








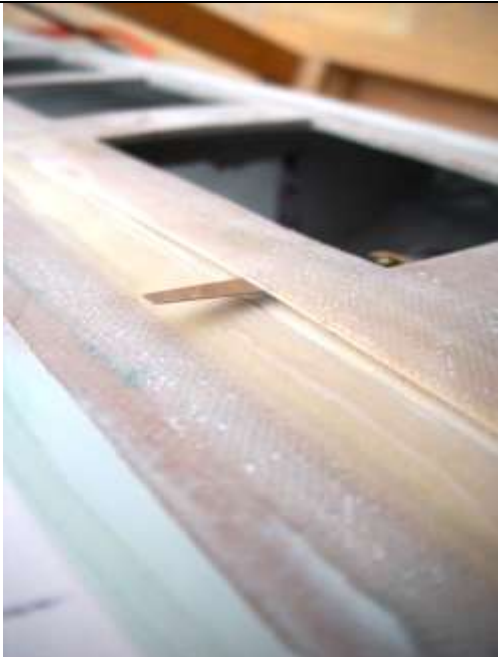

*Repair of fuel tanks
Pulsar 912 XP
OY-LLE*

POS	Picture	Comments
1		<p>The plane was removed from service due to what was expected to be the "normal" Pulsar repair. (No visible leaks just smell and indications)</p> <p>Pulsars with wing tanks are known to develop leaks behind the fuel tank close out panel, due to relative movement between tank skin and an aluminium bracket fixed to the ain spar.</p> <p>However upon removal of wings a number of bubbles and paint failures were found above fuel tank / main spar joint spar of the right hand wing.</p>
2		<p>Upon removal of close out panels it became clear that the sealant was not at all a sealant, but an unprotected fillet of epoxy mixed with micro balloons. According to AeroDesign construction manual these fillets should have been covered with 2 layers of glass tape, before a protective cover of Jeffco 9700 was added.</p> <p>Unfortunately AeroDesigns – who had manufactured and partly assembled wings – had not followed their own building manual. The part was never questioned as the part was delivered in a finished state from AeroDesigns.</p> <p>The Micro fillet had become elastic / rubber like as a result of exposure to fuel (Believed to be due to auto fuel, whereas resistant to Avgas)</p> <p>All micro fillets were attacked, although right tank seemed to be in worse condition.</p> <p>All fillets had to be replaced, missing glass tape and a protective cover of fuel tank sealant to be added.</p>
3		<p>Paint, filler and glass reinforcement (AD note) was sanded down following the joint on the main spar. A number of failures were found under the right hand tank.</p>

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4		As picture 3, but close up. Attacked areas are clearly visible.
5		Top of wing was sanded down following the spar joint, but no failures were found.
6		Close up of interface spar and fuel tank flange with micro partly removed. Note how fuel has penetrated micro down into, and damaged the joint. The micro held fuel which could be smelled when working the micro...but not in liquid phase.


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7		<p>The bond main spar to fuel tank flange was non existing, and a feeler gauge passed easily through the slot. This is true for both tanks, but only over a distance of app 300mm from tank close out and outboard. Rest of the flange length the adhesion was OK. The main spar and wing skin / epoxy was checked and found unaffected.</p>
8		<p>As picture 7 but right hand wing.</p>
9		<p>Even reinforcement for drain valves – that are bonded on to the wing skin had been attacked due to a surface of a few tenths of a millimetre exposed to fuel. Note miscolouring of micro / epoxy.</p>

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10		To gain access to both chambers of fuel tanks a total of 5 openings were made in the underside of each tank.
11		All micro was removed from inside the tank, and below the flange (300mm) Groove sanded and cleaned. Picture shows underside of top skin for left hand tank
12		New micro in place and covered with 2 layers of glass tape, as per AeroDesign original description.
13	<p>Jeffco coating picture</p>	All exposed epoxy / glassfiber is covered with 2 coats of Jeffco 9700 fuel tank sealant.

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14		<p>Aluminum angle removed and replaced by a carbon fiber angle connected to both upper and lower flange as well as main spar. This is the "traditional Pulsar fuel tank fix" ensuring no relative movement. The angle is made from 2 ply BID carbon fiber + 2 ply glasscloth likewise BID.</p>
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