Do You Do Your Own Maintenance?

Paul Parsons

MOST PRIVATE AIRCRAFT OWNERS like to do as much maintenance as possible in order to keep costs down and as we all know that that is vital to our continued flying. To do this we either need the guidance of an AME , overhaul schedule or similar type guidance but a word of caution: the old saying about the blind leading the blind needs to be applied here. Fellow aviators may come up with what on the surface may be good suggestions. Unless the ideas come from a competent AME always check them out very carefully as some things may seem fine but could be flawed. For example the supply of cheap hardware from your local hardware store that purports to be a certain quality should be avoided. Aircraft hardware etc. must come with a release note to be acceptable for aircraft use. The purpose of this paper work is to ensure that if a problem arises with a batch of items they can be traced and remedial steps taken to ensure safety is maintained.

All those who service aircraft should read the reports on mechanical incidents in particular and also the full aircraft accident that are published by the aviation authorities as these highlight any problems both mechanical and human that may have had any bearing on the incident/accident. They may highlight areas that you may not have given much thought to. A case in point is one that I read many years ago concerning the crash of a DC 3 topdressing aircraft spreading fertiliser in rugged hill country in the Marlborough area at the top of the South Island. The old work horse was working off rough back country airstrips and carrying up to 9 tons of superphosphate on each sortie. This of course proved to be rather hard on the machine and required frequent maintenance. One of the items that started coming to the attention of maintenance personal was the occasional loose or missing wing attachment bolts at the flange that attaches the outer wing sections just outboard of the engines. The bolts were duly tightened or replaced and the machine returned to service.

On a nearly calm sunny morning while doing a run low along the hills an outer wing broke off. The cause of this fatal accident was traced back to bolts that had been over stressed. The missing bolts had snapped and fallen out and the loose bolts that had been retightened were stretched and finally under operational stress the bolts gave way.

So what did I learn from this? Several things. First: be suspicious of any loose bolt and learn the definitive reason for it being loose. Second: always use a GOOD quality torque wrench on all bolts and this means having torque settings for bolt sizes. When checking the bolts this will give a clear indication of any slackness there is even if it is not obviously loose. Three: if in doubt pull it out and closely examine it and check for elongation/waisting where the shank and the thread meet. If there is the slightest suspicion that it may not be 100% throw it out or use it to mend the lawn mower.

It is a lot cheaper to buy new hardware than it is to pay for a funeral.

It is a lot cheaper to buy new hardware than it is to pay for a funeral.

I was doing a 100hr/annuals on an aircraft and proceeded to check the prop bolt torque. I thought that one bolt had moved very slightly. I increased the torque wrench setting slightly (still within the range) and felt sure that the suspect bolt moved more than the others so removed it and found that it was clearly elongated. All the hub bolts were pulled out and replaced. Be alert for the slightest hint that something isn't quite right. This bolt has been kept and is used as an example in engineering classes.

If you are not absolutely certain about a problem get professional advice – your life may well depend on it. R