According to the Chief of Air Force, Air Marshal Leo Davies it is a “seminal moment” in the organisation’s history. He of all people should know, but to outsiders the notion of a change of airworthiness regulations is a little esoteric. Air Force has seen the arrival of new platforms such as the F-35 Joint Strike Fighter, the EA-18G Growler electronic attack aircraft, and the P-8A Poseidon maritime surveillance aircraft, among others, so how important can a change of regulations possibly be? Game changing as it turns out.

To understand the magnitude of the changes, and the considerable significance and benefits, it is probably best to start at the beginning, over 100 years ago. When a new recruit called Tom White crashed his Boxkite into a hangar at Point Cook in 1914, it marked the beginning of the journey of military airworthiness in Australia. During both world wars around 10 per cent of recruits died during training, and due to the chaos of war there can be no accurate estimate of how many combat losses may have been due to airframe and engine failures.

The post-war period ushered in the jet age, and a fleet attrition rate of around 25 per cent became normal globally. The Australian experience was only marginally better. Of the 116 Mirage IIIIs operated by Australia, over 40 crashed resulting in the loss of 15 aircrew and one civilian.

Since 1980 the ADF has lost 89 aircraft, although the F/A-18 fleet has a far better record with four crashes out of 75 aircraft and none since 1992. However the ADF reached a crisis point towards the end of the 1980s and early 1990s, with the loss of six aircraft in just one year in 1991, and a dozen lost in the decade leading to 1993.

While approaches to military aviation safety during the 1950s and 1960s might be described as ‘business as usual’ based upon the lessons learned during WW2, it was obvious that jet aircraft presented a very different range of challenges. Part of the problem was operator culture. There was an expectation that pilots would absorb levels of risk in attaining operational readiness that seem foolhardy by today’s standards.

However, in Australia there were deeper organisational and structural issues which also contributed. In the 1970s there was no agreed-upon definition of military airworthiness, and technical roles were broken down into specialisations that operated in increasing isolation. There was a lack of a coordinated and overarching approach to how the knowledge base was managed. When an aircraft was delivered from the manufacturer, the technical information was sparse, and aircraft were often serviced, based upon a fairly minimal instruction set. Aspects of how airworthiness was approached might best be described as ad hoc.

It wasn’t until 1984 after Air Vice-Marshall Tony Deets had challenged the engineering cadre to agree on a definition of military airworthiness, that a workable and agreed-upon definition emerged. Sadly Deets died in service that year, but he provided an important impetus. However, real change only came on the back of multiple tragedies and the written equivalent of a hand grenade lobbed into the engineering organisation by a senior officer.

Air Commodore P J Rushbridge’s letter dated March 1992 from Headquarters Logistic Command, contained some of the most scathing language imaginable.

He stated “we have lost our way” and “…most people would not relish being part of an organisation which is regarded as a management basket case...”. In seeking to uncover underlying problems he concluded that the “overall picture is of crisis management, together with neglect, if not abandonment of the fundamentals of engineering management...”.

He concluded that “flight safety is on the line” and that these problems were now being “reflected in the accident statistics of the RAAF”. He charged the engineering branch with being “ossified and moribund”, having “changed little in the past four decades”, and demanded immediate action.

In July 1993 a draft of a document entitled ‘Blueprint 2020’ was delivered by the RAAF...
Engineering Planning Team which had been charged with devising a comprehensive strategy to “deliver world class engineering support” to Australian military aviation.

The ADF rolled out what was then a world leading approach to military airworthiness, the Technical Airworthiness Regulations, or TAREGs. The TAREGs provided a comprehensive framework for regulating airworthiness in ADF aviation, and they proved to be very successful, ushering in an era of vastly safer military flying.

As the 1990s progressed additional elements were added and the notion of “operational airworthiness” came into being. This terminology related to how operators made decisions regarding flight safety in an operational context – a situation that differs markedly from civilian use.

And as new issues emerged band aids were added and it started to become increasingly clear that a system that was unique to Australia was becoming harder to defend. Australia’s commitment to joint coalition operations made interoperability vital, and yet the ADF’s airworthiness “language” differed markedly from partner nations, creating “translation” issues and impacting sustainment and maintenance options.

Organisational constructs were also different and with more maintenance and engineering being outsourced to industry, and the use of civilian-based platforms, this problem was worsening, creating mounting expense, and significant logistical issues.

In fact it was calculated that the bespoke system was up to 30 per cent more expensive to operate than the civilian equivalents. ‘Rescue teams’ had to be sent around the world to fix even the most minor problems.

By the second decade of the century it had become clear that once again Australia would need to undergo major change if it was to retain a safe approach to military aviation.

It was around 2011 that the Directorate General Technical Airworthiness – ADF (DGTA – ADF) acknowledged the need for a new regulatory system and began exploring options. Given the ADF’s use of American aircraft types, consideration was given to aligning with the US. However, each American service has its own regulatory system, so that was not an option. Discussions with the International Civil Aviation Organization (ICAO) led to an investigation of the merits of aligning with an emerging European-based military convention, being used by around 30 other nations.

The European Defence Agency had taken the European civilian airworthiness regulations and applied them to the military, resulting in the European Military Airworthiness Requirements, or EMARs, which are around 95 per cent identical with their civilian counterparts.

The benefits of aligning with the EMARs were many and varied. Industry partners already had experience of them in many instances. They allowed for greater interoperability with coalition partners, which was an important consideration with the ADF’s operational tempo. It also increased supply and sustainment options. They allowed for international ‘traceability’ of qualifications and ‘blended workforce’ options; reduced the need to “translate” regulations; and provided a benchmark for world best practice in military aviation safety.

It was clear that aligning with the European-based convention was the best option.

The result is the Defence Aviation Safety Regulation, or DASR, which is as closely aligned with the European system as possible, while allowing for ADF operational requirements. Military airworthiness regulations do have some differences to civilian counterparts, and need to have inbuilt flexibilities to allow for operational requirements.

DASR was recommended to the Chief of Air Force in 2013. A period of diligence and mapping of requirements followed resulting in a first draft which was published at the end of January 2016. This allowed feedback and comment from stakeholders as well as assisting with planning for implementation by Defence and industry partners.

A review of all Defence aviation platforms was completed in July 2016, and the first phase of implementation began on September 30 that year. A two-phase approach has been developed to ensure safety levels are maintained during the transition. The first phase sees Defence organisations and selected industry partners adopting the DASR, while the second phase is different for each aircraft type, and allows organisations to explore the benefits at a rate they are comfortable with. Full implementation for Defence and industry partners is expected by December 30 2018 although phase two will continue past that date.

Industry partners with a global imprint were enthusiastic about the new regulations, since they were already familiar with EMARs.

“Boeing Defence Australia made a decision very early on that we would take a lead role in the transition due to the many benefits of the DASR. We are working in close partnership to provide strategic advice and guidance on potential challenges and how to address them,” Chris Smith, general manager operations at Boeing Defence Australia said.

“This collaborative approach – where Defence has been able to rely on industry to provide subject matter expertise – has been a tremendous success.”

Smith also praised the “inclusive approach” whereby Defence worked closely with industry partners.

“The move to DASR hasn’t come without its challenges, in particular for the operators, given the complexity of the change. By being engaged from the outset, we have been part of the team working to identify, understand and ultimately help solve challenges, and it’s worked extremely well,” Smith said.

“It has enabled Boeing, in partnership with the Commonwealth, to transition to DASR while maintaining the operational readiness of key aircraft.”

Air Commodore James Hood of the Defence Aviation Safety Authority (DASA) – which came into being at the same time as DASR to reflect globally recognised organisational structures – is upbeat about the many benefits the ADF is now seeing.

“By aligning airworthiness regulations with the European system we harness the efficiencies of the global supply chain and maintenance options, and increase interoperability,” AIRCdre Hood said.

“It allows civilian partners to more easily exploit ‘blended workforce’ options and improves recognition of approvals and certifications provided by other military and civilian airworthiness authorities. Importantly we can exploit contemporary improvements in aviation safety arrangements globally, and drive aircraft sustainment and aircraft costs down.”

The implementation of DASR has also attracted strong regional interest. It is anticipated that many of Australia’s regional partners will now also align with it, and one of the positives has been the scope for international engagement.

When DASA hosted an international conference on the new regulations in Melbourne last year senior officers from over 25 militaries attended underscoring the huge interest in a global convention, and forging new relationships based on a mutual desire for safe aviation.

In a sense the ADF’s alignment with the European-based system has been world-leading in terms of the extent to which they have been adopted, and international militaries are now increasingly looking to the example being set by Australia.

DASR marks a huge break from an isolationist approach to one that is truly global, underscoring Australia’s commitment to joint operations with coalition partners, and the pursuit of world best practice. Finally we are talking the same “language” in the endless quest for safe flying. It turns out that AIRMSHL Davies is spot on – it was a ‘seminal moment’.

Baz Bardoe is public affairs officer for the Defence Aviation Safety Authority and freelances as an aviation journalist.

Aligning with the European-based convention was the best option.