

The following paper has been submitted to CASA as an alternative approach to how CASA was interpreting the intent of the legislation. The problem lies in not understanding the methods, practices and processes currently used by industry to carry out maintenance. Industry methods, practices and processes are what the legislation is trying to empower. AMROBA has submitted this to CASA some time ago and as yet has not been given any reply on what CASA's policy will be. This is, and has been for many, many years, a maintenance function to assemble cable and hose assemblies.

Though we have had some positive verbal feedback from CASA, AMROBA has yet to be informed officially that the recommendations in this paper will, or will not, be accepted.

CABLE AND HOSE ASSEMBLIES

MAINTENANCE OR MANUFACTURE?

1. Issue:

1.1. AMROBA contends that, in the main, the assembly of cables and hoses are maintenance functions and have always been maintenance functions. However, due to CASA's latest proposal, there is now great confusion being created in the aviation maintenance, repair and overhaul industry as to whether the assembling of cable and hose assemblies are maintenance functions or manufacturing function.

1.2. Internationally it is also accepted that the assembly of a cable or hose assembly utilises maintenance techniques and practices and not manufacturing techniques and practises. This is a fundamental in-service maintenance function.

1.3. This specialised maintenance function was proposed to be covered by CASR Part 145 organisations with a specialised service "D" rating and it is currently covered under the CAR 30 maintenance of aircraft or maintenance of aircraft component activity.

1.4. CASA is substituting a fundamental maintenance function into an overly complicated manufacturing function basically because it has become confused with the issue of the Authorised Release Certificate and the parts manufacturing processes under the APMA system.

1.5. Authorised Release Certificates (ARC) can be issued by maintenance organisations assembling

cables and hoses without the need for an APMA to be issued to such an organisation. The ARC is an international document used after maintenance of products as well as for new manufactured parts. A cable or hose assembled to sample or a drawing is a specialised maintenance function.

1.6. CASA's proposal is adding additional and unnecessary costs and paperwork to the industry. There has been a concerted effort to reduce costs and paperwork under the proposed maintenance rules whilst still retaining safety and traceability.

2. Background:

2.1. The problem identified above comes about because of the past misuse of maintenance and manufacturing terminology within the Australian aviation industry. Basically manufacturing is the making of products or parts utilising manufacturing techniques, whereas maintenance means the maintaining of products or parts using maintenance techniques. When maintaining an aircraft it is accepted that replacement of cable and hose assemblies, including the assembling process, utilises maintenance techniques.

2.2. The problem with the aviation terminology that was generated in Australia over many years emerged because of a failure to adopt international terminology to meet Article 38 of the Convention of International Civil Aviation. This terminology issue was identified during the development of the proposed maintenance suite of regulations where a conscious effort was made to adopt international terminology for all maintenance procedures, processes and practices.

2.3. Both cable and hose assemblies need test procedures, after assembling, to verify that the assembly will meet design standards in relation to pressure or load. Maintenance equipment used by some maintenance organisations will enable cable assemblies to be tested in-situ in the aircraft once the assembly process is completed. Some maintenance organisations, however, utilise equipment specifically designed to assemble and test these products.

2.4. The processes and practices used for assembling cables and hoses are part of the maintenance training techniques for LAMEs used internationally in the aviation industry.

2.5. The problem in Australia came about when CASA's predecessors, pre the introduction of the 1992 maintenance regulations, decided to identify on a maintenance organisation's certificate of approval the specialised services they were providing to the maintenance industry. These specialised services included cable and hose assembling as well as numerous other services. The intention was to enable the Authority to identify how many maintenance organisations were providing such services and did the particular maintenance organisation have appropriate procedures and equipment. The current quandary is caused by the use of incorrect terminology when the approvals were endorsed with "manufacture" of these parts. The outcome is that many maintenance organisations improperly had "manufacture" added to their approval when all they were providing was a specialised maintenance service.

2.6. Though aircraft and product manufacturers try to manufacture aircraft exactly to a jig, many (mostly older) aircraft, especially in the non-transport category, have slight variations that makes it almost impossible to assemble a set-length cable, and in some cases hoses, that can be universally guaranteed to fit each and every aircraft listed in the IPC. It is for that reason that some manufacturers utilise a system of having available cables of varying lengths during initial aircraft manufacture to save time. It is also for that reason that in-service assembling a cable as per sample is the best method to ensure that the cable is not only in safety when installed but some in-service adjustments are capable of being made.

2.7. Maintenance organisations, both here and overseas, have been carrying out these fundamental maintenance functions ever since aircraft started to operate.

2.8. CASA's current proposal is overly complicating what is, and has been up till now, a basic maintenance function. Industry has always treated this as a maintenance function and we propose that it should always remain a maintenance function to support the Australian aircraft fleet.

3. Recommendation:

3.1. That CASA acknowledge that cable and hose assembling is correctly classified as a specialised service maintenance function whenever parts used to assemble the cable or hose are available to be purchased. (Purchased parts are made under manufacturing techniques)

3.2. That the APMA system be used only when a specific cable or hose assembly being manufactured uses a specialised manufacturing technique. e.g. The cable end fitting has to be individually manufactured prior to assembling the cable assembly. Most cable end fittings are commercially available meeting internationally accepted standards such the MS.

3.3. That maintenance organisations providing these specialised maintenance functions utilise current promulgated processes and practices for the assembly of cables and hoses or, if no such process is promulgated, they have procedures approved under CAR 2A(4) to supplement standard maintenance practices.

3.4. That the changeover of current CAR 30 organisations providing these specialised services to the maintenance industry be managed during the implementation period for Part 145

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