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ADVOCATE OF THE AVIATION MRO INDUSTRY

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Maintenance Philosophy

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Way back in 1992, the CAA decided to two tier aviation legislation—in hindsight the whole aviation industry should have rebelled against it.

However, what was also introduced at that time was a maintenance philosophy that applies to those working in a very structured environment such as large airlines and military.

Within this system, the person doing maintenance, whether in a workshop or the LAME on the line, has engineering support that addresses any issue not covered by OEM documents. Trouble shooting is very structured with modern aircraft providing processes to be followed.

This is the system where any maintenance task can be signed iaw an approved manual or process. The individual is also under immense pressure to document the data that was used to complete a task.

However, it does not require the person to sign that the work was airworthy only it was done iaw approved maintenance data. The requirement for “quality” is not required even though the personnel involved will say they do tasks that ensure quality.

It is a system that many employers prefer as it turns people doing maintenance into process workers rather than maintenance engineers.

This is similar to the EASA system without the utilisation of LAMEs to provide quality checks (stage inspections) during base maintenance.

There is quite a difference between ‘qualifications’ and ‘skills’ to do maintenance or fly an aircraft.

An AME licence should confirm that a person has the academic ‘qualifications’ and the ‘skills’ to supervise, inspect (conformity & serviceability) and perform maintenance to airworthiness standards.

Maintenance of aircraft outside the structured system of the large airlines, organisations and military has survived because there has been a different maintenance philosophy applied. Outside these structured environments individuals take on a lot more responsibilities than what their counterparts do in the large organisation system.

This environment was based on the maintenance quality philosophy applied by the FARs.

It enables the A&P/IA to do maintenance that meets industry practices and using information in OEM data or FAA data as long as the aircraft/component will be as equal to it’s original or modified condition, i.e. design standards.

Also, the A&P/IA can use the information to carry out minor modifications and repairs without the need for a DER.

FAR 43 states:

... shall use the methods, techniques, and practices prescribed in the current manufacturer’s maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, **or other methods, techniques, and practices acceptable to the Administrator**

.shall use the tools, equipment, and test apparatus necessary to assure completion of the work in accordance with accepted industry practices

... that work in such a manner and use materials of such a quality, that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition

This maintenance philosophy was supported by past regimes of CASA but apparently not by the current regime who want to use the large organisation/military maintenance philosophy.

Is the FAA non airline system unsafe?—NO.

Can our non airline maintenance capability apply the FAA system?—YES and safely.

Why aren’t we adopting the NAA responsible for the majority of aircraft and engine TCs systems for maintaining their aircraft? - CASA.

Is the **adoption** of FARs for the non airline sector supported by the non airline sector? - YES.

If the FAA maintenance philosophy has such a proven track record then all in this sector of industry should be letting CASA and/or politicians know they want the FAR system and they want a return to 3 tier legislations so “standards” can be written as “standards” not criminal law.

Skills V Qualifications

The most crucial aspect of competency training is to ensure the person also has the skills to perform at an appropriate level. The old adage of knowledge is in the head and skills are in the hands seems to be very important at this time.

Qualifications are needed to obtain funding and are usually in your pocket. Skills however come from applying that knowledge and experience. Qualifications in wallets satisfy bureaucracies, but only qualifications in heads ensure the safety of a flight.

What the flying and maintenance sectors are saying is that under the current competency based training, the knowledge may be there but skills are lower than under the previous system.

It is so serious here in Australia and around the world that academics are questioning the safety of aircraft operations as skills decrease.

Reliability in aircraft design and service reduces a pilot and maintenance engineer from 'exercising' their fundamental skills—can they react correctly when they need to use their skills?

Has competency based training (CBT) moved so far away from the old skills based training?

Over the last few years at every forum that you attend there are employers stating their lack of faith in the CBT of maintenance engineers and pilots—employers state that the outcome of training is many persons holding 'qualifications' but lack skills to be employed.

Some larger operators have started their own training to ensure the pilots have the right skills. This clearly identifies that the academic 'qualification' system is letting them down in producing the right skills.

To produce maintenance engineers/technicians with the right skills and knowledge requires all elements of training to be right. Competency standards, training and OJT assessing and skilling.

The fundamental basis of vocational education—that of identifying and meeting the real demands of the labour market is the most pressing need.

Though we have a competency based training system we need to move more towards a competence based system where graduates are provided with the skills needed in the labour market.

The current system of competency based training is not providing competence skills that the industry can use—is it industry failing their employees?

Employers expect competence (skills) with very broad knowledge to face the changing technology that industry is adopting.

VET standards are inflexible and slow to respond to employer needs and are too often controlled by educators and regulators.

Secondly, there has been no whole of government approach recognising the additional class room time required to provide the skills that are missing from the current system.

Competency Based Training must be replaced by Competence Based Training so 'skills' that employers state are missing are included in the training/assessing system.

Competence based differs to competency based in that it addresses the needs of employment—performance based.

Traditional competency based meets educational, procedures and regulations.

One reason that competency based training in aviation has not met the needs of employers is that there is not enough time to impart and assess the capability of a person to provide performance and productivity levels expected by employers.

There is a possibility that there is confusion created by regulations that seems to be placing responsibilities on the 'system' as the carrier of competences and not the individual.

In the interest of safety, competence is a function of both an individual and shared capacity. Broader skills are required as new technology is introduced. Though we tend to have an aged aircraft fleet, much of the equipment and tooling available today are new technology. This has made maintenance of aircraft different to the methodologies used in the past.

If the current "qualifications" do not provide the 'skills' the employer needs then it is time that the employers, educators and CASA addressed the concerns of employers.

The answer is to move to 2 year fulltime training with an entry level of Yr 10. This model equates to the European, North America and Asian academic training providing skills to aviation.

Training establishments will need to be able to provide the skills that employers need.

If the current model does not work, urgent action is needed to make changes for the future of safe aviation growth in Australia.

LAME "Experience Evidence"

LAMEs must maintain an evidence log of experience to meet the revalidation requirements specified in the Part 66 MoS

MoS:

(b) For the purposes of paragraph 66.120 (2) (c) of CASR 1998, the **requalification** requirements for an A, B1 or B2 aircraft engineer licence holder are:

1. carrying out maintenance of the kind that would be covered by the privileges of any of the licences held, for no less than a total of 100 days; or
2. the holder obtains a report from a Part 147 organisation (an MTO)

GM:

The experience should be documented in an individual log book or in any other recording system (which may be an automated one) containing the following data:

- Date;
- Aircraft type;
- Aircraft identification i.e. registration;
- ATA chapter (optional);
- Operation performed i.e. 100 FH check, MLG wheel change, engine oil check and complement, SB embodiment, trouble shooting, structural repair, STC embodiment;
- Type of maintenance i.e. base, line;
- Type of activity i.e. perform, supervise, release; and
- Category used - A, B1, B2 or C.

Each LAME must maintain such evidence to justify continued use of their AME licence.

It is this record that revalidates your licence every two years—failure to maintain your evidence log will mean that you cannot certify as a LAME.

The US have an A&P/IA evidence maintenance log that we have asked CASA if it can be used.

Maintenance Log Sheet:

- date
- aircraft make and model
- aircraft identification number
- engine(s) make and model
- component(s)
- maintenance activity
- repairman
- AMT (A&P)
- IA Credit (R/A, AI, PI)
- Maintenance Time (< 12,500lbs, > 12,500lbs)

These logs are available from the US at: <http://www.actechbooks.com/products/act388/#ixzz22eiv422E>

For around US\$20 a book.

Date	AC-Model & Make	AC-Serial	Engine: Make & Model	Component(s)	Maintenance Activity	Supp. hrs	AMT	IA Credit	Maintenance Time (Clock hrs)
							R/A	AI	PI
5/4/99	Cessna 182 P	12 544M	Fuel Cell	Replaced L&R-fuel cell		X			8 hrs
5/5/99	Piper PA-23	12 34P	Aileron	Resin right aileron			X		4 hrs
SAMPLE									
I certify that the statements made by me on this form are true.						R/A - Repair or Alteration AI - Annual Inspection PI - Progressive Inspection		Page Total: 1 / 12 hrs Amount Forwarded:	
Technician's Signature: <i>John A. Smith</i>						Total to Date: 1 / 12 hrs			
Certificate Number: <i>A&P 123456 IA</i>									

This new requirement is not well understood by many of our members and their LAMEs.

In less than 18 months, CASA audits will be looking at these personal records to ensure that LAMEs have correctly maintained their experience so that they can continue to exercise the licence privileges.

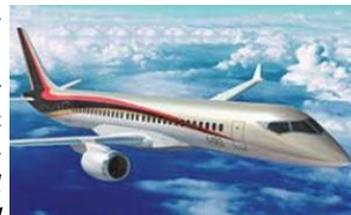
This evidence could be kept in other ways like copying maintenance records.

Mitsubishi Regional Jet

FARNBOROUGH, Hampshire, England, July 11, 2012 – Mitsubishi Aircraft Corporation and SkyWest, Inc., the holding company for the two regional air carriers who conduct the world's largest combined regional airline operations, are pleased to announce that they have reached an agreement in principle in anticipation of completing a firm order for 100 Mitsubishi Regional Jets (MRJ), laying the foundation for a business relationship leading to Mitsubishi Aircraft's delivery of MRJs to SkyWest commencing in 2017.

The MRJ is the next generation 70-90 seat regional jet which will offer both top-class operational economy and outstanding cabin comfort.

By featuring a game-changing engine, state-of-the-art aerodynamic design, & noise analysis technology, the MRJ will significantly cut fuel consumption, noise & emissions.



The MRJ will have a four-abreast seat configuration, with large overhead bins, and also feature an innovative slim seat that offers heightened comfort to passengers.

All we need now is a new 10-15 pax seat aircraft replacement for regional Oz.

OUTSOURCED MAINTENANCE

The aviation airline industry has an outstanding level of safety record noting that the unprecedented level of safety is no accidents. It is a result of a commitment to safety by airlines, designers, manufacturers, maintenance organisations, skilled people and a complex system of government oversight.

Overall, maintenance within our region in aviation is excellent. The dispatch reliability for airplanes and helicopters is near an all-time high, proving the success of their aircraft maintenance programs. Additionally, there are very few maintenance-caused events in flight. Even with this excellent record, improvements can be made.

Design engineering improvements have made newer aeroplanes easier to maintain by utilising internal computer programs that help the maintenance personnel locate the cause of a problem or failure. Additionally, the design engineers take into account maintenance considerations such as the location of components that will need to be changed regularly. The better designs results in improved reliability and safety.

The general view:

The question regarding maintenance work conducted overseas is a difficult one to answer. There are high quality maintenance facilities outside Australia; there are also some that are not very good. This makes the answer to the outsourcing question "**it depends.**"

The operator (airline) has a responsibility to oversee work performed on their aircraft. **Oversight is the essential element to ensure the quality of the work.**

It is possible to send aircraft to maintenance facilities overseas and obtain good results.

Many airlines have their maintenance performed outside their own country and as mentioned previously the overall state of maintenance is excellent.

This shows it can be done successfully **if the oversight is forceful enough.** There are some examples of maintenance failures from overseas facilities, but there are some similar examples from within one's own country. **The quality of the work and oversight is more important than the location.**

There are concerns raised by media, labour representatives, etc with regards to outsourcing, especially off-shore facilities, and the capability of the airline to provide correct oversight.

The government's own regulatory oversight program administered by CASA does not provide a mandate to oversight offshore non-CASA approved aircraft & component maintenance facilities.

The other concern is when CASA approves offshore maintenance facilities, what are the exemptions to compliance to aviation requirements that on-shore facilities are required to meet.

A real concern with outsourcing offshore is seen as decimating a vital national infrastructure of our highly skilled aircraft and component maintenance engineers and technicians that, once reduced, will be very hard to rebuild.



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The Aircraft Maintenance Engineers/Technician Creed

Worth Remembering

"UPON MY HONOR I swear that I shall hold in sacred trust the rights and privileges conferred upon me as a qualified aircraft maintenance engineer/technician. Knowing full well that the safety and lives of others are dependent upon my skill and judgment, I shall never knowingly subject others to risks which I would not be willing to assume for myself, or for those dear to me.

IN DISCHARGING this trust, I pledge myself never to undertake work or approve work which I feel to be beyond the limits of my knowledge nor shall I allow any non qualified superior to persuade me to approve aircraft or equipment as airworthy against my better judgment, nor shall I permit my judgment to be influenced by money or other personal gain, nor shall I pass as airworthy aircraft or equipment about which I am in doubt either as a result of direct inspection or uncertainty regarding the ability of others who have worked on it to accomplish their work satisfactorily.

I REALIZE the grave responsibility which is mine as a qualified aircraft maintenance engineer/technician, to exercise my judgment on the airworthiness of aircraft and equipment. I, therefore, pledge unyielding adherence to these precepts for the advancement of aviation and for the dignity of my vocation."