AWB 55-2 Issue 1, 1 April 2003 Piper Spar Corrosion

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Effectivity

Piper aircraft with steel spar pick-up fittings riveted and/or bolted to aluminium spars, and all aircraft with riveted construction at spar-to-fuselage attachments or pick-up joints.

Purpose

To direct the attention of operators and maintainers to critical inspection areas for aircraft using types of construction mentioned in this Airworthiness Bulletin, and provide additional information for operators with regard to compiling an ageing aircraft maintenance program. Please also refer to "AWB 57-1 Wing Corrosion Cessna 100 series" for more information relating to inspections of built-up structural components.

Background

CASA has received a defect report detailing extensive corrosion and cracking in the spar of a PA-28 RT-201 fin, discovered during routine maintenance. The vital clue was some missing heads from the aluminium rivets used to join steel plates and fittings to the aluminium spar. It was only after the fin sub-assemblies were dismantled, that the full extent of the damage became evident.

Recommendations

Although there is insufficient statistical data available at the time of issuing this bulletin to issue formal directions to perform specific inspections, this type of construction is typical of many aircraft, and the lesson learned in this case should be applied to other aircraft of this age, which use the same construction methods. In many cases, steel fittings were riveted to aluminium spars without any corrosion protection and / or coating system.

Critically examine all spar pick-up joints for any signs of corrosion. Pay particular attention to those "hard to get at" areas and around the edges of the steel plates which are in contact with the aluminium spar.

Rivet heads (or tails) that have fallen off - or about to fall off - are a warning sign that extensive corrosion has already taken place in the joint. Simply installing new rivets to replace rivets with missing heads or tails may not restore original strength to the structure. In some cases, further disassembly may be required to satisfy the LAME of the integrity of the structure.

Ensure an approved corrosion protection and / or coating system is applied between the faying surfaces on re-assembly of any dismantled structure.

To assist CASA in gathering statistical data on defects of this nature, details of such defects should be sent to CASA as soon as they are discovered, and, if at all possible, accompanied by photographs.

Enquiries

If you require more information on this issue, please contact CASA by email to: AirworthinessBulletin@casa.gov.au