

Shortage of LAMEs, AMEs & Others

Depart: 1970-1990s (Aeroskills)

Arrive: 2020/2030s (AME)

Research is a valuable tool as it can sometimes find the reason why we are in the situation we are in and how we got here. Up until the early 2000s, CASA regulatory reform was based on harmonisation with the FARs or, if another regulatory system had a more acceptable regulatory provision to achieve ICAO compliance with less red tape, then adopt that provision to reduce red tape and provide performance based regulations. These two ICAO resolutions are no longer the aim of reform.

The situation goes far beyond a critical shortage of LAMEs, AMEs and others, it has been the lack of government focus on compliance with an international treaty, the Chicago Convention, adopting and implementing Annexes SARPs, Protocols and ICAO Assembly Resolutions.

Government aviation policy **delegates** to ICAO Assembly supported these Resolutions.

ICAO Assembly Resolutions: [Harmonisation Resolutions A29-3 \(1992\) still in force, and A33 \(2000\) still in force.](#)

The multi departments and agencies responsible for harmonisation requires specific Acts to include specific provisions to adopt and implement these international requirements and maintain currency.

This has been a major issue with civil aviation in Australia for decades. There is no specific legislative direction to the applicable government department(s) or agency(ies), to adopt and implement the specific Chicago Convention, Annexes, Protocols, ICAO Assembly Resolutions and other government supported ICAO initiatives.

Non harmonised engineering requirements restricts trade and recognition

Until 2003, CASA was working to harmonise with the FARs to enable global market participation. This was the direction of the government's aviation policy, adopt and to implement ICAO Annex SARPs and ICAO Assembly Resolutions that Australia had voted to adopt.

Did the Australian government's ICAO **delegation group** (*Top Executives – DITRDC & CASA*) change policy and ignored these ICAO Assembly Resolutions that they previously voted to adopt?

Has not implementing isolated Australia from the World civil aviation engineering markets?

Or, was that decision made by others than the government's aviation policy delegates?

Implementation of these two Resolutions, as a starting point, will benefit Australian civil aviation engineering (design/manufacture /maintenance & training) businesses, with foreign countries.

These 2 ICAO Resolutions that the Australia's aviation delegates (public servants) supported in 1992 & 2000, were the basis the reform direction of CASA pre 2004.

The Government's aviation policy section in the Department is responsible to ensure responsibilities under the Convention are being adopted and implemented by the multi departments and agencies now responsible for parts of the Convention, Annexes, Protocols, Resolutions and other ICAO initiatives Australia has supported.

Apparently on the World stage Australia gives the impression they are fully compliant but they fail to adopt and implement in regulations what they supported at ICAO Assembly meetings.

Recommendation: Refocus on implementing A29-3 & A33 ICAO Assembly Resolutions.

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Harmonise Licences Standards with the Major Manufacturing Nations

Which countries recognises maintenance performed in Australia on another nation’s aircraft or component? A study of the EASA, FAA and other Bilateral Aviation Safety Agreements of other countries identified four regulatory systems that recognise each other’s regulatory system.

Our research identifies that Brazil, Canada, EU & USA have BASAs with each other that recognises each other’s systems. The top 4 manufacturing countries.

Brazil/ANAC, Canada/TCA, EU/EASA & USA/FAA.

	Australia	EASA	Brazil	Canada	Japan	Korea	NZ	Russia	Singapore	SA	UK
FAA	BASA No Maint	BASA Maint	BASA Maint	BASA Maint	BASA No Maint	BASA Maint	BASA Maint	BASA Maint	BASA Maint	BASA No Maint	BASA Maint
	Australia	USA	Brazil	Canada	Japan	Korea	NZ	Russia	Singapore	SA	UK
EASA	WA	BASA Maint	BASA Maint	BASA Maint	BASA Maint	—	—	—	BASA Maint	—	—

We need CASA to regulatory promulgate LAME course syllabi for each of the licence categories and sub-categories like they do in other nations.

Under the Convention Annexes, government must set the trade training standards for Aircraft Maintenance Engineers (AME) based on referred ICAO Documents in the Annexes.

Is this CASA’s responsibility or the Education Department?

The more AMEs that complete NVET training courses, if they are based on ICAO standards, will raises the workforce theoretical and practical skills, thus adding to aviation safety.

Replace unique trade definitions and terminology.
Replace ‘*Aeroskills*’ and ‘*MEA*’ terminology – these are not harmonised terminology.
Not used in any other country’s regulatory education system.

For example, these four nations use terminology directly from the Convention Annexes.

- US *Aircraft Maintenance Technician plus Repairman.*
- Canada *Aircraft Maintenance Engineer M1, M2, E, & S.*
- EU *Aircraft Maintenance Engineer A, B1, B2, B2L, B3, C plus L*
- Brazil *Aircraft Mechanics GMP(PP), CEL(AF) & AVI (Avionics).*
- Australia *Aircraft Maintenance Engineer A, B1, B2 & C*

Brazil’s Basic Requirements for the license (paragraph 65.71 of the [RBAC 65](#)).

The person must:

- *be at least 18 years old*
- *hold a High School Diploma*
- *successfully completed a course approved by ANAC*
- *passed an ANAC Knowledge test*

Note: Approved course

FAA’s Requirements:

2 Options

1. You must be;
 - * *at least 18 years old.*
 - * *able to read, write, speak, and understand English.*
2. You must have 18 months of practical experience **with either** power plants or airframes, or 30 months of practical experience **working on both** at the same time, **or** **as an alternative to this experience requirement, you can graduate from an FAA-Approved Aviation Maintenance Technician School.** [the far majority of AMTs]
3. You must pass three types of tests.
 - * *Three written examinations, (General, Powerplant and Airframe).*
 - * *an oral test.*
 - * *a practical test.*

Transport Canada Aviation:

You must:

- Be at least 21 years of age
- Complete a Transport Canada-approved [AME basic training program](#) (or one that is acceptable to Transport Canada),
- Get the total amount of applicable civil aviation maintenance experience,
- Gain skills by doing a number of specific [maintenance tasks](#),
- Successfully complete the [technical \(if required\) and regulatory exams](#).

Note: Approved course or acceptable course

EASA – (CASA system should be the same!)

Three Options

1. Basic training (see below) plus 2 years' experience
2. Technical Trade School qualification plus 3 years' experience.
3. Pass applicable modules examinations plus 5 years' experience.

The most important element of EASR Part 66/147 is this Annex specifying course hours

Basic Course	Duration (in hours)	Theoretical Training Ratio (in %)
A1	800	30-35 1/3 theory – 2/3 practical
A2	650	
A3	800	
A4	800	
B1.1	2400	50-60
B1.2	2000	
B1.3	2400	
B1.4	2400	
B2	2400	
B2L	1500(*)	
B3	1000	
(*) This number of hours shall be increased as follows, depending on the additional system ratings selected		
System Rating	Duration (in hours)	Theoretical Training Ratio (in %)
COM/NAV	90	50-60
INSTRUMENTS	55	
AUTOFLIGHT	80	
SURVEILLANCE	40	
AIRFRAME SYSTEMS	100	

Note: Approved course, allied trades to acceptable self-study

Attract and Retain

This is the biggest challenge to employers today.

The general view of school leavers is to look within the VET system for career pathways.

Where do you find an Aircraft Maintenance Engineer, avionic, airframe and/or engine pathway?

Where do you find an AME licencing pathway?

Where do you find a pre-employment pathway like they have in NZ?

Until the Education Department and the Department/CASA come to agreement to treat AME training in the same manner as they do in the marine industry, then we will continue to struggle to attract.

This is a major reform that needs government support to convert Aeroskills/MEA into AME training courses by removing terminology not compatible to the ICAO terminology.

The ultimate aim is to have “Aircraft Maintenance Engineer” training qualifications, with AME competencies being ICAO compliant, so our AME skills are globally accepted and our training schools are also globally accepted.

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Major VET Training Change to Harmonise

Convert NVET **Aeroskills/MEA** to **Aircraft Maintenance Engineer** plus AME licencing training.

Australia must comply with its obligation and responsibilities of the Chicago Convention and adopt and implement trade and licencing standards specified in the Convention’s Annexes, Protocols, Resolutions and policies of the ICAO Assembly.

Basically we have to have an avionics and mechanical pathway based on the international civil aviation training standards specified in the Chicago Convention’s Annex 8 and Annex 1 with others holding specialised skills supporting those two pathways.

NVET AIRCRAFT MAINTENANCE ENGINEER TRAINING SYSTEM			
Specialised Avionic Skills	AME Pathways		Specialised Mechanical Skills
Instruments	AVIONICS Trade/Licence Training Standard Convention (CBT) Annex 8 Trade Annex 1 Licence	MECHANICAL Trade/Licence Training Standard Convention (CBT) Annex 8 Trade Annex 1 Licence	Structures
Radio			Welding
Design Engineers			NDI/T
Aircrew (test)			Painting
Calibration			Calibration
			Weight & Balance
			Design Engineers
Annex 8, ICAO Docs 9868, 10098-1, 7192, Part D1 & Annex 1.			

Advancing Aeroskills/MEA to Aircraft Maintenance Engineer

Harmonisation is a two way system that works if the ICAO Definitions and Terminology is adopted. Sadly, Australia’s NVET system has never been legislatively directed to globally harmonise aviation engineering personnel like they have done in the marine industry.

Without change, attraction and retention of aircraft maintenance personnel will remain.

ICAO referred Documents addressing competency based training of Aircraft Maintenance Engineers and additional training for licencing and supervising/managing maintenance are comprehensive.

The NVET training system must look at the AME training as a whole because the training levels within the AQF qualification hinder a progressive training system enabling an AQF 2 or 3 to add another level. Ideally, the AQF levels 2-3, 3-4, 4-5 should be designed to work.

However, CASA regulatory Part 66 modules as standalone modules have added to the complexity.

On one hand, AQF IV is seen as trade level training so each CASA module will need to be taught at this level to attain NVET trade qualifications.

On the other hand, CASA itself applies training levels to their training charts. Lastly, the Annex 1 & 8 referred ICAO training documents also refer to training levels within each training subject.

Recommendation

An intergovernmental (Depart of Infrastructure, Education, ASQA & CASA) meeting to remove duplication of training levels and use AQF training levels definitions. This meeting to also plan transition from Aeroskills/MEA to AME and AME competencies terminologies.

This meeting must also adopt the CASA modules into the trade and licencing training.

Outcome

Training can be a fulltime course if the VET training facility can provide the practical training specified by ICAO to meet the Convention Annex requirements.

VET Training be specific based on CASA Part 66 modules all taught at AQF IV trade levels.

Licencing knowledge training, CASA module 10, be based on ICAO recommended standards in Doc 7192, Part D applicable to:

- Basic LAME. (AQF IV)
- Supervisory LAME, (AQF V)
- Management LAME. (AQF V)

Until this major change happens, Australia will not have a global equivalent LAME.

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Can Government Civil Aviation Policy enable Harmonisation

Not only can but must. For example, ICAO Assembly *Resolution A39-23 No Country Left Behind (NCLB) Initiative* states: “Excerpts”

“Whereas to realize these goals, the Organization has established Strategic Objectives on safety, air navigation capacity and efficiency, security and facilitation, economic development of air transport and environmental protection;

Recalling that several Assembly resolutions, including A38-5, A38-11, A38-12, A38-15, A38-16, A38-17, and A33-9, urge States to increase the implementation of ICAO Standards and Recommended Practices (SARPs);

Recognizing that all States should effectively implement ICAO’s Standards and Recommended Practices (SARPs) and policies so that all States have safe, secure, efficient, economically viable and environmentally sound air transport systems which support sustainable development and socio-economic prosperity, and

2. Urges Member States to improve their civil aviation systems by actively participating in ICAO’s work and by effectively implementing ICAO SARPs and policies so that they can foster sustainable local and regional prosperity and fully benefit from improved global connectivity;”

Australia is supposed to be a top 10 Member State that once was globally recognised for its level of adoption and implementation of ICAO SARPs, etc.

In addition to the pre 2004 direction to harmonise with the FARs, everything else that is associated with our ratification of the Convention and its Annexes, seems to be at loggerheads with the aims of the Convention.

The basis of harmonisation relies on using the same definition and terminology globally.

The [ICAO] Assembly:

“1. Calls on Member States to reaffirm their commitment to abide by the obligations under Articles 37 and 38 of the Convention;

2. Resolves that SARPs and PANS shall be amended as necessary to reflect changing requirements and techniques and thus, inter alia, to provide a sound basis for global and regional planning and implementation;

3. Agrees that subject to the foregoing clause, a high degree of stability in SARPs shall be maintained to enable the Member States to maintain stability in their national regulations.”

[ICAO] Qualified and Competent Aviation Personnel

“The Assembly resolves that:

1. ICAO shall assist Member States in achieving and maintaining competency of aviation personnel through the ICAO Aviation Training Programme;

2. the ICAO Aviation Training Programme shall be governed by the following principles:

a) qualification of aviation professionals is the responsibility of Member States;

b) the highest priority is placed on learning activities that support the implementation of SARPs;

c) cooperation with Member States and industry is essential to develop and implement learning activities to support the implementation of SARPs; and

d) priority shall be placed on cultivating the next generation of aviation professionals.

3. ICAO advises operators of training facilities but does not participate in the operation of such facilities; and

4. Member States assist each other to optimize access to learning activities for their aviation professionals.

Associated practices

1. The Council should assist Member States to harmonize aviation professionals’ levels of competency. These efforts should be based on:

a) data analysis to determine priorities and needs;

b) identified training needs for the implementation of ICAO provisions; and

c) a competency-based approach.

The above are all responsibilities and obligations that come with ratifying an international treaty.

Australia needs to meet these responsibilities and obligations so Australian civil aviation can become part of the globally harmonised countries holding BASA’s with each trading nation, especially for engineering.

It is Government that has to obtain BASAs with other nations, not businesses.

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