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What Was – What Is – What Should Be?

Basically, the objective of the Civil Aviation Safety Authority and its predecessors is, and has always been, to prevent aviation accidents.

The Act specifies the limits for CASA to conduct ‘regulation’ whereas they really conduct “administration” of civil aviation to prevent accidents. In other words, regulating the activities of *persons* involved. This is important to understand because CASA administers and is not directly responsible for safety during manufacture, operations, or maintenance.

NB: Section 2C (1) of the Acts Interpretation Act 1901 presumes that expressions used to denote persons generally include a body politic or corporate as well as an individual’.

Semantically, one cannot directly *regulate* safety. One cannot *regulate* the absence of risk.

The Australian economy is highly dependent on aviation and therefore on aviation safety. Much of the economic dependence is on small aircraft. Australia had/has many light aeroplanes masquerading as airliners and carrying people around on their daily business.

For this reason, Australia put in the effort and Australian unique regulations were in advance of other countries to safely operate to outback and remote airports. Never the less, all past Regulations and Orders were always traceable to ICAO principles. It was quite common for the USA and the UK to adopt requirements equivalent to the “unique” Australian requirements, but it was a prolonged affair. On each occasion, Australian requirements were tested in service to prove them superior to the USA requirements. This was so from Bell 47 helicopters to Boeing 747. Australia led the way with weather radar, flight data recorders, full scale fatigue testing, airworthiness requirements for fibre reinforced plastic, landing aids and so on.

Another reality of regulating (administering), is that sooner or later, the regulator will be alleged to have caused an accident, or at least contributed to the cause. This can be contributed by not regulatory devolving responsibilities suitably to those that are responsible for safety: i.e., manufacturers, operators, and maintainers, or to those that created regulatory standards.

The administration of airworthiness standards requires people with specialist knowledge, and considerable experience and intellect. Day by day, in an economy based on competition, the aviation industry is driven by the need to do new things and especially to cut costs in new ways. There is a continual demand upon regulators to make rulings on each new twist. For obvious reasons this all must be done in a hurry.

Quote: *"Though they may be privately employed, aircraft [professional & maintenance] engineers are all public servants in the sense that each has an obligation to provide the highest degree of care in the public interest. The law of course demands this."* J. Lederer 1965

What was: *“the GG may make regulations for the purpose of carrying out and giving effect to the Chicago Convention, as amended by the Protocols, any Annex in the Convention relating to international standards and recommended practices (being an Annex adopted iaw the Convention) and the Air Transit Agreement.”*

What is: *“the GG may make regulations for the purpose of carrying out and giving effect to the provisions of the Chicago Convention relating to safety”;* **[No requirement to include the Annexes & all ICAO standards and recommended practices that are associated with safety – so why add confusion.]**

What Should Be: Until the Civil Aviation Act is amended so Regulations they develop give effect, not only those standards they think apply to safety, but to all aspects of the Convention & Annexes like **it was**, proper regulations will not harmonise Australia to the extent needed to obtain Bilateral Aviation Agreements that recognise Australian engineering businesses of design, manufacture, maintenance, and training, by other more harmonised trading aviation nations.

The Department of Education must be made responsible for Annex 8 personnel standards.

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What Was – What Is – Annex Responsibilities?

Infrastructure promulgates Australia's **State Aviation Safety Policy**. One change is to include the Department of Education in the multi-agency MOU in relation to the management of maintenance personnel training aspects to international standards.

The second arrangement is a [multi-agency MoU](#) on Civil and Defence aviation matters between:

- the Department of Infrastructure, Transport, Regional Development, Communications and the Arts;
- the [Civil Aviation Safety Authority](#);
- the [Airservices Australia](#);
- the [Department of Home Affairs](#);
- the [Australian Transport Safety Bureau](#);
- the [Australian Maritime Safety Authority](#);
- the [Bureau of Meteorology](#);
- the [Department of Defence](#); and
- the [Department of Foreign Affairs and Trade](#).
- the **[Department of Education](#) DoE needs to be added to ensure national trade/licensing training meets ICAO standards to support the trade-based licences specified in CASR Part 66 by adopting EASR Part 147 training courses.**
- Government must amend the [multi-agency MoU](#) to include the [Department of Education](#) to be responsible to provide basic trade/licencing training/qualification standards for maintenance personnel as below.

What Was: Pre CAA/CASA Agency days, the Department had a working relationship with the Australian National Training Authority (ANTA) to base aviation maintenance personnel training on the ICAO AME Training Manual trade/licencing copied in ***DCA Publication No 35, Guide to Aircraft Maintenance Engineer Examinations*** (*contains each trade/licence syllabi*). Basic AME licences were based on the trade elements associated with aircraft. Australia was instrumental in developing the initial ICAO Training Manual Doc 7192 to provide global trade and licence training standards.

What is: CAA/CASA did not continue to promulgate ***DCA Pub. 35***. VET training is now based on a airline/union trade demarcation outcome. CASA senior management do not see it as their responsibility to set competency-based standards for the courses, durations, and syllabi, as other NAAs do, for aircraft maintenance personnel. The Convention's Annex 8 places this responsibility on Australia to set the competence standards for maintenance personnel and ICAO provides several training manuals specifying the minimum training trade and licencing standards.

- **Annex 8, Part II, 6.6 Personnel (6.6.4) Competence of maintenance personnel – State responsibility.**
- **ICAO Doc. 7192 Part D-1, Aircraft Maintenance Engineer Training Manual.**
- **ICAO Doc. 9824, Human Factor Guidelines for Aircraft Maintenance Engineers.**
- **ICAO Doc. 9868, Part III, Training and Assessment for Aircraft Maintenance Engineers. (CBT)**
- **ICAO Doc. 10098, Manual on Aircraft Maintenance Personnel Competency-based Training and Assessment.** (Note: ICAO Docs. 9868/10098 replicate Australia's NVET CBT system)

What Should Be: Government, to remove duplication of responsibilities, must transfer responsibility for **Annex 8 specified standards and recommended practices relating to aircraft maintenance personnel basic training/qualifications**, referencing the above multiple ICAO Aircraft Maintenance Personnel training documents that support both trade and licencing training standards, **to the Education Department to implement.** ICAO manuals now align with Australia's CBT system's training packages. EASR Part 147 lists standards for each of their member States to implement.

EASR Part 147 regulations relating to maintenance training courses need adopting BUT by which government department or agency? Not CASA, who have ignored global maintenance personnel training standards ever since they were created in 1988.

ICAO's multi training documents standards and recommended practices are relatively easy to apply and underpin the EASR Part 147. CASA licencing requires 5 AME courses and 4 AME sub courses; EASR Part 147 covers trade training for a wider scope than the licencing pathways.

These EASA regulations need to be urgently adopted by the Education Department, by adding for Australia to be globally harmonised with ICAO SARPs and EASA regulations.

Reference: Department of Infrastructure, Transport, Regional Development, Communications and Art allocation to Departments/Agencies responsibilities for the Convention Annexes. **With one Change.**

Annex	Description	Agency Responsible
1	Personnel Licensing (licensing of flight crews, air traffic controllers and aircraft maintenance personnel).	CASA Education
2	Rules of the Air (rules relating to the conduct of visual and instrument flights)	CASA
3	Meteorological Service for International Air Navigation (provision of meteorology services for international air navigation and reporting of meteorology observations from aircraft)	BOM
4	Aeronautical Charts (specifications for aeronautical charts for use in international aviation)	CASA and Airservices Australia
5	Units of Measurement to be used in Air and Ground Operations (dimensional systems to be used in air and ground operations)	Airservices Australia
6	Operations of Aircraft (specifications which will ensure in similar operations throughout the world a level of safety above a prescribed minimum): Part I - International Commercial Air Transport – Aeroplanes Part II - International General Aviation – Aeroplanes Part III - International Operations – Helicopter	CASA
7	Aircraft Nationality and Registration Marks (requirements for registration and identification of aircraft).	CASA
8	Airworthiness of Aircraft (certification and inspection of aircraft according to uniform procedures plus maintenance organisation/personnel standards)	CASA Education
9	Facilitation (requirements relating to facilities, services and arrangements for the entry and departure of aircraft, passengers, and cargo)	Infrastructure, Home Affairs and DFAT
10	Aeronautical Telecommunications (standardisation of communications systems) Vol I - Radio Navigation Aids Vol II - Communications Procedures including those with PANS status Vol III – Communication Systems Vol IV - Surveillance and Collision Avoidance Systems Vol V - Aeronautical Radio Frequency Spectrum Utilization	CASA and Airservices Australia
11	Air Traffic Services (establishment and operation of air traffic control, flight information and alerting services)	CASA and Airservices Australia
12	Search and Rescue (organisation and operation of facilities and services necessary for search and rescue)	AMSA and Infrastructure
13	Aircraft Accident and Incident Investigation	ATSB
14	Aerodromes (specifications for the design and equipment of aerodromes) Vol I - Aerodrome Design and Operations Vol II - Heliports	CASA
15	Aeronautical Information Services (methods for the collection and dissemination of aeronautical information required for flight operations)	CASA and Airservices Australia
16	Environmental Protection: Vol I - Aircraft Noise (specifications for aircraft noise certification, noise monitoring and noise exposure units for land use planning) Vol II - Aircraft Engine Emissions Vol III - Aeroplane CO2 Emissions	Infrastructure
17	Security - (Safeguarding International Civil Aviation Against Acts of Unlawful Interference)	Home Affairs
18	The Safe Transport of Dangerous Goods By Air (specifications for the labelling, packaging and shipping of dangerous goods)	CASA
19	Safety Management	CASA

What Should Be? To address a serious safety issue, after 34 years of no NVET “Aircraft Maintenance Engineer” training packages or AQF qualifications, to underpin all of the trade-based licences issued by CASA, the commonwealth education department must be made responsible for providing these AME training packages, based on ICAO minimum standards, packaged to support the trade competencies associated with each licence specified in CASR Part 66.

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What Was – What Is – General Aviation Maintenance?

General aviation has suffered the most under the shift from Department administration to Agency administration. A major change was the ability of the Department to administer innovations to the almost negative capability of the Agency to administer innovations. This may be because of Act limitations but more likely the expertise and experience of key personnel employed by the Agency.

- "**Innovation** is crucial to the continuing success of general aviation and commercial aviation"
- "**Innovation**, for its part, can also be referred to something new or to a change made to an existing standard or practice, including regulatory standards."

Well drafted regulations will/should always include a provision for a regulator to approve variations to regulatory standards or practices so they can approve innovations developed by industry participants.

What Was – The Department globally led the way in providing flights into airstrips by twin engine aeroplanes that benefitted mainly remote and regional communities. They also introduced directly supervised organisations (flying training and maintenance organisations) with huge success for thousands of participants that also benefitted many remote and country communities. The costs were always a major factor to consider but safety and compliance with the Convention's Annexes principles were first priorities. Innovation was encouraged by past regulators capability to set appropriate safety standards to enable the innovation to happen. Many innovative submissions failed because a satisfactory safety standard could not be achieved.

NB 1. The majority of pilots came from regional Australia and still do, but not as many – no shortage back then.

NB 2. ICAO Assembly meetings and Resolutions have been encouraging all Member States to harmonise their national regulations with either the FARs or JAA/EASA regulations for decades.

What Is. Australia prides itself of being classified as one of the top ten ICAO nations but also one of the worse to harmonise with the intent of the FAR system, or, if seen as safe as but more cost-effective, adopt other nations regulatory standards.

The problem, CAA/CASA suffer from avolition, i.e., a total lack of motivation that makes it hard to get anything done.

NB: The Federal Parliament review in the late 1990s directed regulatory reform and the 1992 ICAO Assembly Resolution A-29 Harmonisation with the FARs was endorsed by CASA CEO set the intent for change. Industry has been subject to the snail-paced reform for over 30 years ending with low GA participation and critical shortage of pilots and maintenance personnel.

CAA/CASA's direction, under Boards or no-Boards, has not followed the Convention's aim to have a global civil aviation industry regulatory framework in all nation's regulatory system that encourages innovation. However, since one CEO wanted a black letter law approach to regulatory reform only demonstrated their lack of regulatory experience and how to implement the Convention's requirements into legislation and regulations.

Industry suffers from partial adoption of either EASA or FAA regulations that have added red tape and costs without any benefits or safety improvement to general aviation and others. Changes are restricting the ability of CASA to accept industry innovations.

Currently, under the present regulations, industry has reduced in size and there is a shortage of pilots and maintenance personnel.

What Should Be:

Remember, semantically, one cannot directly *regulate* safety. One cannot *regulate* the absence of risk. However, CASA must implement the cost effective global regulatory standards and practices that, with qualified, skilled pilots, engineers, and maintenance personnel, can mitigate safety and risks to a very low level. Continuing safety is dependent largely on qualified, skilled, and current pilots and maintenance personnel.

This can be achieved by fully adopting either the FARs or EASRs for each area of regulations.

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What Was – What Is – Maintenance Personnel Training

What Was: Pre-Agency days, the Department initially worked with each States Education Department and then with the Australian National Training Authority to ensure the training met the minimum training standards promulgated by ICAO to meet Convention Annex standards.

The Department did this by publishing *DCA Publication No 35, Guide to Aircraft Maintenance Engineer Examinations*, that took the minimum aircraft maintenance personnel training standards promulgated by ICAO and provided 5 category syllabi for airframe, engine, electrical, instrument & radio. i.e., avionic trade of electrical, instrument and radio and mechanical trade of airframe and engines. There were also a reasonable number of privileges defined so that the avionic and mechanical trades had in each other's trade stream to enable a flexible workforce. Everyone understood privileges. The basic aircraft maintenance engineer training was provided through State approved Recognised Training Organisations like the TAFE and some dedicated RTOs.

The clarity of this system is explained by the following excerpts from DCA Pub. 35.

"4. The privileges of which may be exercised by a Licensed Aircraft Maintenance Engineer include certification of safety for flight of n aircraft; certification of documents for issue or renewal of a Certificate of Airworthiness; approval of subsequent flight tests; certification for issue of an maintenance release; certification of work carried out under regular maintenance schedules; certification after replacement of components; rectification of defects; and maintenance inspections."

"5. The exercise of these privileges involves the acceptance of responsibilities and briefly stated they are as follows:

When certifying work and inspections the LAME must ensure he/she has adequately supervised the work, that established standards have been maintained and the resulting condition is satisfactory in all respects.

The AME licences and ratings were based on the kind of work where the experience may be attained.

What Is: When the CAA did not promulgate the DCA Pub. 35, the training converted to an industrial demarcation between the mechanical and structures agreement in the airline industry. With no aviation aircraft maintenance personnel standards being promulgated by CAA/CASA, training in RTOs converted to the airline demarcation standards.

General aviation aeroplanes/helicopters and the commercial helicopters maintenance personnel training standards were no longer provided by CAA/CASA and under the NVET. What training that was being provided was not fit for purpose of the general aviation & helicopter sectors.

In 2007, CASA partially adopted EASA's Part 66 aircraft maintenance engineers licence system that EASA found did not work well for general aviation within a couple of years. They have amended their Part 66 license system a few times but not adopted by CASA. Why use a system not rejected by EU.

To enable the airline licence system to be supported by formal training, the education sector added a few competencies to the current Diploma to make the Avionic and Mechanical streams compatible with the adopted B1 & B2 aircraft maintenance engineer categories for large aeroplanes.

Basically, there is no formal developed training courses and qualifications required by aviation regulations like the EASRs, FARs etc., and there is no aviation regulatory recognition of AQF qualifications required to hold a licence or to hold a supervisory and/or management position.

What Should Be: Like the mature systems of EASA, FAA and other major nations, CASA should include the aircraft maintenance engineer course details specified in EASR Part 147 applicable to each kind of aircraft that lead to a CASA issued basic licence or rating in CASR Part 147. The major way of obtaining a licence should be by attaining an applicable AQF academic qualification plus CASA defined experience.

EASA Parts 66/147 identifies trade training courses to support, not only certified aircraft, but also sport and recreational aircraft sectors. These sectors need the VET system to include these training standards for sport and recreational aircraft. This would enable CBT being available for all sectors of aircraft maintenance. Our CBT system could remove the issue that prevents an A to progress to B licence.

Safety Depends On: "The skills of maintenance personnel is critical to reducing accidents and incidents in civil aviation operations. Airworthiness is dependent upon maintenance quality; it directly affects the flying public's safety. For this reason, the FAA sets standards for experience and training, establishes minimum curriculum requirements, and tests individuals for competence before they are awarded an AMT. As aviation maintenance tasks grow more complex, so does the training necessary to transfer the requisite knowledge and skills to AMTs." [Back to the Front Page](#)

Professional Academic Pathways for Maintenance Personnel – What Can Be?

After 100 years of civil aviation, it is time, in the interest of improving safety, that this sector develops maintenance personnel training packages for all levels of aviation maintenance. Whether the aircraft is recreational, sport, balloons, gliders, small or large aeroplane or helicopters, proportional training courses should be available through the vocational, education training system (NVET).

Whether you are maintaining a non-commercial gyro-copter, glider, ultralight aircraft, balloons, etc., or commercial small and large aeroplanes and helicopters, academic training should be available in the NVET CBT system. Applicable and appropriate training pathways can and should be available.

The NVET aviation competency unit database includes all competencies needed in aircraft maintenance, the depth and level delivering the competency is dependent on the kind of aircraft being maintained.

A model that can be used for applicable trade skills, is the underpinning training for EASR Part 66 “L” licences. The A & B training courses are for aircraft that have been certified to national airworthiness codes compatible with the airworthiness codes of the FAA & EASA.

Aircraft certified under the national airworthiness codes of a country need maintenance personnel qualified and, where required, licenced by CASA.

Because Australia’s aviation is sparingly dispersed around Australia, vocational training must use on-line training to its fullest extent.

What Was – What Is – GA Flight Training?

What Was: We raise this issue because under Department administration of aviation there were more than a thousand small flight training schools scattered around Australia, especially in rural and remote areas. There was no shortage of pilots, in fact, many Australian pilots successfully sought employment in other countries to get the experience and hours to join the airline sectors.

Under Agency administration there has been a major reduction in general aviation and small commercial operations under continual regulatory changes.

What Is: Regulations and exemptions under Department administration enabled continued growth especially in general aviation – thousands of small flight training schools and hundreds of maintenance organisations that existed under Department administration no longer exists under Agency administration

Conclusion

The changeover to the administration of civil aviation from Department level to Agency level reversed the growth of general aviation that was a skilled workforce that also supported the growth cycle in the medium to large and complex aircraft commercial sectors. The Act created to pass responsibility has obviously not provided the Agency with the same directions as was the case under the Department administration.

So, has the Agency administration failed? Did the legislative direction fail to provide the same direction that the Department had provided? An industry that did not have a shortage of pilots or maintenance personnel, a shortage caused by change in direction by CAA/CASA engineered by government direction spelt out in applicable civil aviation Acts.

The critical shortage of pilots and maintenance personnel can be sheeted home to the availability of training and by whom. As stated in this Newsletter and other AMROBA papers, ever since the passing of responsibility from the Department to CAA, harmonisation with the Convention’s Annexes and utilising the NVET training capabilities has not been guiding principles in developing regulations.

It is now obvious that the continual changes in the management of government departments and Agencies have diminished the historical knowledge and that is the result of regulations that are under continuous increase in red tape and unworkable and costly requirements.

Recommendation: To address the shortage of maintenance personnel the government needs to add the Department of Education to the Department of Infrastructure, Transport, Regional Development, Communications and Art managed **State Aviation Safety Policy** [MULTI-AGENCY Agreement](#) for Annex 1 & 8.

This will enable Australian academic qualification to improve safety, employment and be accepted by CASA, in lieu of CASA examinations, to hold an *Aircraft Maintenance Engineer Licence*.