



3 Basic Phases of an Aviation Regulatory Safety Structure

Phase 1, qualified workers; **Phase 2**, quality safety level; **Phase 3**, the approvers/managers. There are a lot of regulations and quasi regulations associated with the core requirement of aviation safety in the engineering fields of design, maintenance and manufacturing sectors. Many don't relate to safety or phase 1. Before we consider the need for a regulation/standard the three phases of aviation needs to be understood.

These 3 phases of regulatory clarity suffered over the last decade of regulatory development where concentration was on phase 2 & 3. It affects engineering and airworthiness design engineers, aircraft maintenance engineers/technicians and other skills used in maintenance and manufacturing.

Phase 1: The first phase of regulatory requirements relates to those that do the work in engineering certification, aircraft/component maintenance and manufacturing. Australian aviation regulatory requirements lack clarity in this most crucial element of a sensible regulatory safety system. The skills and knowledge at this level must be competent to do the work as assessed and authorised by the employer.

1. Designer engineers
2. AMEs and/or AMTs
3. Trades/skilled persons

This is the first phase that needs better clarity in current airworthiness and engineering regulations/standards associated with design, maintenance & manufacturing.

Phase 2: The second phase is the safety quality phase built into every mature aviation regulatory system based on the ICAO model. This is the level where designs are found compliant with airworthiness requirements by experienced design engineers; maintenance is certified as airworthy by LAMEs & workshop supervisors by performing safety quality inspections and, inspectors who sign off parts during the manufacturing process.

1. Design verification – experienced compliance engineers
2. LAMEs and/or Shop Certifiers
3. Inspectorate level

Phase 3: This is the approval phase in the engineering sectors of design, maintenance and manufacturing. This is the level where the design, maintenance or manufacturing process is approved ready to put the item into service. Approved design data for use by an operator and/or maintenance entity. Signing the release document to return an aircraft or component to service. Signing the release document at the completion of manufacturing.

Approvers. Final coordinators, sign releases

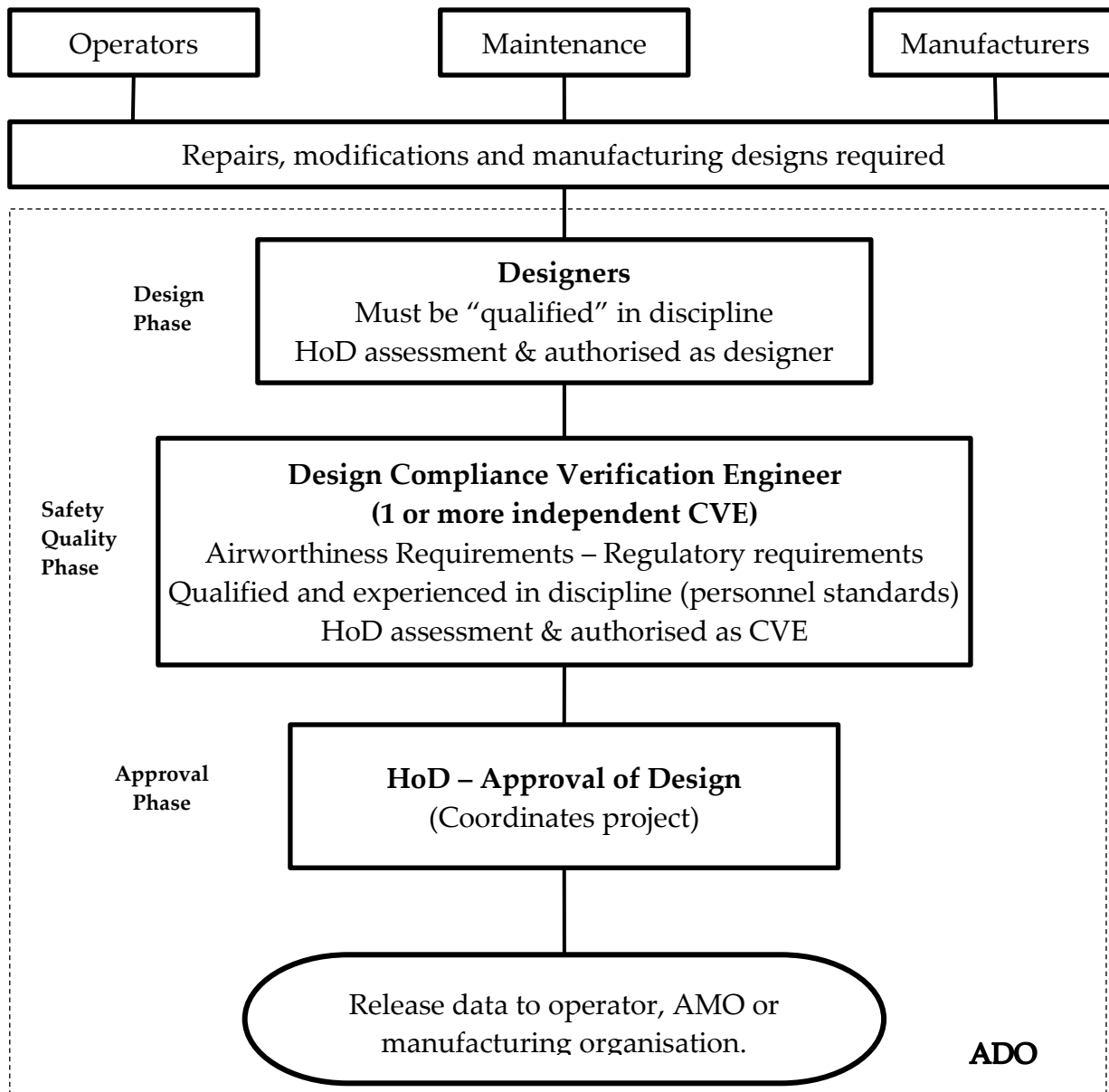
Adding organisational activities to these three phases can confuse the simplicity of a basic engineering safety quality regulatory system. The organisational structure should not confuse the three basic phases of a safety quality system in the engineering sectors of design, maintenance and manufacturing.



Design Sector

The following schematic demonstrates a quality safety approach to approve designs.

Within an ADO, the following applies. Duplication is not required.



Irrespective of input for approved designs, the person developing and drafting the design is qualified to perform this work. It is practice that the AM/HoD of an ADO is responsible to assess their engineers and authorise, within their system, to perform this function.

The independent verification is performed by one or more engineers with the experience in the discipline they are verifying that the design is in compliance with the stated standards.

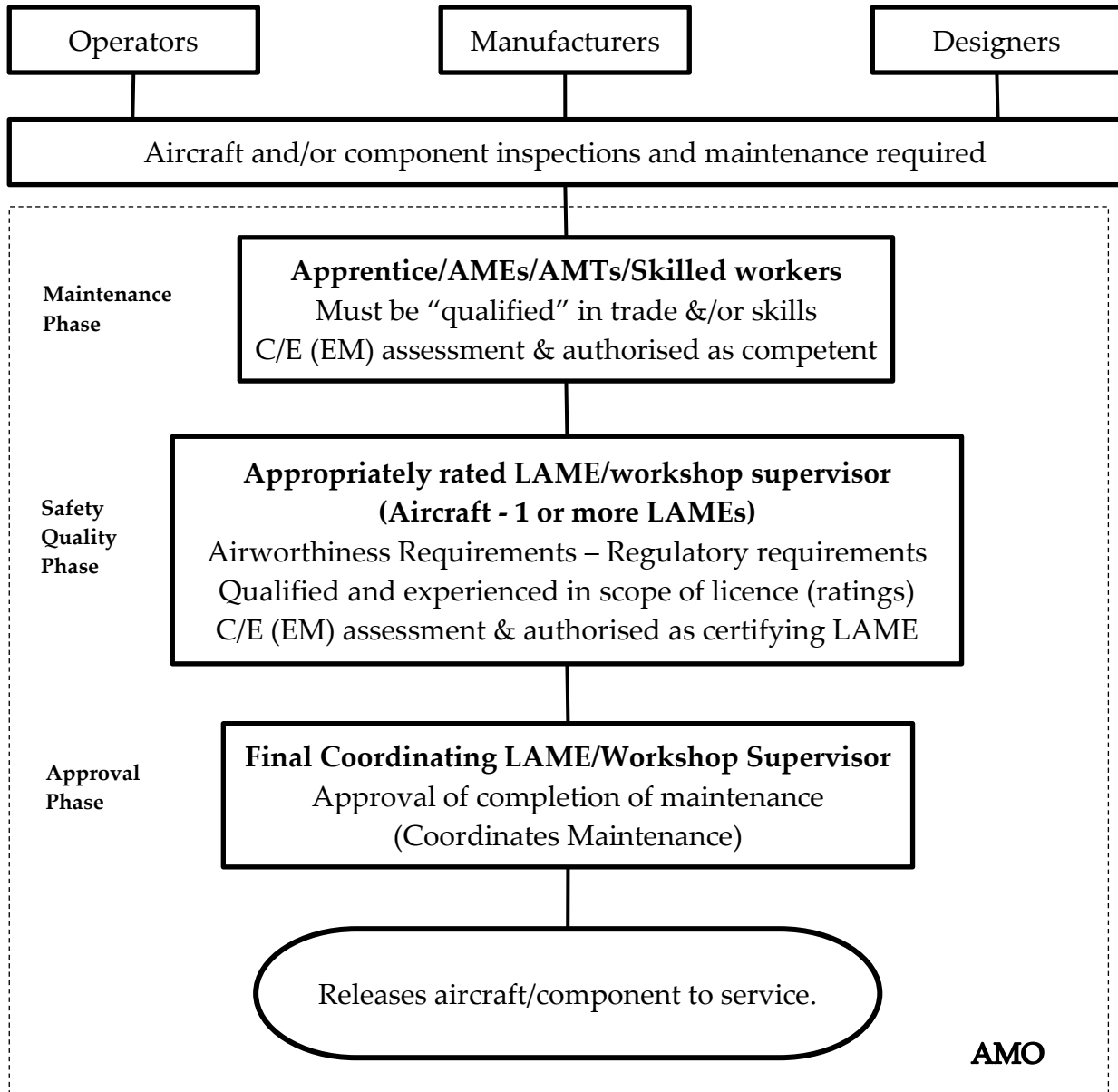
The final approval is done by the HoD after verifying that all disciplines have had independent verification by a qualified and experienced engineer.

Adding organisational requirements should not affect these phases of a regulatory structure as has been the practice in the past.

Maintenance Sector

The following schematic demonstrates a quality safety approach to approve maintenance.

Within an approved maintenance organisation (AMO) the following applies



Irrespective of the maintenance being performed, the person doing the maintenance tasks must be assessed by the C/E (EM) as competent to perform such maintenance on customers' aircraft and/or components.

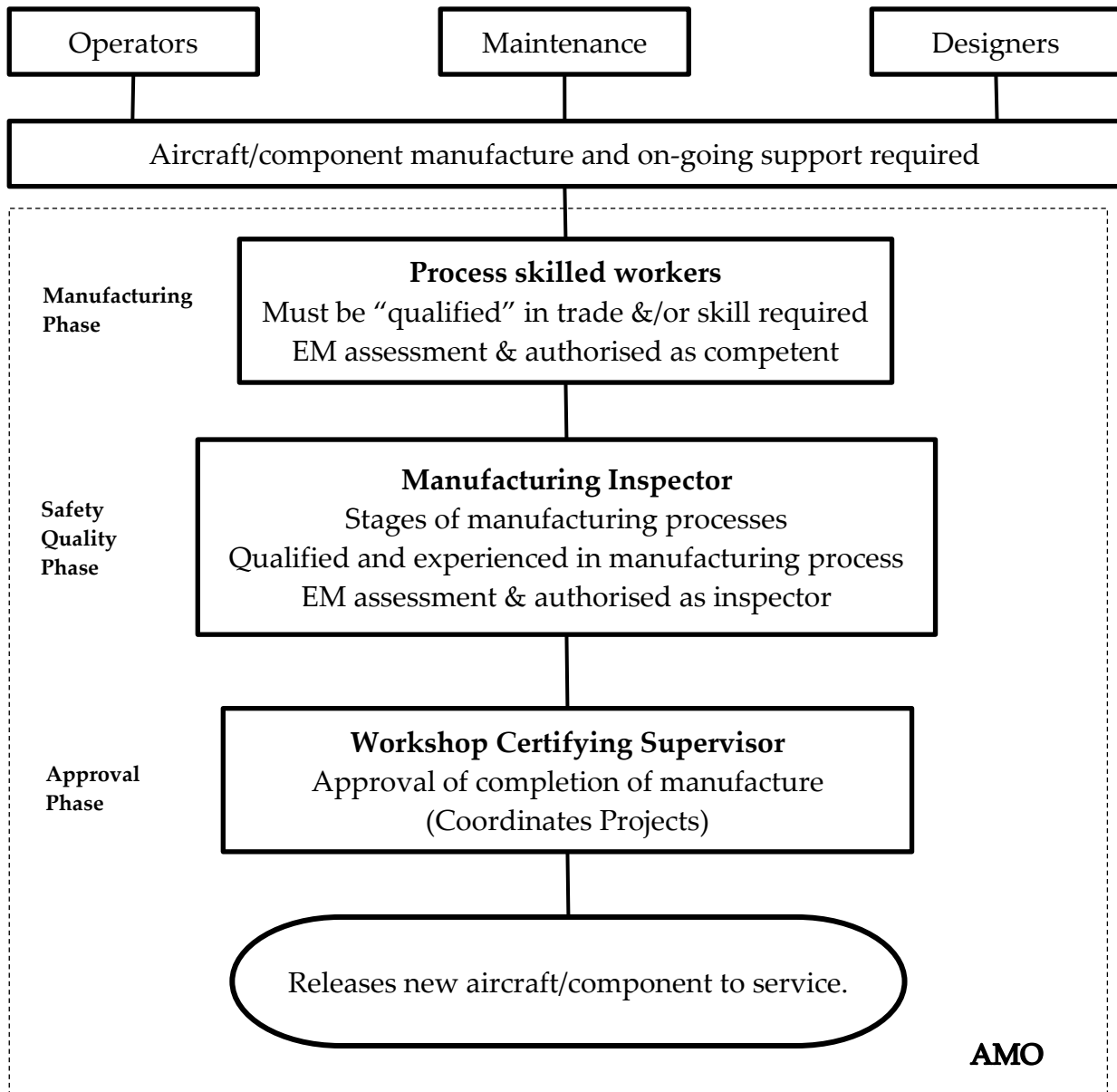
The person supervising and certifying as airworthy, post the maintenance, must be an appropriately rated LAME or workshop supervisor that has been assessed by the C/E (EM) as competent to perform this safety quality role.

The coordinating LAME/supervisor releasing the aircraft/component to service must ensure all disciplines have been certified by a LAME or workshop authorised person that has been authorised by the C/E (EM) to certify the aircraft/component as airworthy. This person will be authorised by the AMO to release aircraft and/or components to service.

Manufacturing Sector

The following schematic demonstrates a quality safety approach to approve manufacture.

Within an approved manufacturing organisation (AMO) the following applies:



Irrespective of the manufacturing process being performed, the EM will need to have assessed the person's skills and qualifications to perform the manufacturing process applicable.

The inspectorate levels ensures each process is in compliance with the airworthiness requirements specified in the design data. There may be one or more inspectorate personnel depending on the processes involved. The EM will need to have assessed and authorised to certify compliance with design/manufacturing requirements

The EM or authorised project coordinator will ensure all inspector certifications required have been made by authorised persons prior to certifying completion of manufacture.

Summary

These three phases are common in most engineering fields and only become complicated when organisational requirements are applied. The organisational requirements should effectively and efficiently support these phases of work.

Most of the problems arise when regulatory standards infer personnel responsibilities and traditional roles should be the role of a third party. Safety can be comprised when direct responsibilities of those directly involved in engineering work is ascribed to others.

Organisational support should enable higher productivity levels of those directly involved in the three phases described.

The larger the business, the larger the number of support staff and organisational support that is provided for the productive staff members.

Too often, medium to large organisations rely on the support staff and the productive staff whose primary responsibility is to produce/maintain items which become the main focus of the organisation.

This is sometime influenced by regulators focussing on records and support processes within an organisation, especially an organisation that has expanded to trade internationally.

The lack of regulatory and/or standards support for the first phase as earlier described, is why we are in constant criticism of a poorly developed regulatory standard system.

If this basic 3 phase aspect is applied to current and proposed regulations and standards that applies to our engineering fields of design, maintenance and manufacturing, then we will go a long way to having workable, harmonised efficient and effective requirements.

Conclusion

Those that are now responsible within CASA have accepted these three phases for the PIR into the Approved Design Organisation working group.

CASA's Board and DAS Skidmore's support for continual improvement in the engineering fields of design, maintenance and manufacturing is essential and the new CASA "*Responsible Managers*" within airworthiness and certification sections have been positive in addressing our push for harmonisation.

Most design, maintenance and manufacturing organisations want a harmonised system of minimum regulatory standards just like their counterparts operating under the systems in Europe, North America and New Zealand. However, one size does not fit all.

What we must be continually conscious of is the Bilateral Agreement with the USA – our systems must be harmonised so trade with the USA can be increased. Other jurisdictions must not impose on the largest market that our design and manufacturers can access.

31st July 2016