

AMROBA[®]inc

ADVOCATE OF THE AVIATION MRO INDUSTRY

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2013 — A Continuation of Enquiries Harming Aviation

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As a new year starts for the ever changing aviation regulatory system that we have to comply with, another political enquiry is still on-going into Accident Investigations and the roles of ATSB and CASA, including the interaction between these two government agencies.

How many more political and judicial enquiries will this industry have before the politicians realise that the legislative environment that they, the politicians, have created is the real reason why we have and will continue to have judicial and/or political enquiries in one form or another.

Like all other political/judicial enquiries, this one has and will attract a lot of very sincere and appropriate submissions from many quarters. The outcome will be recommendations to add a provision in an Act or two, maybe additional regulations BUT never a real recommendation to rewrite the aviation legislative system to modernise our antiquated aviation system.

AMROBA, on behalf of its members has also made such a submission. A brief of that submission is as follows:

The only way to fix the on-going issues is a complete legislative review based on a country that has achieved 100% compliance with the International Civil Aviation Organisation's (ICAO) Critical Elements of a Safety Oversight System.

In our Region, the only ICAO contracting State (country) that has achieved this is Singapore.

So why has Singapore been able to fully meet the ICAO critical elements? They completely rewrote their aviation legislative system to comply with ICAO without the system being screwed by political and industry interested parties.

It is the high level legislative requirements that sets up a proper aviation environment for government, departments and agencies to operate in that has been their success. Singapore critical elements compliance can be seen at this link: [Singapore ICAO critical elements](#)

How did Singapore achieve this result?

It all starts with their plain English Air Navigation Act that sets the high level controls of structures, aerodromes, etc. Quite different from our Act.

The wording is in plain English that this and previous Australian governments keep telling us they are adopting but few of us can understand. [Singapore Air Navigation Act](#)

This sets up the structure for their legislative system that their government requires.

The Singapore Air Navigation Act does not address the creation of and operation of the Singapore Civil Aviation Authority (CAAS) as this is clarified in their Civil Aviation Authority Act. This Act clarifies exactly what CAAS can and cannot do and is much better structured and clearer than our Civil Aviation Act. Their Act clearly specifies the functions, in Sec 7 and 8, of CAAS and when a comparison is done against the functions of CASA spelt out in our Civil Aviation Act, theirs removes the confusion that has existed since the creation of the Civil Aviation Act. Link: [Singapore CAA Act](#)

The most crucial part of the Singapore aviation legislative framework is the Air Navigation Order that clarifies the adoption of the ICAO requirements including empowering the CAAS to raise supplementary requirements to assist with implementing the requirements spelt out in the Act and Order. This delineation of CAAS requirements removes a major issue in Australia where technical requirements are being redrafted as regulatory requirements with the resultant blurring of detail. Link: [Singapore Air Navigation Order](#)

New Zealand also has a plain English system but not full compliance with ICAO critical elements.

If the Singapore ANO was our CASR regulations, all other 'requirements' would then be issued by CASA adopting such requirements from ICAO, FAA, EASA, or any other regulatory system that is appropriate to the Australian aviation system. Like Singapore, CASA could promulgate these as Operational, Airworthiness, Airways, Airport Requirements or should we say Orders.

Low Utilisation Aircraft

The vast majority of general aviation aircraft that do not accumulate more than 100 hours/annum should include a calendar based maintenance schedule.

The CASA Schedule 5 is based on aircraft exceeding 100 hours/annum and is usually more comprehensive than older aircraft manufacturer's schedules.

Low utilisation aircraft should transition from a flying hour based maintenance schedule/system to one which is controlled by mostly calendar time.

Particularly important are the lubrication activities. The breakdown in the chemical composition of oils and greases, possibly due to environmental conditions, may contribute to internal and external corrosion.

Amongst the many negative considerations of low utilisation are the following:

- Aircraft structure which is subject to excessive corrosion may as a result be more susceptible to fatigue.
- Low utilisation of aircraft engines and components can have an extremely detrimental affect on the operation of the aircraft.
- Engines are typically not designed with corrosion protection features built in due to the expectation that the engine will be running on a regular basis.
- Engines not managed correctly by calendar period inspections/checks can lead to significant costs as they accumulate fluid in areas within the engine.

Many general aviation aircraft log book statements should include calendar periods associated with the manufacturer's maintenance schedules. Most schedules are based on a 300 hour annual utilisation.

If a general aviation aircraft or component manufacturer produces a low utilisation maintenance schedule then these should be included in the aircraft's log book statement if aircraft utilisation is below 100 hours/annum.

Calendar period maintenance schedules are influenced by the kind of operation, climatic conditions, storage facilities, age, and construction of the aircraft.

Lycoming states experience has shown that in regions of high humidity, active corrosion can be found on cylinder walls of new engines inoperative for periods as brief as two days. 50 hours of operation will provide a varnish type finish on cylinder walls. Engine preservation/storage programs should be considered when engines do not meet normal flight operating temperatures once every one to two weeks.

It is recommended that all low-utilisation turbine engines should spool their engines once a month with N1 rotation and make a log book entry. For engines dormant for longer than six months, fuel system preservation is required.

Maintenance organisations should encourage aircraft registered operators operating low utilisation aircraft to amend their log book statement to adopt calendar period maintenance schedules.

If aircraft were treated like motor vehicles and were required to be maintained in an airworthy condition to be registered, maybe we would have a lot more calendar based maintenance schedules. Conversely, the number of registered aircraft may be greatly reduced.

If registered, the aircraft should be airworthy just like registered motor vehicles.

FAA Renewal Aircraft Registration System

The Government's White Paper raised the issue for compulsory third party insurance whilst the FAA is transitioning to a 3 year renewable aircraft registration system. How much longer before government adopts a similar approach.

There are so many Australian general aviation aircraft that are not being operated, it questions just how many aircraft on the CASA Aircraft Register could be classified as being an active and airworthy aircraft.

Maybe a renewable system will reduce the actual number of active aircraft to a level that government resources associated with aviation could be reviewed. The numbers involved in civil aviation are reducing.

AMROBA has always put forward that a 3 yearly renewable Certificate of Airworthiness is more safety appropriate than renewing Certificate of Registrations.

This is supported by ICAO who provide guidance for a renewable Certificates of Airworthiness.

The FAA System is based on:

FAR Part 47 (3) A Certificate of Aircraft Registration issued under this paragraph (expires three years after the last day of the month in which it is issued)

(b) Initial Registration. A Certificate of Aircraft Registration issued in accordance with § 47.31 expires three years after the last day of the month in which it is issued.

(c) Renewal. Each holder of a Certificate of Aircraft Registration, AC Form 8050-3, containing an expiration date may apply for renewal by submitting an Application for Aircraft Registration Renewal, AC Form 8050-1B, and the fee required by § 47.17 during the six months preceding the expiration date. (c) Renewal. Each holder of a Certificate of Aircraft Registration, AC Form 8050-3, containing an expiration date may apply for renewal by submitting an Application for Aircraft Registration Renewal, AC Form 8050-1B, and the fee required by § 47.17 during the six months preceding the expiration date. A certificate issued under this paragraph expires three years from the expiration date of the previous certificate.

The FAA estimated that 1/3 of their aircraft registration data was corrupt. 47K aircraft may not exist.

Private General Aviation LBS

When an aircraft registered operator brings their aircraft to a maintenance organisation and authorises the maintenance organisation to perform maintenance, is the registered operator aware of the effectiveness of the maintenance requirements spelt out in the aircraft log book statement.

Many maintenance organisations prefer the CASA Maintenance Schedule (Sch 5) to the manufacturer schedule when a combination should be used.

The CASA log book statement (LBS) is in two Parts for a reason but few registered operators utilise the LBS correctly.

Part 1 sets up the basic maintenance schedules or system for the aircraft maintenance.

Part 2 should have all additional maintenance instructions from modifications and repairs incorporated over the years.

Though registered operators are legally responsible for the LBS, Part 1 and Part 2, it is usually the AMO Chief Engineer that brings deficiencies to the notice of the registered operator.

The regulations enables the manufacturer's schedules, CASA maintenance schedule or a system of maintenance. So what does the manufacturer or CASA maintenance schedule include in a LBS to be effective and appropriate?

1. CAR 42A(1) is the manufacturer's maintenance schedule subject to paragraphs (2), (3), (4) & (5).

- (2) is a maintenance direction from CASA;
- (3) is additional instructions (LBS Part 2);
- (4) includes component schedules; and
- (5) adds Schedule 5 E, I & R items not included in manufacturer's schedule.

Elect to use the manufacturer's schedule as it automatically includes additional E, I & R items from Schedule 5 plus mods/repairs maintenance instructions.

2. CAR 42B(1) is the CASA Maintenance Schedule subject to paragraph (2)

- (2) adds a turbine engine manufacturer's maintenance schedule.

Interestingly, the CASA Maintenance Schedule election does not specify that additional instructions from mods/repairs should be included. (LBS Part 2.)

However, not to include instructions from mods/repairs would mean a deficient and ineffective LBS.

If the CASA maintenance schedule does not include additional items from the manufacturer's maintenance schedules then it would also be deficient.

Why is it appropriate to include items from the CASA Schedule with the manufacturer's schedule but not vice versa!! Places liability back on registered operators.

CAR 41 states that the aircraft cannot be operated if the maintenance schedules do not include maintenance of all components fitted to the aircraft, including those fitted from time to time (e.g. role equipment).

This means that, to meet CAR 41, manufacturer's schedule items not covered by Schedule 5 would need to be included otherwise a breach of CAR42.

A well documented LBS provides the basis for adequate maintenance that keeps an aircraft airworthy.

As discussed elsewhere in this Newsletter, low utilisation aircraft also need to include calendar inspection periods and/or short time storage programs.

When the maintenance regulations were promulgated in 1992, low utilisation was not a consideration nor was there a full review of which aircraft maintenance schedules were deficient. CAO100.5 provides a list of manufacturers that do not have adequate maintenance schedules — there are many others, when compared to the CASA Maintenance Schedule 5, that are deficient.

The concern is that CASA bias towards EASA will see the demise of the LBS, Schedule 5 and adoption of manufacturer's maintenance schedules only.

FAA TC AIRCRAFT MAINTENANCE

The basic inspection requirements for aircraft maintenance is spelt out in FAR 91.409. All aircraft are subject to an annual inspection that underpins the maintenance requirements. Many specific items, such as avionic equipment, are addressed in individual requirements of FAR Part 91. Part 91 identifies the basic requirement for maintenance of a US registered aircraft used privately.

Additional maintenance is added depending on operational use. Hire & reward and training requires 100hourly inspections to be added.

If the aircraft is to operate in controlled airspace, specific maintenance tasks and/or test must be carried out at specified regulatory intervals.

When the aircraft is operated in either Part 135 or 121, the aircraft must have a maintenance program and a person responsible for the maintenance program.

The annual is not done by their A&P mechanic. It is done by an A&P mechanic that also holds a renewable Inspection Authority.

This inspection is not just a maintenance inspection, it is also a conformity inspection, especially of the structure. Conformity inspections are carried out to confirm the item continues to meet the design requirements.

Since the demise of the 3 year annual in Australia, there is now a deficiency of the understanding in what is now the annual conformity inspection.

ICAO Corrective Action System

CASA has a responsibility to perform regulatory oversight of the aviation system to comply with its function as the government's aviation regulatory authority.

From an industry position, the system that addresses correction of identified deficiencies and safety concerns is the most critical element of the government aviation regulatory oversight system.

How CASA and the industry interface is critical to the success of correcting safety issues and removing deficiencies and ICAO provides very good guidelines how this should be done.

For older aviators, they will recognise the older system of implementing agreed corrective action plans with timelines is what ICAO details in the Regulatory Oversight Manual.

So why did we change?

The basis of the ICAO Corrective Action approach is based on identifying the "cause" why there is deficiencies or safety issues.

Correcting the "cause" prevents ongoing deficiencies and safety issues — a real safety approach.

ICAO states that CAA guidance should be provided early in the programme of safety oversight improvement **to avoid inconsistent extremes of action by CAA personnel.**

Corrective action systems increases the knowledge and skills of both CASA and industry participants involved in identifying the "cause" for the deficiency or safety issue.

This is a safety approach instead of current approach of taking aggressive action based purely on the safety issue or deficiency. This may correct the deficiency or safety issue but not the cause.

ICAO Regulatory Oversight Manual Doc 9734, Section 3.9 is dedicated to the **Resolution of Safety Concerns.**

3.9.1. The resolution of identified deficiencies and safety concerns is a critical element at the core of all safety oversight activities. A good safety oversight system will provide for the identification of deficiencies and safety concerns and the appropriate action required for resolution.

3.9.2. Should the surveillance and inspection programme and related inspection reports reveal that the licence/certificate/approval holder has failed or is unable to meet or maintain the required Standards, the CAA technical expert primarily responsible for

the surveillance of the operation must promptly advise the licence/rating/certificate/approval holder of the deficiency observed. Once the cause of the deficiency is determined, the CAA should provide deadlines for corrective action to be taken and initiate appropriate follow-up to determine the effectiveness of the corrective action. Additional inspections should be conducted whenever problems in a particular areas repeatedly occur.

3.9.3. If the licence/rating/certificate/approval holder does not correct the deficiency within the established deadlines, the CAA technical expert should immediately inform the Director General of Civil Aviation (DGCA) with a recommendation that the licence/rating/certificate/approval holder's privileges be temporarily or permanently withdrawn or restricted.

3.9.8. An effective resolution of safety issues is highly dependent on the authority vested in the CAA. This critical element can only be successful in situations clearly supported by and linked to the primary aviation legislation and [CASA] regulations. There should be technical guidance and procedures for both the technical inspectors and the assigned CAA legal personnel. This guidance should be provided early in the programme of safety oversight improvement to avoid inconsistent extremes of action by CAA personnel.

AMROBA believes that one of the problems is primary legislation such as the Civil Aviation Act does not provide CASA with the right authority to implement ICAO processes like other Regulatory Authorities.



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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."