BULLETIN ADDENDUM

AAIB File:	EW/G95/09/18
Aircraft Type and Registration:	Piper PA-23-250 Aztec, G-YSFT
Date & Time (UTC):	7 August 1995 at 1400 hrs
Location:	Bournemouth (Hurn) Airport, Dorset
Information Source:	CAA Occurrence Report, Aircraft Accident Report Form submitted by the pilot and AAIB engineering investigation

During the AAIB investigations into an accident reported on in AAIB Bulletin 11/95, details of an earlier failure became known. This earlier failure had given rise to the need to effect repairs in the nose landing gear zone and subsequently to conduct the test flight which had resulted in that accident. This earlier failure had been notified to AAIB at the time but the symptoms, as initially reported, did not indicate its potential seriousness. This addendum is concerned with the earlier failure.

After returning from a training flight, a 'touch and go' landing was made. As the aircraft became airborne again, the nose landing gear 'down and locked' indication light was observed to go out. The landing gear was cycled up and down and the 'down and locked' indication for the nose gear illuminated. Even so, before landing the aircraft was flown past the tower for an inspection by the controller, who reported to the pilot that the nose gear appeared to be fully extended.

The pilot elected to land the aircraft on the secondary runway (35); both because it was more into wind and to avoid blocking the main runway should the nose gear collapse. During the landing roll, the nosewheel was held off for as long as possible and the engines stopped. The aircraft was coasted off the runway onto a taxiway where the crew got out. The nose gear was then observed to be raked about 30° forward of its normal extended position.

Subsequent examination by the operator's maintenance organisation revealed that the brackets restraining the upper end of the nose leg drag link (Fittings, Part Nos 17082-000 & -001) had fractured and that the leg itself had pivoted, lower end forward, until held by the wheel-well front bulkhead, which had been considerably distorted. The fragments of upper drag link attachment bracket which had remained attached to the aircraft structure were, of necessity, destroyed whilst being removed to effect repairs. The fragments of the brackets which had been attached to the drag link, however, had been retained and, for interest, shown to AAIB whilst the second failure was being investigated.

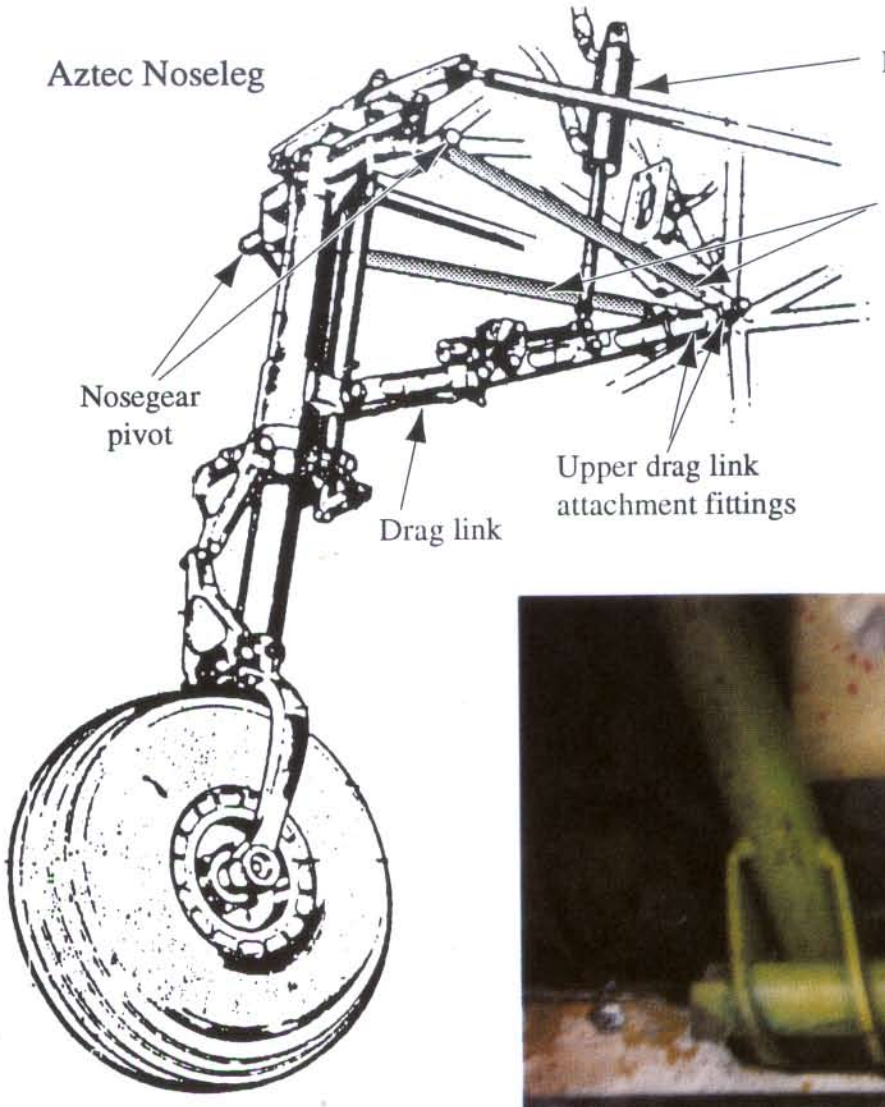
Subsequent metallurgical examination revealed that both brackets had suffered extensive fatigue cracking until too weak to sustain normal loads. The bracket on one side had failed as a result of almost purely tensile fatigue through the hole accommodating the drag stay upper pivot bolt whereas the other had largely suffered bending fatigue, at or close to the weld attaching the bracket to the fuselage structure (see diagram and photographs).

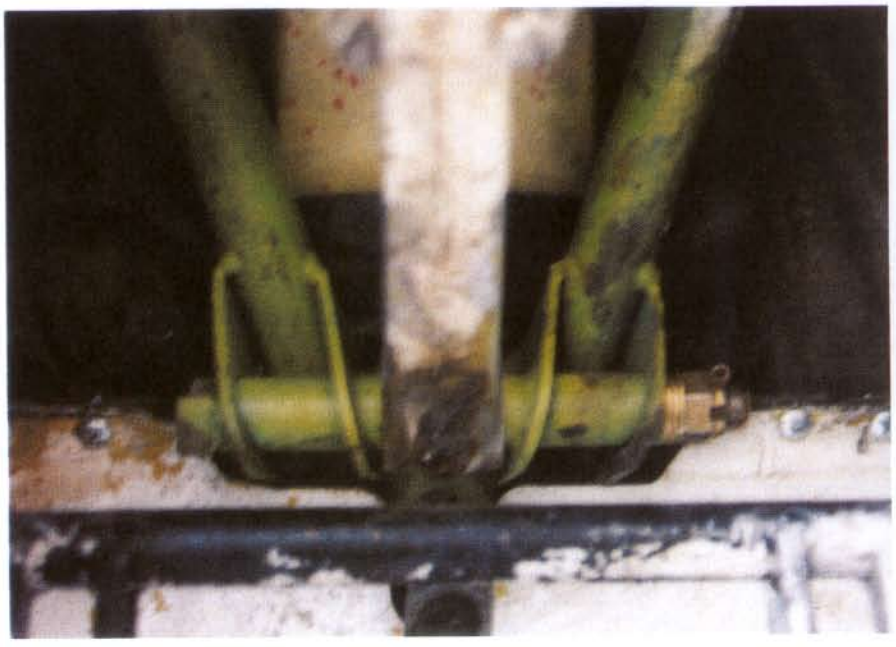
This aircraft has been used extensively in the training role in recent years which probably resulted in the landing gear being exposed to more extension/retraction cycles than the majority of this type. The brackets which failed are not readily inspectable for cracking, being awkward to view, and as a result of this failure, the operator has made inspection of these fittings a highlighted item at 450 hour scheduled inspections. There are no Piper Service Bulletins covering this area which encourage particular attention to these brackets.

Safety Recommendation

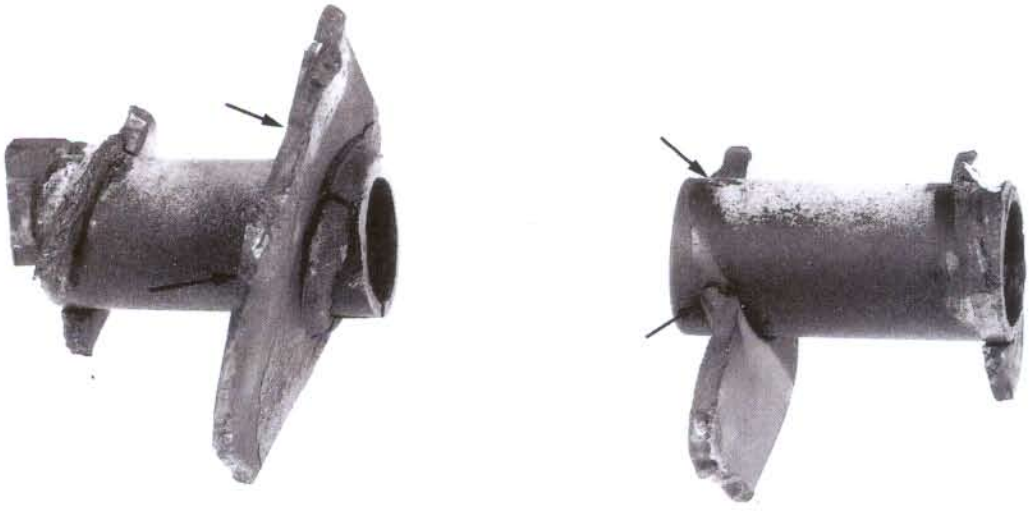
As a result of these findings, the following Safety Recommendation is made:

95-41: The CAA should liaise with the aircraft manufacturer with a view to the formulation of a Service Bulletin to alert operators of PA-23-250, Aztec, aircraft to the potential failure of the nose gear upper drag link attachment fittings (Part Nos 17082-000 & -001) and require periodic inspection of these fittings.





View, looking aft and upwards, of upper drag link attachment fittings



Failed fittings - Arrows point to fatigue origins