Fournier RF4D, G-AWGN, 24 May 1997

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Aircraft Type and Registration:	Fournier RF4D, G-AWGN
No & Type of Engines:	1 Rectimo 4AR-1200 piston engine
Year of Manufacture:	1968
Date & Time (UTC):	24 May 1997 at 1234 hrs
Location:	Gloucestershire Airport
Type of Flight:	Private
Persons on Board:	Crew - 1 - Passengers - None
Injuries:	Crew - None - Passengers - N/A
Nature of Damage:	Upper main landing gear member failure
Commander's Licence:	Private Pilot's Licence
Commander's Age:	53 years
Commander's Flying Experience:	650 hours (of which 197 were on type) Last 90 days - 7 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot, telephone enquiries and metallurgical examination of component

After a normal flight, the aircraft was landed on Runway 04 atGloucestershire Airport; the reported wind at the time of landingwas 090°/15 kt.

The pilot reported that the landing was gentle, the aircraft didnot bounce, nor did the into-wind wing lift. The pilot noted,however, that there was a slight sideways check at touchdown whichindicated to him that he had not 'kicked off' drift correctly.

Whilst taxiing back to the aircraft parking area, the pilot observedthat it was more difficult than usual and attributed this to theaircraft's tendency to 'weathercock'. Later, however, havingparked the aircraft and completed the paperwork, as he walkedback towards it, the pilot noticed that the main landing gearwheel was slanted to the left.

Inspection by a maintenance engineer revealed that one arm ofthe upper member of the main landing gear had completely fractured. The component was forwarded to the AAIB and subsequently sentfor metallurgical examination. This revealed that the cast aluminiumalloy component had failed in two stages as a result of two separateoverload events. The first stage, originating from casting defects,had occurred some time ago and had resulted in a crack which ranpart way across the casting cross-section. This part of the failurehad become dirty and discoloured and no consequent fatigue crackinghad occurred at the limit of this first crack, despite its beinga significant stress concentration. The ultimate failure hadstarted at the limit of the old crack and had extended right acrossthe remaining cross-section in one event. (See diagram).

The area from which the failure had initiated contained castingshrinkage porosity voids which had broken the surface of the casting. The aluminium alloy from which the casting was made (AU5G) conformedto specification.