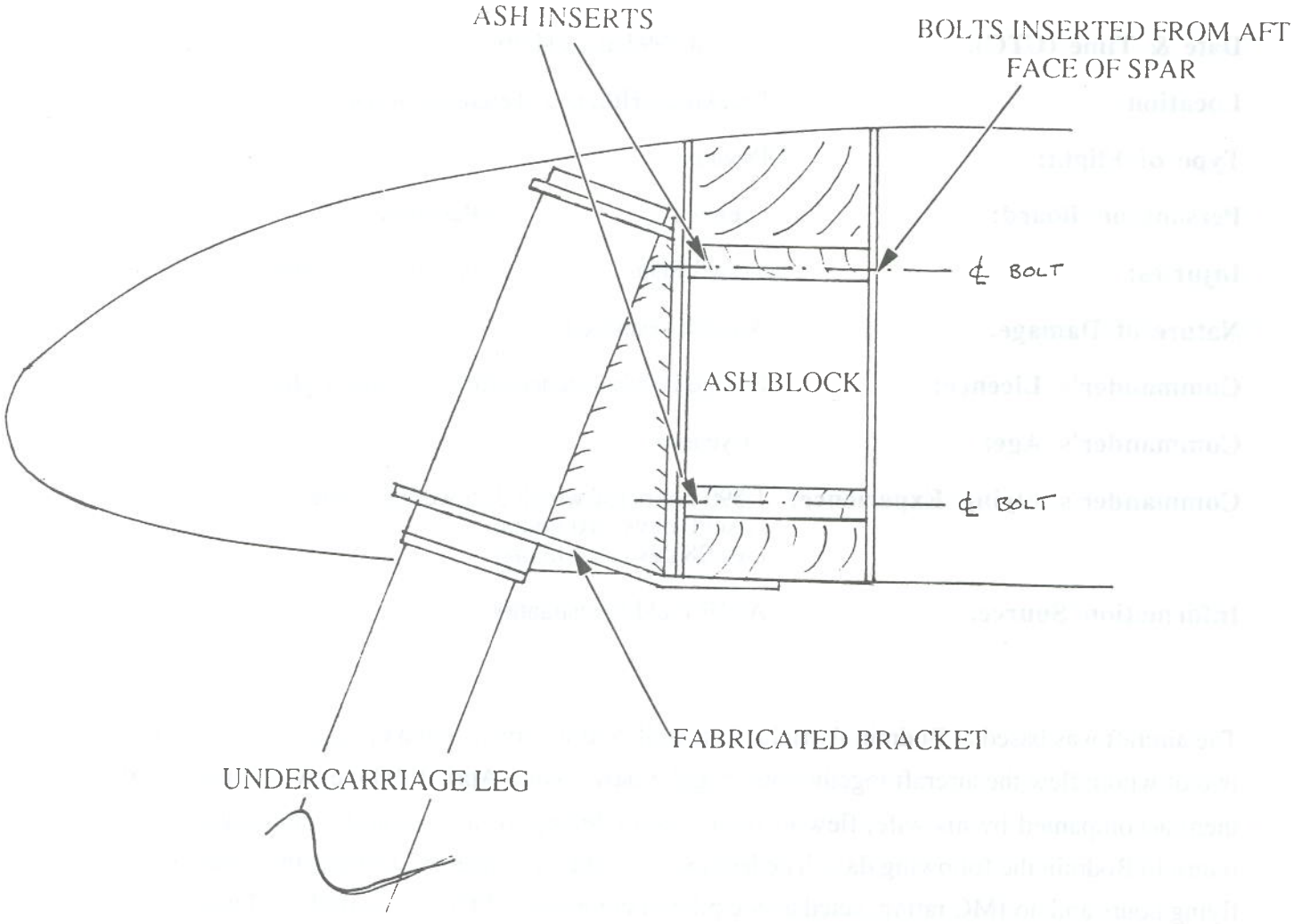
The Taylor monoplane plans showed that the landing gear leg was attached to the front spar by a fabricated bracket bolted through the spar with four 5/16 inch diameter bolts and nuts (see diagram). Examination revealed that the lower pair of bolts had broken at the point where the bolt entered the nut, allowing the bracket to bend around the upper two bolts as the leg folded forwards.

Metallurgical examination showed that the failed bolts had evidence of fatigue damage both on the fracture surface and in the root of other threads. Fatigue had also initiated in one of the upper bolts. The nature of the fatigue showed that it arose primarily from plain bending loads with one or two static 'jumps' indicating heavy landings. It was also noted that the two plate washers from the failed bolts were dished, suggesting that the wooden structure had collapsed locally underneath. If this occurred

during initial tightening, then it could have allowed loosening of the assembly and movement of the bolts. Some thread wear was found to indicate that such movement had occurred.

Discussions with the organisation charged with repairing the aircraft revealed that the ash spar inserts called-up on the construction drawing appeared to be of soft wood on G-BDNC. It had also been flown relatively more intensely than is usual with this class of aircraft.

The metallurgist points out that thicker washers would have spread the load more evenly and that it would have been advantageous to have inserted the bolts from the front of the spar, given that the bolts were not loaded in pure tension.



TAYLOR MONOPLANE G-BDNC, DIAGRAM SHOWING ATTACHMENT OF MAIN LANDING GEAR TO WING SPAR