ACCIDENT

Aircraft Type and Registration:	Rans S6-116 Coyote II, G-BUTM
No & Type of Engines:	1 Rotax 912-UL piston engine
Year of Manufacture:	1993
Date & Time (UTC):	7 May 2008 at 1440 hrs
Location:	Grove Farm (private airstrip) near Gamston, Nottingham
Type of Flight:	Training
Persons on Board:	Crew - 2 Passengers - None
Injuries:	Crew - None Passengers - N/A
Nature of Damage:	Left landing gear strut broken, propeller strike, engine shockloaded, fuselage damage
Commander's Licence:	Commercial Pilot's Licence
Commander's Age:	50 years
Commander's Flying Experience:	2,126 hours (of which 4 were on type) Last 90 days - 67 hours Last 28 days - 30 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and examination of hardware by the AAIB

Synopsis

Whilst on an instructional sortie, the student flared too high on landing and the aircraft landed heavily, fracturing the left main landing gear. Some evidence of metal fatigue was noted in the fracture face, but it is not considered to have advanced enough to have had a significant effect on the strut's ultimate strength.

History of the flight

The aircraft was being flown with an instructor to familiarise its owner with tailwheel aircraft. Two sorties had already been flown, involving approaches and go-arounds. On the accident flight, after some upper air work, an approach was made to Grove Farm airstrip with the intention that the owner would attempt his first landing on Runway 09. The approach was stable in a light easterly wind but the handling pilot flared somewhat high – not so high, in the opinion of the instructor, that damage would be expected - and a very heavy landing resulted. The left wing dropped and the aircraft veered to the left, coming to rest upright in a crop. The crew evacuated the aircraft normally after switching off the fuel and magnetos and it was apparent from the ground marks that the left main landing gear strut had broken immediately on touchdown.

Examination

The aircraft was examined prior to commencement of repairs and the fractured strut seemed to contain an element of metal fatigue. The two pieces of the strut were sent to the AAIB for metallurgical examination. The strut is essentially a solid cantilever steel rod tapering toward the wheel end with a hollow, parallel section at the top where it inserts into a fitting attached to the fuselage. The strut had failed at the change in section from tubular to solid and there was indeed evidence of a pre-existing fatigue crack on the inside of the tubular section. Extending around about 25% of the circumference (see Figure 1), the maximum depth was less than a millimetre, so it was not considered that it had significantly affected the ultimate strength of the strut. The strut also had noticeable bending distortion towards the lower end.

The repair organisation believe that the main landing gear struts were original and the aircraft had flown about 400 hours since new. Both struts were found to be 'rattling' in the socket of the fuselage fittings, despite some apparent attempts to shim them. New struts and fittings were ordered and found to require shims to achieve a reasonable fit. The previous owner of the aircraft did, however, state that the struts had been a very tight fit in the fittings when the aircraft had been built and did not require shims.

The Light Aircraft Association (LAA) advised that there did not appear to be a history of fatigue failures with this aircraft model and that it seemed a characteristic that the struts would take on a 'set' over a period of time in service.

The aircraft had experienced a nose-over during a soft-field landing in about 1999. The current repairer noted the contemporary repairs but also noted additional significant damage which had apparently not been spotted at the time. He is cataloguing this damage and will submit a report to the LAA, who have also been advised of the discovery of the fatigue crack in the strut.

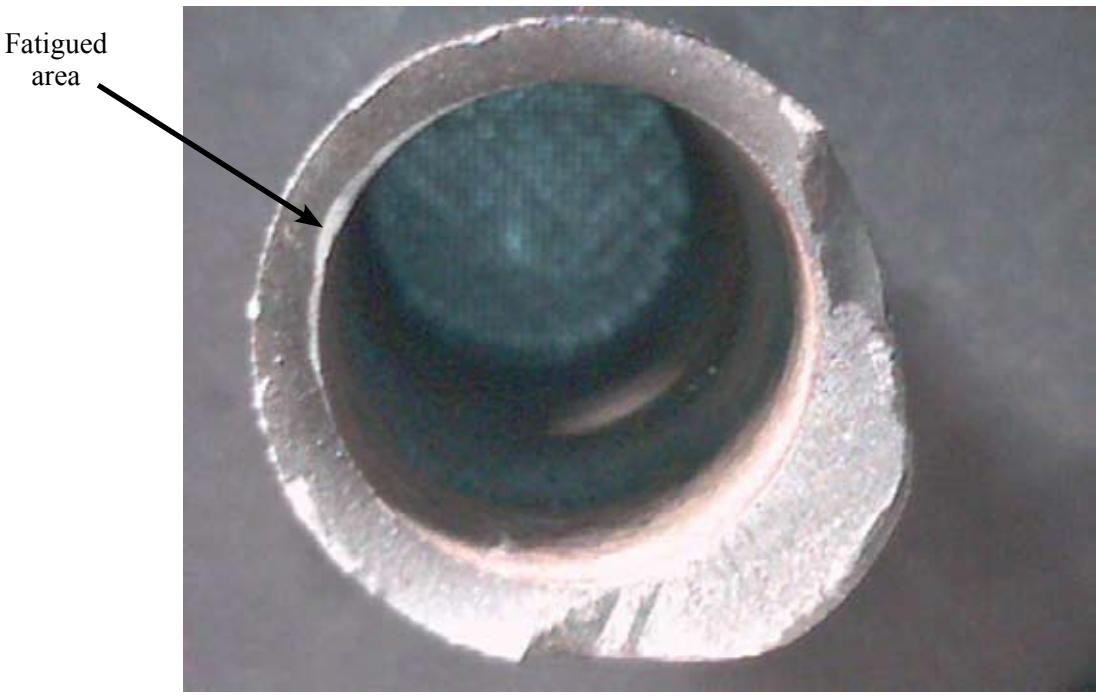

Figure 1