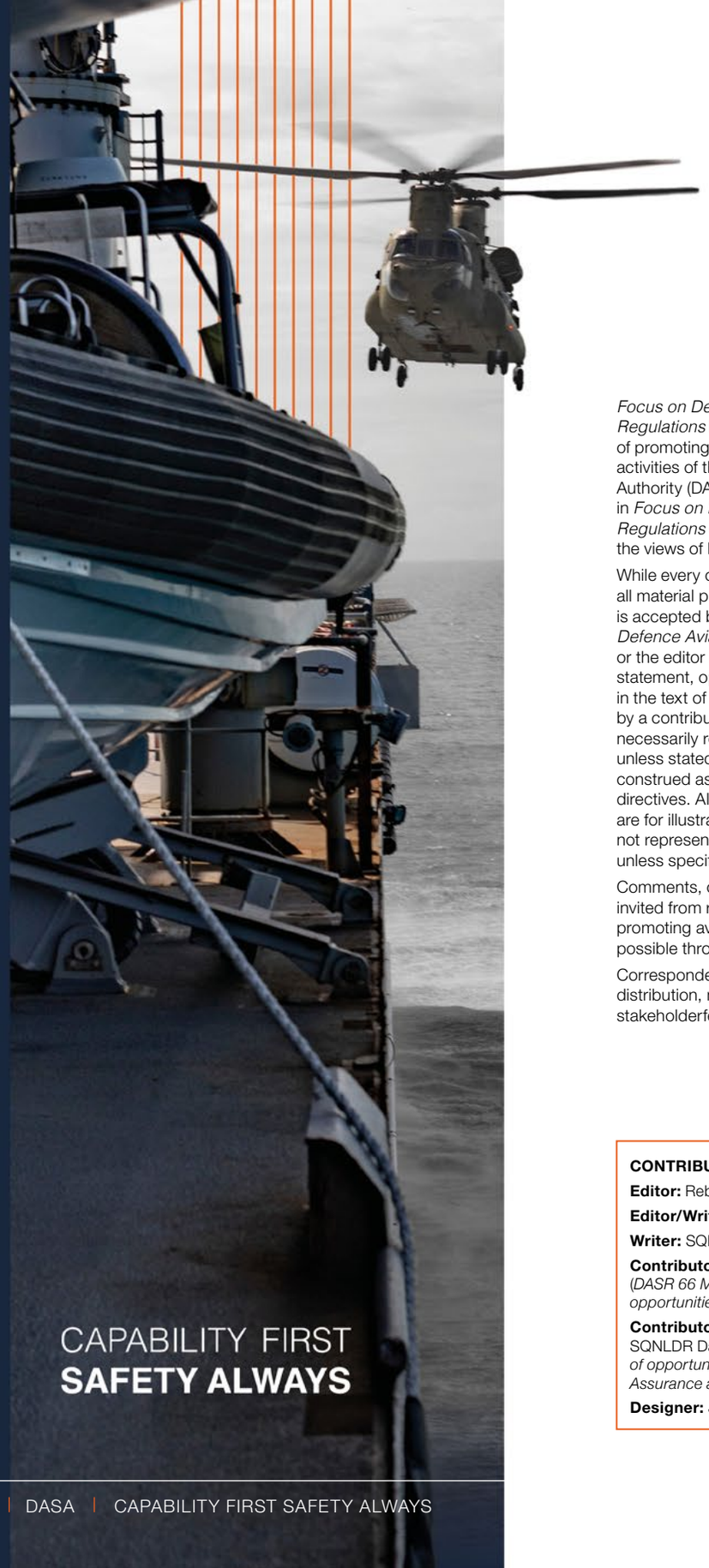
FOCUS ON DEFENCE AVIATION SAFETY REGULATIONS

DASA | CAPABILITY FIRST SAFETY ALWAYS

2024 ANNUAL



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Comments, contributions et cetera are invited from readers in the interests of promoting aviation safety as widely as possible throughout Defence.

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FOREWORD
2024 ANNUAL

Welcome to this edition of our annual *Focus on Defence Aviation Safety Regulations* magazine! We are very pleased to bring you a publication that showcases the important and innovative work of the Defence Aviation Safety Authority (DASA), and the dedicated people that perform that work.

In this edition, we hear from our outgoing Director General Air Commodore (AIRCDRE) Joe Medved in a Q&A. AIRCDRE Medved gives us a rare insight into his impressions of his tenure with DASA. He talks about his focus on creating a 'One DASA' organisation that has matured as a regulator. We also learn a little about his life outside of work, and get a sneak peak on life after Defence for him.

Take a trip around the organisation to learn about the key elements in safety regulation of Uncrewed Aircraft Systems (UAS), aerodromes and space. Discover the benefits of our new Safety Assurance Intelligence System (SAIS), and delve into the DASR 66 Maintenance Licensing regulation, as well as the world of military recognition.

If you are a junior electrical engineer, look out for the exciting employment and training opportunities you can experience in the Development Assurance and Software space.

And take a historical journey with us as we reflect on the life and career of the first Director General Technical Airworthiness – ADF, Air Vice Marshal (AVM) Noel Schmidt, and consider the safety of our warbirds.

We hope you enjoy this edition of *Focus on Defence Aviation Safety Regulations*. Please email stakeholderfeedback@defence.gov.au with any feedback.

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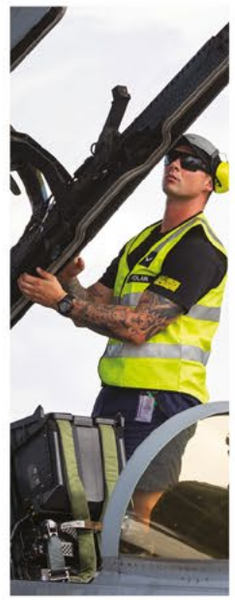
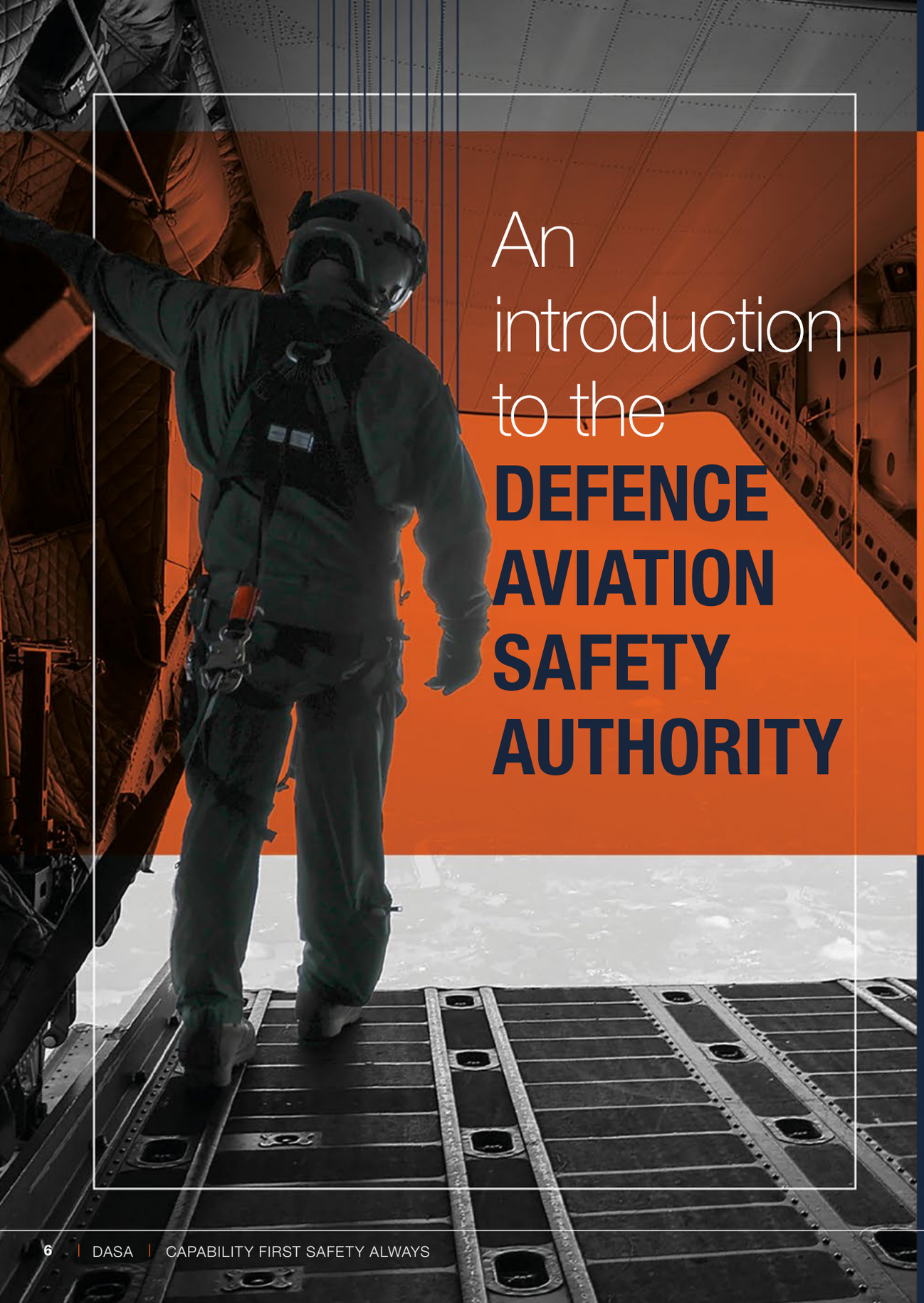




An introduction to the DEFENCE AVIATION SAFETY AUTHORITY

The Defence Aviation Safety Authority (DASA) is responsible for enhancing and promoting the safety of military aviation.[1] This is mainly achieved through the implementation of the Defence Aviation Safety Program (DASP), which supports compliance with statutory safety obligations and assures the effective management of aviation safety risks.[2]

DASA was formed in 2016 with the amalgamation of three existing Defence Aviation Safety agencies: Directorate General Technical Airworthiness – ADF, Airworthiness Coordination and Policy Agency and Directorate of Defence Aviation and Air Force Safety. The organisation is an integral part of the Defence Aviation Safety Framework (DASF), established by Chief of the Defence Force (CDF) and the Secretary of Defence and formalised through a Joint Directive (JD 24/2016 — The Defence Aviation Safety Framework, superseded by JD 21/2021).

The DASF is aligned, where appropriate, with International Civil Aviation Organisation (ICAO) principles and the European Military Airworthiness Requirements (EMARs); providing significant benefits and efficiencies for Defence by adopting global aviation safety conventions and practices.

In early 2022 a newly restructured DASA became operational. DASA Director General (DG) Air Commodore Joe Medved says DASA strives to be an exemplar, globally recognised military aviation safety organisation, providing trusted, credible and defensible independent assurance of the Defence Aviation Community and industry partners.[3]

DG DASA and DASA Directors are responsible for the efficient implementation of the DASP on a day-to-day basis, and have clear delegations and leadership functions within DASA.

Director General Defence Aviation Safety Authority

DG DASA is the main authority on matters concerning stewardship of the DASP. DG DASA is delegated by the Defence Aviation Authority (Defence AA) to approve amendments to the *DASP Manual* Volumes 2 and 3, including all Defence Aviation Safety Regulations (DASRs). DG DASA is also delegated to issue/revoke all authorisations (including permits, approvals, licences and similar artefacts) as necessary for implementation of the DASRs.

DASA Chief of Staff

The Chief of Staff leads the headquarters of DASA and provides support to the directorates through:

- coordination of the DASP
- policy, engagement advice and a recognition function
- support to the Independent Review of Aviation Safety under the DASP
- business support and governance.

Director of Defence Flight Safety Bureau

The Director of Defence Flight Safety Bureau (DirDFSB) is responsible for independent aviation accident and incident investigations to prevent recurrence and improve safety performance. DirDFSB is given powers by the Defence AA for action outside of both DASA and the command chain, and to directly report matters of concern that may impact Aviation Safety. DFSB is functionally independent of the other DASA Directorates.

Director of Aviation Operations

The Director of Aviation Operations (DAVNOPS) is responsible for:

- formulation and interpretation of policy, regulations and standards for aircraft operations
- Uncrewed Aircraft Systems, Air Navigation Services and aerodromes
- education
- the issue of organisational approvals
- associated oversight and enforcement.

Director of Initial Airworthiness

The Director of Initial Airworthiness (DIA) is responsible for:

- formulation and interpretation of Initial Airworthiness policy, regulations and standards
- the certification of state aircraft and aerodromes
- education
- the issue of organisational approvals and associated oversight and enforcement.

Director of Continuing Airworthiness

The Director of Continuing Airworthiness (DCA) is responsible for:

- formulation and interpretation of Continuing Airworthiness policy and regulations
- education
- the issue of organisational approvals and licences
- associated oversight and enforcement.

Director of Aviation Engineering

The Director of Aviation Engineering (DAVENG) provides engineering services in support of DIA and DCA, and provides specialist aviation structural engineering and training services to aviation commanders, to ensure the integrity of aircraft platforms and propulsion systems.

Director of Space

The Director of Space (DSpace) is responsible for delivering independent space safety regulator functions for Defence. The directorate is in its formative stage but is expected to include:

- approval of space and high-powered rocket licences and permits
- support to the conduct of accident investigations
- assurance of collision avoidance and debris mitigation.

Find out more at https://dasa.defence.gov.au

References

1. Department of Defence Joint Directive 21/2021: The Defence Aviation Safety Framework.
2. DASA Intranet: http://drnet.defence.gov.au/dasa/Pages/About-Us.aspx
3. *Defence Aviation Safety gets a revamp* by SQNLDR Barrie Bardoe

Changing OF THE GUARD

Reflections of a DASA DG

Air Commodore (AIRCDRE) Joe Medved is a Director General (DG) with an impressive and varied career in the ADF. Since late December 2020, he has led DASA through ongoing development and change, to a place of committed cohesiveness.

As he prepares to exit this post in early 2025, he leaves behind a legacy of unity in 'One DASA', creating an environment where people can openly share ideas and work together to achieve profound outcomes.

Leonie Gall sat down with AIRCDRE Medved, as he reflected on his tenure with the organisation, his plans for the future and a bit about his 'other life' as a devoted family man.

What do you see as your main achievements in the job?

The main achievement has been driving the change to a new organisational construct. This was a fundamental change that reinforced the importance of regulatory functions, particularly for aviation operations. We have also seen the maturation and development of assurance of aviation operations.

To be honest, there was limited historical independent assurance for operations. It was heavily dependent and reliant on Airworthiness Boards (AwBs). I've seen a huge step forward in not only staff knowledge and skills but outcomes of what the staff, in particular of the Directorate of Aviation Operations (DAVNOPS) does across flight operations, aerodromes, air navigation service providers, as well as Safety Management Systems (SMS). Seeing that improve has been fantastic.

Another achievement is the creation of an environment supporting a cohesive regulatory organisation. It's easy to say those words, but I genuinely see the right intent with having a 'One DASA' approach. And yes we do have some stovepipes. There is friction at times, but the commitment and collegiate behaviours from all levels in DASA is exceptional.

What's also great, at least within DASA, and it's starting to permeate through the rest of the community, is an understanding and recognition that there is not a simple split between operational and technical considerations. You can't split op and tech in a regulatory sense. There are some aspects that are almost purely operational, like assurance of flight operation, and there are some highly technical things that are almost exclusively in the remit of engineers.

But so much of what we do and even the scope of our product and organisational assurance, requires a multidisciplinary approach of different operators, different engineers and ex-maintenance staff all working together.

What's your favourite thing about leading DASA?

I'd say it's seeing the outcomes of the organisation's collective efforts. When I periodically reflect, and more so now as I'm coming to the end of my tenure, seeing the increase in maturity of the organisation as a regulator and Defence Flight Safety Bureau in their independent investigative function. Not all organisations continue to grow and develop. And when I say grow I'm not talking about size. I'm talking growing in performance.

I think it's fantastic that the organisation has not only continued to improve in what it can do, but also how we're supporting the community. It may not always be seen that way, because you have a natural tension with constraints that a regulator puts in place, but seeing that growth, is very rewarding.

What are you most proud of?

I guess what I'm really proud of is; it's not an individual activity, but it's setting up the environment for a cohesive DASA Executive in particular. Having a DASA Executive that is aligned, that works together, works with the intent and spirit of a 'One DASA' organisation. And also an environment where ideas can be contested. It's not an authoritative regime. It definitely is an environment where I welcome people to challenge the status quo, and then I expect this culture to spread through the organisation, where people are comfortable to share their knowledge.

I think at times we constrain the potential of the organisation because we only look at a staff member through the lens of their job roles rather than considering their broader skills and experiences. My organisational aim has always been to tap into all areas of an individual's potential – and to a certain degree I think the environment has supported that.

And, continuing with environment theme I have always sought to empower individuals, and allow people to make mistakes from a business perspective. This has been important in order to rapidly advance our knowledge, output and outcomes as a regulator, as an independent investigation organisation and also some of the Subject Matter Expertise (SME) functions that we provide across engineering, non-destructive testing and composite training and in Safety Management Systems.

What are you up to next?

For those that aren't aware, I'll be transitioning out of Defence at the start of next year. Beyond locking down a transfer date towards the end of March, I have not yet made any firm plans or commitments. I do plan to pursue some reserve work, but in the short term I'll take a bit of a break early next year. I'll take some time to focus on what I want to do, so that when I reflect back in 10 years' time, I won't regret decisions made by rushing into anything at the start of next year.

What do you get up to on your weekends away from DASA?

My other life revolves heavily around family. I spend a lot of time as a taxi driver, which is reducing with only one child still learning to drive. But more importantly spending time doing the simple things together, and savouring the shared activities with adult children (even if I am always paying!).

And often there's an element of resting and re-energising on the weekends, having some quiet time, and paying a bit more attention to our animals – I've got two cats and a dog; that just grounds you.

Is there anything you would like to add?

It's been a remarkable opportunity with an organisation like DASA. Although, it's a double-edged sword – particularly with a demanding community. There is also very limited mentoring or guidance, given the niche nature of the independent safety authority role.

But I have seen that as much more of an opportunity, to drive the organisation with greater autonomy than in many other jobs. Even though many assume that engineers love process, I thrive on ambiguity and the option sets that can produce. It allows you to be creative in how to solve problems. There definitely needs to be discipline; it's not a laissez faire approach to the way we act as a regulator. But you get a level of autonomy and you can be creative in ways that most people don't appreciate.

FAST FACTS

Joined Air Force:
1992 as an engineering cadet at the Australian Defence Force Academy.

Qualifications:
Bachelor of Engineering, Masters degrees in Aircraft Vehicle Design, Engineering Science and Management.

Previous DASA post:
2015-2018 – Future aviation regulation project (DASR) and becoming Director of Aviation Engineering in 2016.

Previous position:
2019-2020 – Officer Commanding Surveillance and Response System Program Office, which was responsible for providing acquisition and sustainment support for the P-8A Poseidon and P-3C(EW) capabilities, and Defence Aeronautical Life Support Equipment.

Previous work in DGTA:
Specialist engineering supporting F/A-18, Hawk and PC-9/A aircraft.

Hails from: Williamstown, Melbourne.

AFL football team: Western Bulldogs.

Number of children: three.

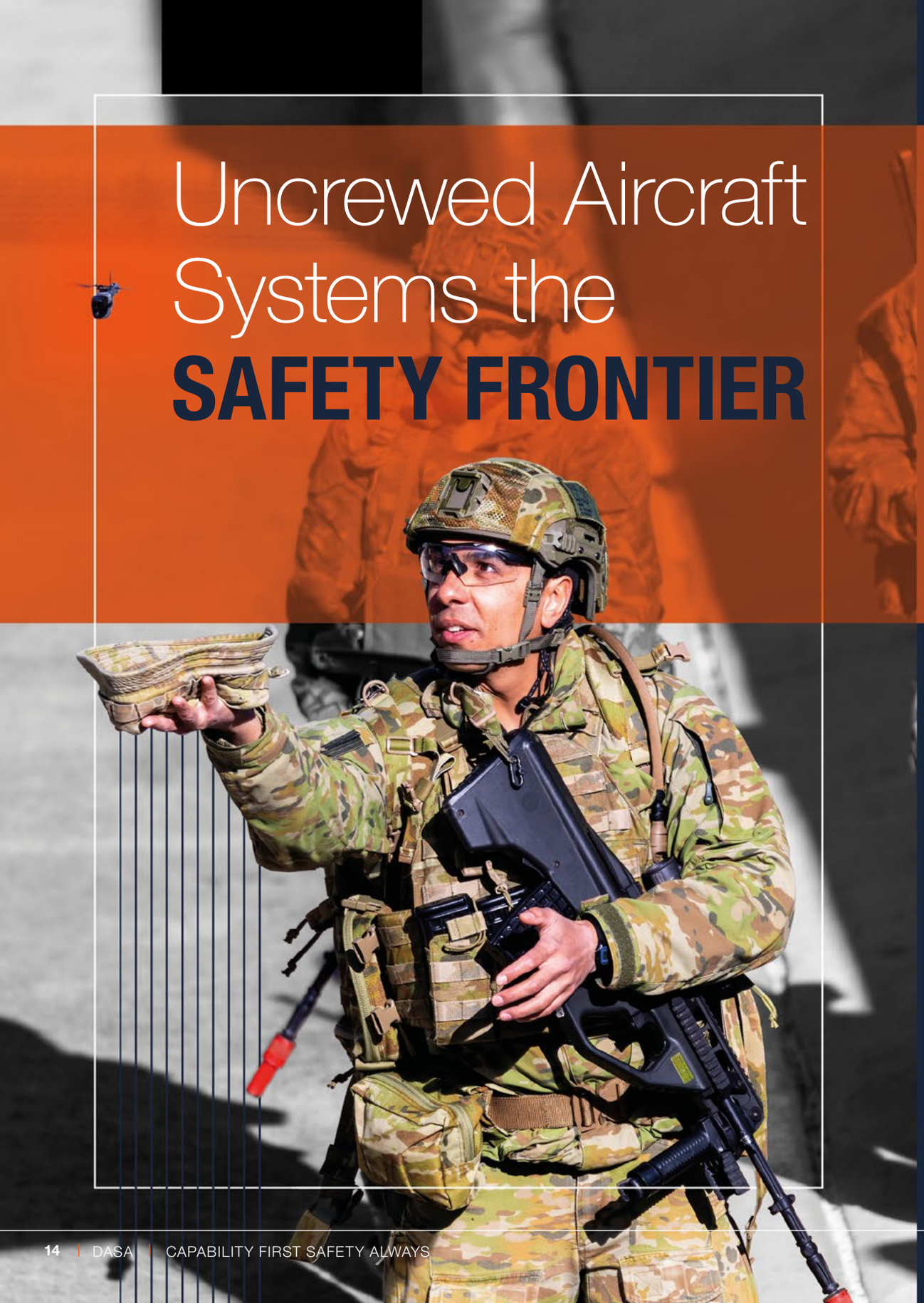
Number of cats: two.

Number of dogs: one.

Do you have any parting words?

It seems early to say this: I'm very grateful to Air Force, the people who have helped me in the past and to this day, for giving me the opportunities throughout my career to date. And culminating in DG DASA, I want to especially thank all the DASA staff that support me directly, and all those in Defence, Industry and elsewhere for such professional and collegiate behaviours that have made me look forward to the challenges each and every day – well nearly every day!

Uncrewed Aircraft Systems the **SAFETY FRONTIER**



The ADF operates a wide range of Uncrewed Aircraft Systems (UAS), or you may know them as drones. UAS are not an entirely new concept for Defence, but allow for innovative design and operations, and will supplement crewed systems more and more as time goes on.

As they become an increasingly important and numerous component of the air domain, UAS capability will present many opportunities as well as challenges. A robust regulatory framework that is outcomes focused and has the flexibility to quickly adapt to increments in technology and new operational demands will play a vital role.

Like any ADF aircraft, UAS require specialised regulation to ensure they can be operated safely, and this poses many and varied challenges, especially in a military context. Deputy Director UAS Certification Alex Sivachtchenko says UAS are still a developing space. 'The rate of technological change and innovation is phenomenal, with current and recent global conflicts further fuelling the rate of change,' Mr Sivachtchenko says.

'A key challenge is for the regulations to allow the use of novel technologies, while still assuring their safety, in accordance with the *Work Health & Safety Act 2011*; at the same time, acknowledging Defence Strategic Review/National Defence Strategy command considerations. This can range from the use of vision systems to detect other air traffic, to the use of non-standard (to the crewed aviation world at least) coding practices, and the viability of one remote pilot to many UAS operations.

'Outcome-based regulations are helpful here but determining "what is safe enough" is often still a challenge.'

The size and makeup of UAS is diverse, requiring different regulatory approaches to assure their safe operation. For example, the MQ-4C Triton is somewhat similar to a conventional crewed aircraft in size. The Army's RQ – 7B Shadow 200 is smaller, with a weight slightly over 200 kg. Units closer in size and style to civilian recreational and special purpose types are UAS like the FLIR Black Hornet, which fits into the palm of your hand. Different groupings require quite different regulatory approaches.

'DASA was very careful when developing the Defence Aviation Safety Regulation (DASR) for UAS to make them outcome focused,' Mr Sivachtchenko says. 'This means it would be counterproductive to tie requirements to size alone. We generally derive the requirements based on the risk posed by the UAS operation to other airspace users in the air, and people and critical infrastructure on the ground. Therefore, a large UAS flying in a Restricted Area over ground devoid of people would generally have less onerous requirements than a smaller UAS flying over a populous area in Class G airspace.

'Outcome-based regulations are helpful here but determining ''what is safe enough" is often still a challenge.'

'In general, the more people you want to overfly and the more complex the airspace you want to operate in, the more regulatory requirements you will need to comply with.'

As might be expected, military UAS use also requires a different regulatory approach to the civilian world. As state aircraft, Defence UAS must have 'due regard for the safety of navigation of civil aircraft'.

UAS – where do they fit?

From a regulatory standpoint DASA organises UAS into three basic categories.

Certified Category

Intended for UAS operations where the UAS operator expects to operate in all airspace classes for which it is equipped, and over all populous areas. Certified UAS are to be airworthy and operated to equivalent standards of safety to crewed aircraft. Certification requirements are therefore akin to crewed aircraft.

Specific Category

Intended for UAS operations where the UAS is not certified to an airworthiness standard. An appropriate risk assessment drives increased operational controls and limitations to enable safe aviation operations.

Open Category

Intended for small UAS weighing less than 25 kg that can operate within Authority-defined Standard Operating Conditions. UAS operations under the Open Category do not require an explicit Authority approval. Commanders can authorise UAS operations under the Open Category provided every Standard Operating Condition has been met and must be able to provide the Authority with a list of all UAS they have authorised to operate under the Open Category.

This stems from the requirements of the Chicago Convention 1944. The Chicago Convention was a convention (held in the US city of Chicago) that essentially created the International Civil Aviation Organisation (ICAO).

'ICAO governs how civil aircraft fly all over the world,' Mr Sivachtchenko says. 'Importantly, the Chicago Convention states that it does not apply to state (as opposed to civil) aircraft but that, "States undertake, when issuing regulations for their state aircraft, that they will have due regard for the safety of navigation of civil aircraft," (article 3.d). One obvious way of achieving this is to fly in a way that meets civil requirements. Or, Defence also has the ability to fly in a way that does not meet civilian requirements, as long as we fly in accordance with article 3.d. This, in our opinion, along with some obvious Defence differences such as carriage of weapons by the UAS, is the most significant difference between civil and military approaches.'

Traditionally there has been somewhat of a divide between operators and technical personnel in terms of how they might desire an aircraft to be managed. Mr Sivachtchenko feels that the operation of UAS is seeing a greater integration of technical and operator inputs. 'As the level of safety can often be a variable that is adjusted, the operators and engineers must talk in order to ensure they understand each other's needs and the impact of each other's decisions,' he says. 'In general in the crewed aircraft world, I've seen that engineers do their design work, then hand over the aircraft with a flight manual to the aircrew who go away and fly within the limits of their abilities and those imposed by the flight manual.

'DASA will need to be agile and adapt to emerging trends and applications while maintaining safe UAS operations.'

'This generally worked as there was a safety benchmark that was expected from the aircraft given at least one person was going to be on board. With UAS, there is generally nobody on board, so the safety benchmark cannot be assumed to be the same. For example, for a UAS to have the same factor of safety as a crewed aircraft may mean it is heavier and unable to achieve a particular mission, but the operators may be more than happy with a lower safety benchmark as they plan to fly it over unpopulated areas anyway.'

UAS designs and use will continue to present novel problems for the regulated community and DASA. 'In order to support Defence in maximising UAS capabilities under our outcome-based regulations, DASA will need to be agile and adapt to emerging trends and applications while maintaining safe UAS operations,' Mr Sivachtchenko says.

'We may often need to revert back to first principles to assess applications. The world is still trying to accommodate UAS within the regulatory space so DASA monitoring the efforts of other Civilian Aviation Authorities/Military Aviation Authorities will help us stay lock step with emerging worldwide good practice.

Safeguarding
THE HEAVENS

There's a lot we don't know about the mysterious and expansive place we call 'space'. One thing we do know, is that space is now seen as a legitimate warfighting domain.

With that realisation has come the responsibility for ensuring that all our Defence activities 'out there' are conducted safely. Enter DASA's Directorate of Space, established in 2022. This small team set about identifying what a military space regulator needs to do to assure the safety of space activities, and began drafting policy, regulations and guidance material.

FLTLT Claire Oliveira from DASA says that similar to aviation, space safety is a key contributor to Defence capability, and regulation assists with achieving those safety outcomes. 'Space regulation will also help Defence comply with its international space treaty obligations,' FLTLT Oliveira says.

Space activities carried out in Australia or activities overseas by an Australian national are bound by the *Space (Launches and Returns) Act 2018* (SLR Act). The Australian Space Agency (ASA) is responsible for assuring civil space activities.

'However, not everything in the SLR Act applies to Defence,' FLTLT Oliveira says. 'For example Defence does not need approvals from the relevant Minister for space payloads, facilities and launches. Responsibility for assuring space safety therefore rests solely with Defence.'

She says there are some inherent differences in military and civilian space activities that require a different regulatory approach. 'For example, military space commanders sometimes require additional flexibility in applying risk management to space operations, and this has to be catered for within the regulations,' FLTLT Oliveira says.

Defence space assets and operations often have specific security and operational arrangements that are different to those experienced in the civilian environment.

‘Defence space assets and operations often have specific security and operational arrangements that are different to those experienced in the civilian environment. Therefore, DASA, being a military regulatory body, is well-suited to regulating Defence space activities.’

There are obvious benefits for Australia in aligning the Defence and civil approaches to space safety regulation as far as practicable. DASA also recognises that ASA has already established its regulations and permit processes, and is keen to leverage off that experience.

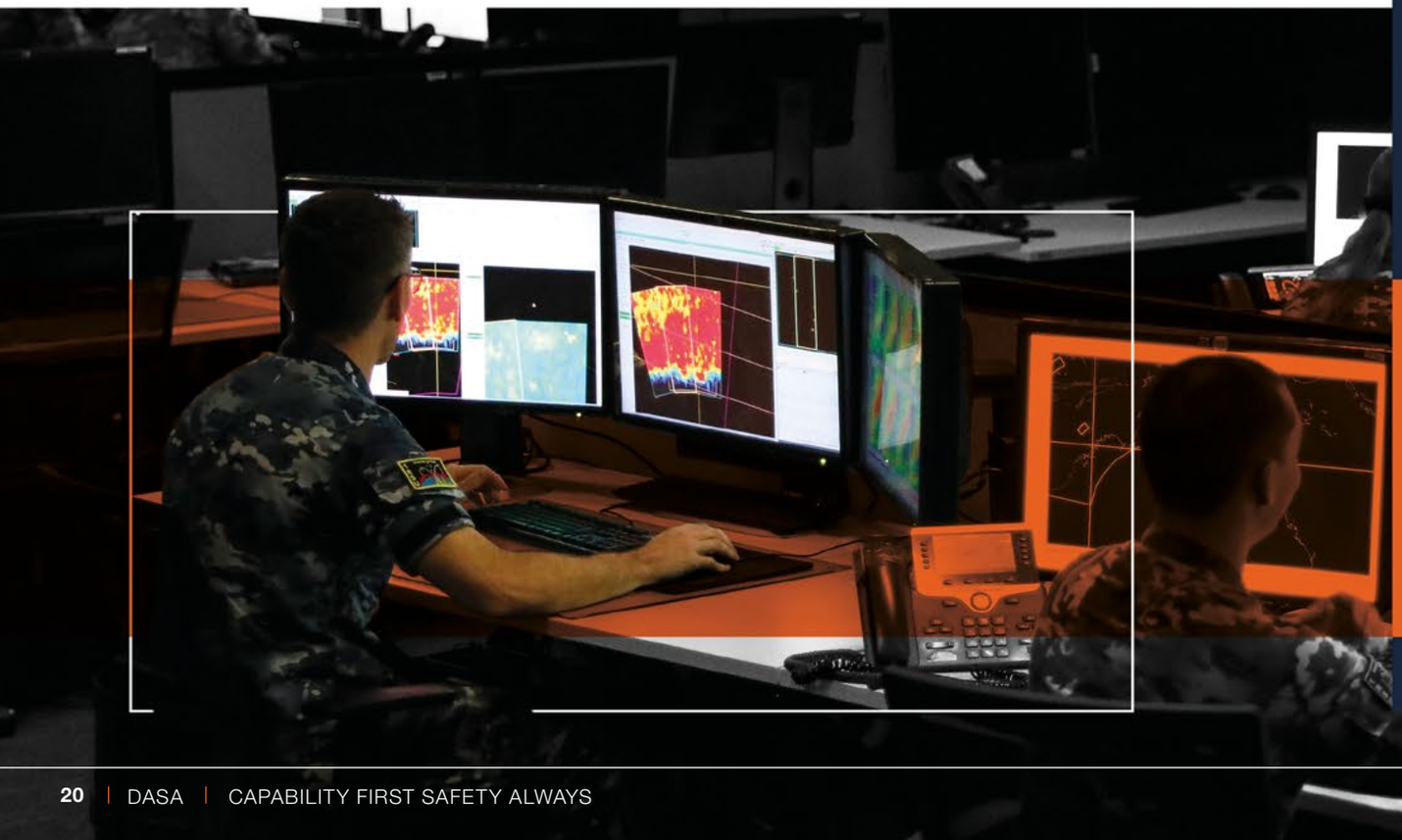
‘The ASA and DASA have established a Memorandum of Understanding, committing both agencies to working together across the full range of space safety-related functions,’ FLTLT Oliveira says. ‘ASA has already provided DASA with assistance, lessons learnt and expertise. This is in the spirit of the whole-of-government approach to space safety.’

The Defence Space Safety Regulations will divide space activities into three main areas; Payload and Orbital, Facilities, and Launch and Return regulations.

- Payload and Orbital regulations will cover safe design, launch, operation and disposal of Defence payloads launched in Australia and overseas.
- Launch Facility regulations will cover any Defence facility – both fixed and mobile – from which space objects can be launched.
- Launch regulations will cover the preparatory steps for initiating flight up to the last exercise of control, or in the case of reusable launch vehicles once it has reached its intended orbit. Returns regulations will cover the first steps of initiating the re-entry of a space object to the landing or impact on Earth and the activities required to return the object to a safe state.

DASA is prioritising regulations for Payload and Orbital Safety, to align with Defence’s current efforts in space. The first set of regulations will be released for consultation in Q4 2024. The next area of focus will be launch facilities and finally launches and returns.

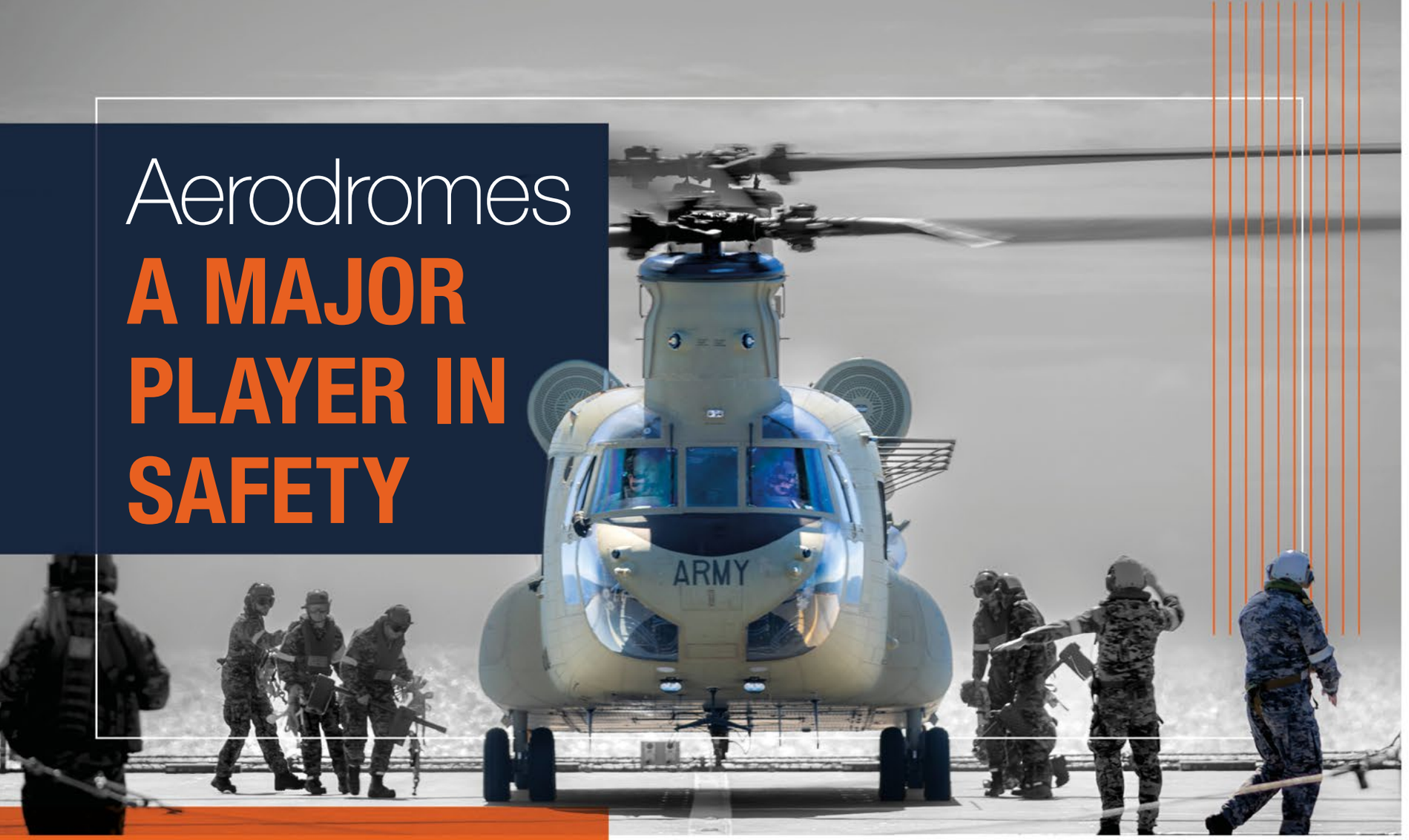
The small team at DASA has achieved much in a short timeframe. As with all safety-assurance activities, there is a lot that is not immediately apparent to non-specialist audiences, but with the rapidly increasing complexities of the space domain, DASA’s work is proving vital.



DSPACE MILESTONE ACTIVITIES

- Defining the regulatory scope – what should and shouldn’t be regulated by DSPACE and how it will work within Defence’s statutory obligations and other internal regulators.
- Releasing a new Defence Instruction provision that will authorise establishment of the Defence Space Safety Program and empower DG DASA as the Defence Space Safety Regulator.
- Developing a set of Payload and Orbital Permit (POP) regulations based on international best practice.
- Working with the Defence Science and Technology Group (DSTG) to provide a POP for the upcoming Buccaneer Mission.

Aerodromes
A MAJOR PLAYER IN SAFETY



No airbase, no airspace!

Aerodromes are the critical 'launch and catch' interface for ADF aircraft. They provide a unique connection with aircraft during critical phases of flight – such as take-off, and landing. So, it's essential these important spaces support safe flight and are not hazardous to operations.

FLTLT Loretta Newton-Hoare works at the Directorate of Aviation Operations within DASA as a Staff Officer in the Air Navigation Service Providers and Aerodromes section.

'A very obvious example is having a runway long enough to support an aircraft take-off run and rotation before it gets to the end of the pavement,' FLTLT Newton-Hoare says. 'There are many other good examples of how appropriate aerodrome design can support safe operations. Remember that shipborne heliports are also considered aerodromes – our air capable Navy ships.'

Aerodromes are complex systems and their safe operation requires competent, qualified and authorised personnel, across a wide range of roles including engineering, maintenance, operations, and safety. Both the design of an aerodrome, and how it is operated and managed, can have an impact on aviation safety.

'For example, aerodrome operators need to take all possible steps to ensure birds do not congregate around the runway, because they may pose a wildlife-strike or engine-ingestion hazard – both are potentially serious safety issues for aircraft,' FLTLT Newton-Hoare says.

It is vital that aerodromes are suitable for the kinds of aircraft they support. 'For most Defence aerodromes, a number of Defence and open-access publications describe their capability,' FLTLT Newton-Hoare says. 'This includes everything from pavement strength, length and width of movement surfaces – runways, taxiways, parking areas – aerodrome lighting, aircraft arresting systems, and Aviation Rescue Fire Fighting services available at the aerodrome. All of these elements and more can impact suitability of an aerodrome for a given aircraft.'

'The acceptance of risk in any decision to proceed will be informed by the criticality of the mission at hand – as appetite for risk acceptance may be high.'

Assessing the suitability of non-certified aerodromes for particular aircraft may require the services of the Airfield Survey Agency. They provide specialist engineering advice on the use of unrated and non-certified airfields, and non-defined landing areas for Defence aircraft operations. The specialist advice of Airfield Engineering Officers may be required in either scenario.

A very real possibility for any aerodrome in a war-fighting scenario is that it might be damaged. 'Airfield Engineering Officers are able to assess what Minimum Operating Strip (MOS) is available in the undamaged portion of a runway – if any – and determine the priority for Airfield Damage Repair (ADR) to provide a MOS for a certain aircraft type,' FLTLT Newton-Hoare says. '65 Airbase Recovery Squadron is the custodian of ADR capability within Defence. Ultimately it is up to a pilot – a command decision – to determine if an aerodrome can support their aircraft.

'The acceptance of risk in any decision to proceed will be informed by the criticality of the mission at hand – as appetite for risk acceptance may be high.'

The aerodrome operator would need to communicate information to the Military Air Operator (MAO) on the hazards a damaged aerodrome presents to aircraft, to enable the MAO to make an informed decision. 'Of course if all of your access taxiways are destroyed and you can't get your aircraft onto or off the runway – then capability for fixed wing aircraft will be very limited,' FLTLT Newton-Hoare says.

When thinking about aviation safety, aircraft and operators are often at the forefront with less attention given to the role played by aerodromes in achieving safer aviation outcomes. Without aerodromes that meet certain specifications, aviation safety can be compromised.

To support safe aircraft operations at Defence aerodromes, DASA released the Defence Aviation Safety Regulation (DASR) 139 – Aerodromes on 10 April 2020. These regulations require all Defence aerodromes to be classified as certified or non-certified. The terms airport, airfield, airbase, land based or shipborne heliports are all considered when referring to an aerodrome.

The DASR 139 — Aerodromes focus is on establishing certified aerodromes, which requires several key areas to be addressed including: Aerodrome Operator Approval with an Accountable Manager; an Aerodrome Manual; Safety Management Systems and Quality Management Systems, and Aerodrome Certification.

'The DASR 139 aims to strengthen the systems for Defence aerodrome design, operation and oversight while aligning with recognised, contemporary domestic and international good practice,' FLTLT Newton-Hoare says. 'As long as we have aircraft that require an aerodrome to launch from and recover to, Defence will need to ensure that those aerodromes can support safe flight operations.

'Major upgrades to aerodromes, required to support future capabilities that are more demanding of aerodrome infrastructure – bigger, heavier aircraft or aircraft with high tyre pressures, unusual wheel configurations and so forth – can take time, specialist design, and significant budget.

'We are expecting further upgrades and investment in Defence aerodromes, particularly those in the north of Australia, to support current and future capabilities. Since well-designed, constructed and managed aerodromes are a direct contributor to aircraft safety, it follows that those people responsible for providing such an aerodrome must ensure it is, so far as is reasonably practicable, free from risks that may jeopardise aircraft safety. Continued provision of safe aerodromes is a direct contributor to the ADF's ability to project air power, so the concept of aerodrome safety is not going away any time soon.'

Aerodrome safety regulation – A SHORT HISTORY

In August 2013, the Defence Aviation Authority (Defence AA) acknowledged that the regulation of state aircraft and supporting arrangements relating to Defence aerodromes no longer represented good practice and was not likely to be defensible under the *Work Health and Safety Act of 2011*.

As a result, in 2016, Defence implemented the Defence Aviation Safety Regulations (DASRs). The DASRs align with global conventions in military airworthiness based on the civilian European Aviation Safety Agency (EASA) regulations, with added provisions to support military operational flexibility and organisational structures.

In 2014, the Civil Aviation Safety Authority (CASA) and industry recognised that a comprehensive review of Civil Aviation Safety Regulations (CASR) Part 139 was necessary to more closely reflect the International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPS) for aerodromes. They issued a Notice of Proposed Rule Making (NPRM) in 2017 to update CASR Part 139 and the subsidiary Manual of Standards (MOS) 139 and these updated regulations and standards were released in 2019.

The previous aerodrome regulations within the DASRs were loosely based on the 2003 CASR Part 139 requirements, and largely on the previous military regulations that no longer reflected good practice. In order to better align with contemporary policy the latest amendment to the DASRs introduces the DASR 139 – Aerodromes regulations. The DASR 139 was published in April 2020 and incorporated significant changes to the existing regulatory set, bringing Defence aerodrome regulations up to a contemporary standard.

Defence aviation safety recognition

WHAT IT TAKES

To maintain a credible and defensible level of military aviation safety in Australia, DASA aligns with global best practice and aspires to exceed it where possible. It actively engages with similar organisations from coalition and partner nation militaries and aviation authorities, as a way of establishing the competence of those other authorities.

Recognition activities and engagement with a wide range of global military and civil aviation safety organisations is an integral part of DASA's mission to provide the ADF aviation community with exemplar aviation safety management. The benefits are numerous and include enhanced interoperability, greater efficiency, cost savings, and international traceability of qualifications. It also provides documented justification for trusting the work of another aviation safety authority.

Recognition increases efficiency in the acquisition and sustainment of aviation platforms by avoiding the need to repeat safety assurance already carried out by a competent authority. It underpins DASA's relationships with other Military Aviation Authorities (MAAs) and helps to stay abreast of international best practice. DASA has so far recognised 13 MAAs and 26 Civil Aviation Authorities (CAAs) and also been recognised by 10 MAAs including the US Air Force and Army MAAs, Canadian MAA and the Norwegian MAA in support of F-35 maintenance.

Ashley Taylor is Officer in Charge Type Certification, Directorate of Initial Airworthiness. He says that aviation authority recognition is a formal acknowledgement by DASA that another aviation authority applies a credible and defensible safety assurance framework. 'Every single ADF platform leverages recognition in some aspect,' Mr Taylor says.

The most recent example of successfully leveraging recognition in certification was the Medium Special Purpose Aircraft Replacement (MSPA) project. 'The selected MSPA aircraft was a 737 MAX variant which was not previously certified by DASA,' Mr Taylor says. 'Even though the MAX is a variant of the Boeing 737, it still took the FAA several years, hundreds of millions of dollars, and thousands of hours of flight test to approve the certification. DASA recognition of the FAA establishes a framework to directly use the work completed by the FAA and Boeing, and saves the ADF having to duplicate this effort.'

The scope of recognition activities covers airworthiness and flight operations, however, could be applied across the full scope of the Defence Aviation Safety Program (DASP) including aviation facilities, or service providers, in the future. In the operational context, recognition may enhance interoperability with partner forces by simplifying the exchange of services such as aircraft maintenance, or by supporting a command assessment to allow Defence personnel to travel on board foreign military aircraft.

'Recognition allows the Defence aviation community to maintain the level of independent safety assurance inherent in the DASP, by avoiding the repetition of known-good independent safety assurance,' Mr Taylor says. 'It can remain compliant with the Defence Aviation Safety Regulation when engaging with operators and service providers who work with the oversight of recognised authorities.'

The process of recognising equivalent organisations of partner nations is a huge task. For MAA recognition DASA adopted the process outlined in the European Military Airworthiness Document – Recognition (EMAD-R). For CAA recognition, International Civil Aviation Organisation (ICAO) audit results are used. DASA follows a recognition process established through a Five Eyes Air Force Interoperability Council standard. This standard in turn adopts and supplements the de facto global standard developed by the European Defence Agency Military Airworthiness Authorities Forum.

The objective of a recognition assessment is to determine whether the candidate authority applies a credible and defensible aviation safety management framework, using the Defence Aviation Safety Framework as a reference. If the findings support recognition being established for a civil or military authority, the Director General DASA issues a certificate. It's presented to the recognised authority and posted on the DASA web site, which attests to them meeting the requirements.

Recognition arrangements are reviewed every few years to ensure they remain current.

THE DASA 3-TIER RECOGNITION APPROACH

Tier 1

Competent authority as established by DASA.

- Competent, independent authority that applies a credible and defensible aviation safety framework.
- Recognition certificate is issued.
- Does not enable exchange of products and services.

Tier 2

Competent authority also providing recognised products and services as established by DASA.

- Requires detailed knowledge and understanding of the recognised framework to identify deltas and/or address interface issues.
- Relevant annexes are attached to the recognition certificate.
- Enables exchange of products and services.

Tier 3

Any additional product or service outside of the C/MAA frameworks established by the regulated community.

DASR 66 Maintenance Licensing

OPPORTUNITIES, BENEFITS AND CHALLENGES

Defence Aviation Safety Regulation (DASR) 66 Military Aircraft Maintenance Licensing is based on an internationally accepted standard that provides a credible, defensible and consistent position for knowledge, experience and aircraft-specific type training across the ADF.

It also delivers an opportunity to realise the largest maintenance efficiency gains in a generation, and addresses shortfalls of the legacy technical regulatory system where the scope of the same – or similar – authorisations could vary between maintenance organisations. DASR 66 also provides a focused accountability for the certification of maintenance – something that was sometimes lacking under the previous technical regulatory 'three signature' system.

DASR 66 also enables technical training to be better targeted to maintenance outcomes. A framework now exists for training pathways that will enable almost all aircraft components to be removed, installed, tested and then certified by a single trade – including electrical and avionics equipment – providing an opportunity to significantly reduce the number of personnel required to deploy with, or recover, an aircraft.

Worth noting is that DASR 66 prescribes knowledge and experience standards for the certification of maintenance only – the hands-off work. This allows a DASR 145 Maintenance Organisation (MO) to identify its own knowledge, experience and type training requirements for the performance and supervision of aircraft maintenance (task sign-off) – largely the hands-on work. DASR 66-approved aircraft type training is only mandatory for certifying and support staff holding a Category B & C Military Aircraft Maintenance Licence (MAML). A DASR 145 MO can authorise its staff to perform and supervise maintenance (task sign-off) prior to being awarded a MAML and prior to completion of DASR 66-approved type training.

DASR 66 MAMLs were introduced in June 2017, and some of the expected efficiency gains will be realised through a better understanding of MAML-holder roles and responsibilities, such as the connection between supervision and certification. The most significant gains may potentially be realised through bold maintenance workforce and training redesign.

Similarly, some areas of the Defence Aviation community have not yet unlocked the benefits and potential that the maintenance licensing system offers.

While the journey won't be without challenge, the outcome will most certainly be worth it.

The introduction of DASR 66 MAMLs represented a significant change in how maintenance personnel are authorised to certify maintenance. The key challenge in the introduction of MAMLs was to align DASR 66 knowledge and experience requirements to the existing ADF technical training regime. In Australia, 'Aeroskills' training is conducted in accordance within the National Vocational Education and Training (VET) system, which employs a competency-based training and assessment model. DASA utilised Civil Aviation Safety Authority (CASA) mapping of VET Units of Competency (UoCs) to map ADF training to DASR 66 knowledge modules.

DASA mapping identified that, in some cases, existing technical training for ADF trades was insufficient to meet all DASR 66 outcomes for each MAML category. Hence, most MAMLs have a range of exclusions that prevent the MAML holder from certifying maintenance on aircraft systems covered by the exclusion.

These exclusions often include electrical and avionics systems for aircraft mechanical technicians, preventing them from certifying maintenance on these systems. A future focus on removing these exclusions (training redesign) will enable aircraft mechanical technicians to perform and certify maintenance on a range of electrical and avionics systems – greatly enhancing workforce resilience and efficiency.

Avionics technicians are trained for avionics repairs, complex avionic fault-finding and avionics rectifications that require specialist testing equipment. As the ADF has introduced more and more complex and avionics-rich aircraft, we have made the flawed assumption that we need much greater numbers of avionics technicians to maintain these aircraft. While some platforms will require a significant ongoing workforce for avionics fault-finding and testing, modern aircraft have adopted maintainability philosophies resulting in complex avionics equipment that can be largely removed, installed and tested by other aircraft trades, with limited supplementary training.

Larger numbers of slightly upskilled aircraft mechanical technicians with reduced numbers of avionics technicians (workforce redesign) closely mirrors the civil aviation industry where profit drives efficiency (even with modern complex fly-by-wire aircraft). In addition to being more efficient, this maintenance concept is more effective in generating capability effects, with decreased personnel required for deployments or increased resilience with the same numbers. Workforce redesign, when combined with the upskilling of aircraft mechanical technicians (training redesign) becomes a clear investment in capability.

While Defence aviation maintenance licencing has been implemented for some time, DASA acknowledges that challenges remain, and the organisation is actively working to address them.

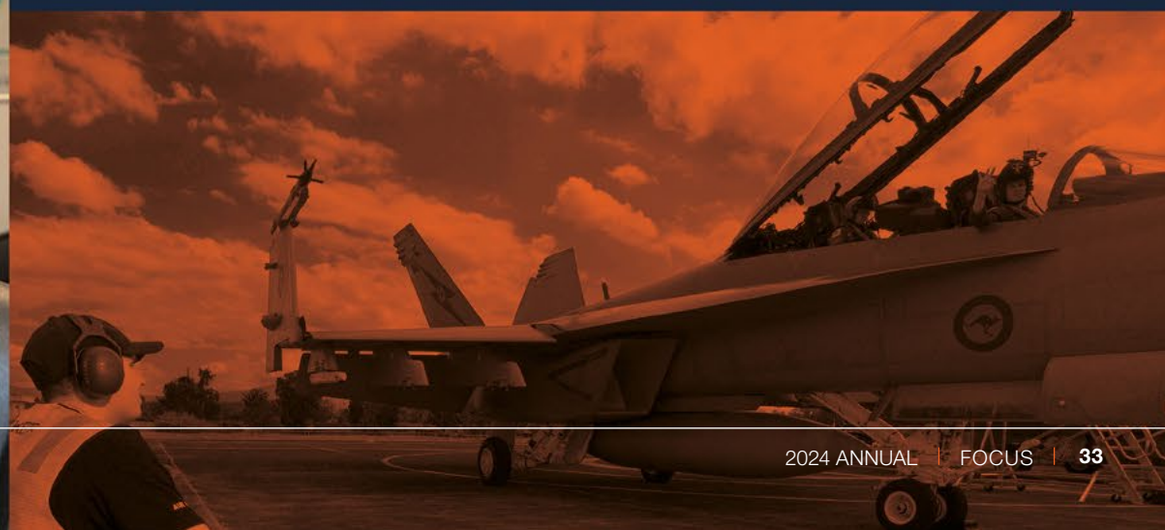
Similarly, some areas of the Defence Aviation community have not yet unlocked the benefits and potential that the maintenance licensing system offers.

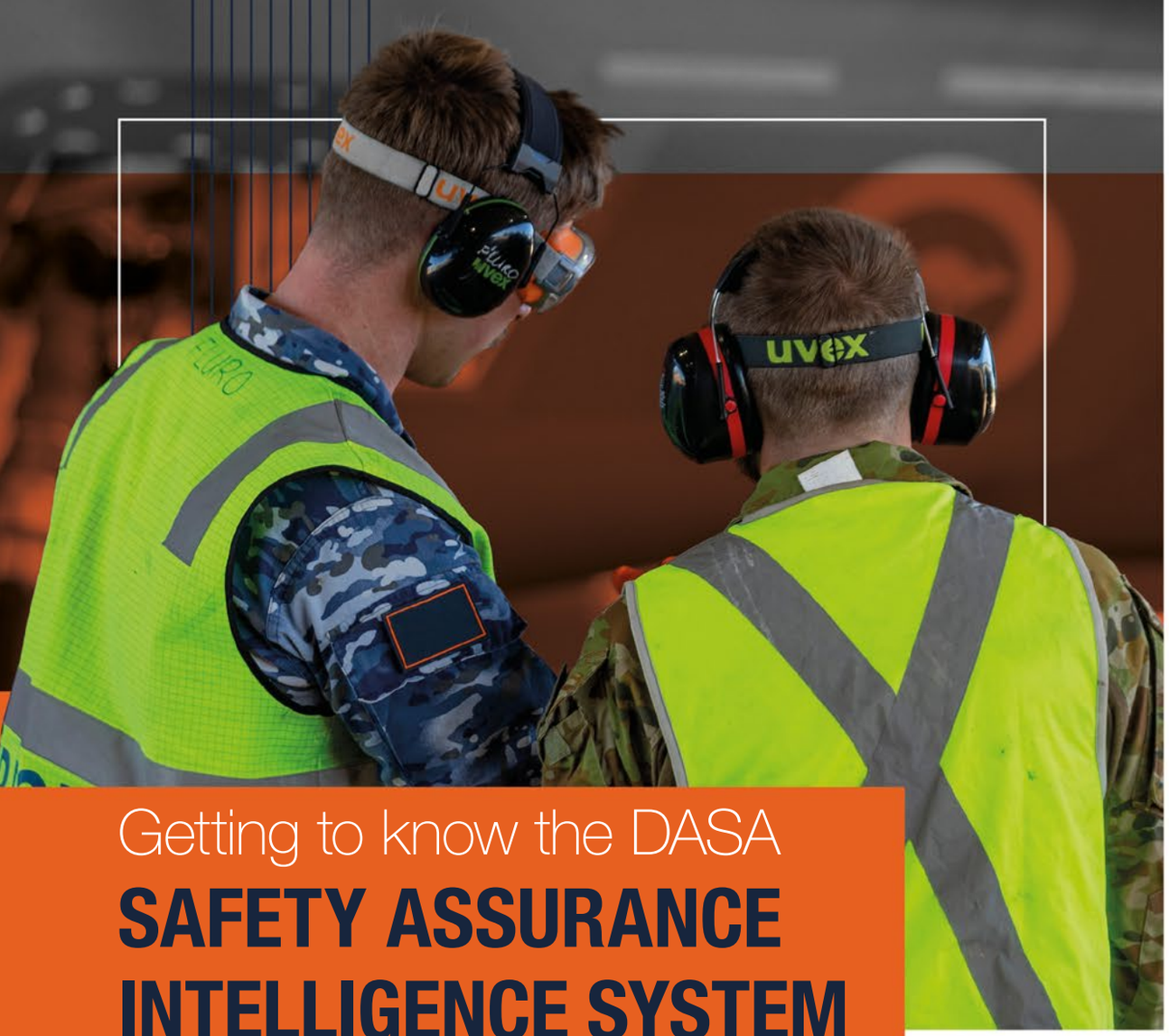
Continued collaboration is required between DASA and the Defence community to realise the full DASR potential of the maintenance licensing system.

Note:

In 2023 DASA conducted an independent two-star review into the DASR 66/147 regulatory domains to confirm the overall value proposition of MAMLs and, where appropriate, make recommendations for improvement.

The report concluded the MAML system is appropriate, and necessary components of a healthy, mature, outcomes-based regulation set for Defence. The full report is available through the DASA website https://dasa.defence.gov.au/military-aircraft-maintenance-licencing.





Getting to know the DASA

SAFETY ASSURANCE INTELLIGENCE SYSTEM

You may or may not be familiar with the DASA Safety Assurance Intelligence System (SAIS). Perhaps you're already using it, or you're even an expert!

Whatever your interaction, this multifaceted tool is a new IT system DASA uses to make better safety-assurance decisions based on data. It was created in a partnership between the Directorate of Continuing Airworthiness (DCA) and the Defence Flight Safety Bureau (DFSB). Launched as a project in 2020, SAIS has had 'business as usual' status since February this year.

SAIS uses data that is safety related and applicable to aviation platforms (fixed wing aircraft, helicopters and soon to be added, Uncrewed Aircraft System (UAS)), organisations and personnel that are regulated and approved, or accepted by DASA. It holds a range of useful data, some of which includes Aviation Safety Reports (ASRs), Operation Hazard Reports (OPHAZ), Military Permits to Fly (MPTF) and Airworthiness Directives (AD). More data sources are added regularly as they become available and are modelled into the SAIS.

Both Deputy Director Safety Systems Airworthiness Mark Clark and OIC Strategic Data Management DASA Eirinaios Vrousgos articulate that SAIS is a decision support tool to enable DASA to provide risk-based assurance.

'This is part of the DASA strategy to "exploit data to improve safety assurance,"' Mr Clark says. 'It provides Desk Officers with information that can enable better Data Driven Decision Making (D^3M). In a world where data is increasingly driving the way we work, a data-rich environment that does nothing with the data is increasingly a dinosaur. The SAIS is DASA reaching into available data and exploring the art of the possible. As we grow the SAIS into a more powerful tool, we will truly embrace what new emerging technologies can give us to improve our business and aviation safety as a whole.'

Reports that are created for the SAIS can also be published on the Defence Aviation Community catalogue (DAC). The DAC is published in the Salus portal and includes ASR, Airworthiness Board (AwB) and Fatigue & Duty Limits Variation reports, and the *Snapshot* Survey; these reports allow the aviation safety community the ability to explore selected safety-related data.

Mr Vrousgos says data analysis and statistical inference can be viewed through the lens of a set of balancing acts, including the balance between useful sophistication and simplicity.

'We try to balance our modelling attempts with a principle attributed to Albert Einstein: "As simple as possible but not simpler."'

SAIS USER BENEFITS

Reports – Users access data and reports in a graphical format that allows for analysis and download to Excel for use.

Risk analytics – Users can access details of data analysis based on risk. This is split into three categories: Platforms; Organisations; and Executive Dashboards. In these Dashboards, the data is risk-ranked and compared to trends over time to provide a balanced view of risk. It allows the user to review data, via drill downs, to assist in making better decisions and providing a mechanism for risk-based assurance.

Tools – Users can access tools that are intended to make their jobs easier. Planning tools are currently available to assist in the planning of risk-based oversight. The planning tool compares the current plan (entered into FastTrack by Desk Officers) with the organisation's risk, from the SAIS risk analysis, and provides guidance on when the system suggests visits. Tools in the near future include an Airworthiness Board report tool, and Oversight Preparation tool.

A world of opportunity

WITH DEVELOPMENT ASSURANCE AND SOFTWARE

Are you an aspiring junior electrical engineer looking to enhance your skills and experience, while undertaking a life-changing opportunity to live and work overseas? Would you like to work towards a unique and varied career in computing, cyber security, autonomy, or artificial intelligence and engage with their unique challenges?

DASA sponsors junior engineers to undertake advanced training at some of the world's leading universities. This high-level education will enable them to be a part of leading-edge research developments with other like-minded individuals in emerging and exciting fields related to computer systems and software.

The first program on offer is an intensive 16-month Master of Software Engineering degree at Carnegie Mellon University in Pittsburgh, Pennsylvania, USA. This software-engineering program covers the full software lifecycle, from business need, through design, development and verification, to deployment and operation. It goes far beyond programming, and focuses on real-world challenges.

A particular highlight for students is the 12-month studio project unique to this program. The studio project puts students in a small team to implement real software solutions for industry partners. Air Force participants have worked on rovers destined to discover ice at the lunar South Pole, under a NASA contract.

The second program on offer is a 12-month Master of Science in Safety Critical Systems Engineering at the University of York in the UK. This course teaches the foundations of designing safety into systems from the start.

It deep dives into how challenges are overcome, exploring questions such as: How can computer systems and software be adequately assured when they are responsible for protecting human life?

When it comes to keeping our aviators in the air and on mission, aviation software is integral.

How can you trust robotic and autonomous systems? And how does security intersect with safety on critical systems? Previous Air Force members have undertaken research to assure the safety of machine-learning behaviours for controllers for autonomous military aircraft.

Upon completion of their masters, members undertake a three-year posting at DASA within the Development Assurance and Software (DAS) section in Melbourne, where they receive further role-specific training.

Emergent technology combined with software, has made the world faster and more connected, so more than ever, there is a place for software engineer specialists within the ADF. When it comes to keeping our aviators in the air and on mission, aviation software is integral. DASA's team of DAS specialists play an essential role in keeping aviators safe.

DASA engineers are involved in some cutting-edge work. On a daily basis, the DAS team delves into the technical details of the many different ADF aircraft platforms. A recent example of DASA assurance activities was the Hawk Mk 127 engine major change. This change has introduced a new engine with a Full Authority Digital Engine Control (FADEC) capability. Mission computer software, and overall system safety aspects have been revisited to facilitate the upgrade.

The DAS team identified the most critical aspects of this change to undertake targeted sampling, which provided assurance the change has complied with the type certification basis.

DAS' first significant dive into protections from cyber hazards to aviation safety has been undertaken with the introduction of the Boeing 737 MAX 8 Boeing Business Jet. The aircraft has a significant pedigree in civil aviation, including cyber security design aspects overseen by the United States Federal Aviation Administration.

DAS' challenge has been to gain confidence that the original certification aspects have been fit for purpose in the military context, and that continuing airworthiness security requirements are suitably implemented for the Defence environment. This activity has supported the aircraft's introduction to service, and tested our ability to consume cyber security compliance demonstration evidence into the military context.

DAS has also been involved in assurance activities for C-27J changes, Triton acquisition, Tiger software upgrade, and many more Defence aircraft and systems-certification activities. The team has the valuable opportunity to work with the full range of Defence aviation organisations, and to work with all services and industry partners to assure Defence aviation capabilities remain safe.

Another key role of a DAS engineer is to monitor emerging technology trends, which keeps DAS engineers on the leading edge in the aerospace sector. As a result, we are working on understanding autonomy and the effects that artificial intelligence and machine learning will have when integrated into avionics systems.

Some of the questions we will need to solve over the coming years include: What is an appropriate safety benchmark for an autonomous system? What assumptions need to be challenged when certifying an autonomous system? How do we go about assuring the safety of flight and maintaining software systems integrity while allowing our military assets to leverage the cutting edge? Closely related to autonomy, is Uncrewed Aircraft Systems (UAS). Small bespoke and commercial-off-the-shelf UAS have been used to surprising success in modern conflicts.

These systems often use open source software solutions and rapid development lifecycles not traditionally seen in civil and military aviation. With limitations on weight, airspace, and functions, UAS can often forgo formal certificate due to the negligible risk they pose.

However, the DAS team is increasing its understanding of common risk mitigations used in open source and commercial UAS solutions in anticipation of the natural evolution towards higher weight categories, open airspace use, and increased complexity of function.

YOUR DAS OPPORTUNITY

We are always looking for motivated individuals for our team and sponsorship program and to share ideas, so reach out via the Design Technologies and Standards mailbox (dasa.dtsenquiries@defence.gov.au) and by chatting with your Career Manager.

Expressions of Interest are released yearly. Being a part of the Defence community, we encourage stakeholder engagement in developing solutions, so if you can help and want to be involved then please reach out.

More technology information is available on the DASA Design Technologies webpage. Software and Cyber aviation training opportunities can be found on the DASA Training webpage.

One man's half century of **TECHNICAL EXCELLENCE**

For half of the RAAF's existence, Air Vice Marshal (AVM) Noel Schmidt has provided significant technical expertise to military aviation capability, accumulating a number of 'firsts' alongside some outstanding career achievements.

AVM Schmidt was the first Director of Technical Airworthiness and later the first Director General Technical Airworthiness – ADF when this tri-service agency was set up in 1998. He had a pioneering role in computer-based technical systems, and has conducted more than 150 Airworthiness Boards. To say he has played a significant role in Air Force's emergence as a globally recognised exemplar in military aviation safety is an understatement. Insights into his unique career help provide a context for contemporary approaches.

AVM Schmidt grew up on a farm in South Australia and from an early age, had an intense desire to understand 'how things worked' and 'how to improve'.

'In high school I really enjoyed my physics classes, which also led me to examining new technologies and inventions,' AVM Schmidt says. 'I closely followed the exciting developments in the space race in the late 1960s, including all the Mercury, Gemini, and Apollo missions, leading to man first circling the moon in Apollo 8 in December 1968 followed by moon landings in 1969. I was also captivated by the number of new firsts in civil aviation, including the first flight of B747 in February 1969 and the first flight of the Concorde in March 1969, which led to much talk of a new age in aviation! Also, many exciting developments in military aviation, with new supersonic aircraft including the F-111.

'I was living my dream being at the centre of maintenance and defect investigation work on one of the world's most technologically advanced aircraft at the time.'

By my third year of high school in 1967, I knew my destiny was going to be a career in aerospace – achieved by first joining the Air Force.'

Schmidt joined the RAAF on 16 January 1970 as an Engineering Cadet at RAAF Base Frognall, undertaking Aeronautical Engineering at what is now RMIT University.

'Highlights included the many specialist and complex areas of aircraft design, performance and flight dynamics in my aeronautical engineering course,' AVM Schmidt says. 'My first posting direct from Officer Training School at Point Cook was RAAF Base Amberley Queensland, my first preference – considered the most exciting place by many young engineers

with the impending arrival of RAAF F-111s. I felt so privileged and excited to be at Amberley for the arrival of our first six F-111s on 1 June 1973. During my next two years, I was living my dream being at the centre of maintenance and defect investigation work on one of the world's most technologically advanced aircraft at the time.'

In January 1976, AVM Schmidt's career took an unexpected turn. He was posted to Canberra as one of four junior Engineering Officers assigned to write computer code for Air Force's new computerised maintenance system.

'Moving from a totally paper-based to a computerised aircraft maintenance system was then considered revolutionary,' AVM Schmidt says. 'This was a very enjoyable posting, giving me unique experience in large computer system design and programming, which assisted me in later postings. Following our first rollout in August 1978, I left for England for two years to undertake a Master of Sciencec course in Aircraft Design and Flight Test at the Cranfield College of Aeronautics – now Cranfield University.'

Upon returning to Australia, AVM Schmidt became an aircraft structural integrity (ASI) expert.

'I was immediately tasked with the engineering challenge of sustaining a credible fleet of Canberra Bomber aircraft then operated by 2 SQN,' AVM Schmidt says.

'Significant stress-corrosion cracking had been found in the primary wing/fuselage attachment structure which had already led to significant operational load limits. I had visited British Aerospace (BAE) before my return but BAE rejected any increased repair limits, instead simply offering a complete aircraft centre structure replacement option similar to the Royal Air Force (RAF) and some other operators. The RAAF rejected this, hence we were on our own to produce an interim solution.'

This led Schmidt to work closely with scientists at the Aeronautical Research Laboratories (ARL), ultimately writing his own computer crack growth model that was customised to individual aircraft defect locations and orientations, leading to customised crack limits for individual aircraft. When exceeded, aircraft were grounded. The entire Canberra fleet was withdrawn and 2 SQN shut down in July 1982. During this time, Schmidt also worked on a range of other significant ASI issues including the F-111 and also the F/A-18 after selection in October 1981.

After an exchange tour with the United States Air Force (USAF) on F-111 aircraft at Mountain Home in Idaho, he returned to Canberra and, over the next six years, developed significant experience in managing what would later become known as 'technical airworthiness'.

'At the time, Air Force had very little policy and understanding on processes for formal certification of civil-derivative aircraft,' AVM Schmidt says. 'As the lead Engineer on some major new aircraft projects including PC-9 and the civil-leased F900 VIP fleet, along with additional B707 purchase and major B707 tanker and P-3C modifications by companies having no civil Type Certificate recognition, understanding civil certification requirements became my core focus.

'This gave me great experience and ultimately led to my significant contribution to the major changes in RAAF's approach to managing airworthiness during the 1990s, including the first Airworthiness Board in May 1991.'

These changes were partly driven by a period of high aircraft losses in the late 1980s and early 1990s. Along with wider organisation change, they also led to major changes in the way engineering was conducted, leading to the establishment of the Directorate of Technical Airworthiness in late 1993, with AVM Schmidt the first Director. In 1998, he was appointed the first Director General Technical Airworthiness when the capability became tri-service. After leaving this position in mid-2005, he joined the Reserves and conducted Airworthiness Boards along with mentorship and sharing a wealth of knowledge to other staff over the next 18 years until final retirement at the end of 2023.

When AVM Schmidt stepped back from a career spanning more than half the life of Air Force, there was little doubt that he played a pivotal role contributing to a safer period of military aviation that we now experience.

Warbirds
WHERE SAFETY MEETS HISTORY

The RAAF is known for its fleet of contemporary aircraft but it also maintains a range of historic warbirds.

These aircraft create a connection with the long history of the world's second oldest air force and mostly operate out of the world's oldest continuously operating military airfield at Point Cook, as well as Temora Aviation Museum. The Air Force Heritage Squadron – No. 100 Squadron – operates Air Force's Fleet of Heritage Aircraft and was reformed in January 2021 to coincide with the Air Force Centenary. The squadron's webpage states: 'The squadron maintains priceless artefacts of Australia's national heritage in airworthy condition and conducts flying displays in order to commemorate those who have fallen in service of the country, to promote the Royal Australian Air Force and inspire future generations.'

Commanding Officer 100 SQN, WGCDR Jason Easthope, has enjoyed a varied career flying with three air forces.

A native Kiwi, he flew with the Royal New Zealand Air Force, then had a secondment to the Royal Air Force where he flew combat missions in a SEPECAT Jaguar in the Balkans. Upon joining the RAAF, he flew the F/A-18 Hornet and now enjoys his 'dream job' flying vintage aircraft such as the P-51 Mustang.

Given the age of some of these aircraft, the question arises as to how they are operated safely.

'We have a mature Safety Management System in place that is supported by Subject Matter Experts (SMEs),' WGCDR Easthope says. 'They often draw upon decades of experience, not just with aircraft types and design, but a specific aircraft that is part of the current fleet. Their knowledge of the aircraft and its history is incredibly detailed.

We also draw upon a wide network of specialist providers for parts and advice, who have a proven level of quality and this in turn is subject to intense scrutiny from our SMEs. Most of our aircraft no longer have traditional manufacturer or System Program Office support so reliance on an enterprise approach is key. We have a thorough and multi-faceted approach to assure safe operation of our historic aircraft.'

Given the age of some of these aircraft, the question arises as to how they are operated safely.

When it comes to spare parts, WGCDR Easthope explains the squadron draws upon a wide network of suppliers across Australia, New Zealand UK and US. 'If something is not available "off the shelf" we are usually able to get it made to the required standards,' WGCDR Easthope says.

The aircraft also have minor modifications essential for safe operation in the present day. 'One good example is the installation of contemporary radio equipment, which is essential for operating an aircraft in the modern context and also important for safety,' WGCDR Easthope says. 'Apart from that, we keep the aircraft as authentic as possible with only minor variations if absolutely needed.'

The aircraft are state aircraft but to date have been on the civilian register. This is now changing as they are being brought over to the military register which should enhance congruence in how they are managed.

‘A grey zone exists currently due to the warbirds fleet being registered on the civilian register and not the Defence register, despite being defined as state aircraft.’

‘I suspect once we transfer to the Defence register we will still heavily rely on the extant regulatory framework governing civilian warbird operations,’ WGCDR Easthope says.

Ricky Cochrane is the Leader Emerging Technology Policy at DASA HQ. He says warbirds have always been state aircraft but this will be more congruent and does not impact flying activities.

‘A grey zone exists currently due to the warbirds fleet being registered on the civilian register and not the Defence register, despite being defined as state aircraft,’ Mr Cochrane says.

‘The requirement is for all state aircraft to be Defence registered and oversighted by Defence. By moving the warbirds fleet to the Defence register, it fixes the ambiguity of who has oversight of these aircraft. This is progressing well to an expected end date of the first quarter in 2025. There is a large amount of work involved in completing the mechanisms for DASA to ensure the continuation of safety assurance of the operations.’

Some people may ask why Air Force maintains a squadron of obsolete historic aircraft. WGCDR Easthope feels the rationale is varied and compelling. ‘The operation of historic aircraft reminds present-day aviators, the wider aviation community and the general public, of the considerable legacy we inherit,’ he says.

‘It connects us with a lengthy history, reminding us of the challenges we have overcome in order to keep Australia safe. It underscores the technical progressions we have made – consider Eric Harrison taking to the skies in a Boxkite a little over a century ago and what he would have thought if he could see an F35A!

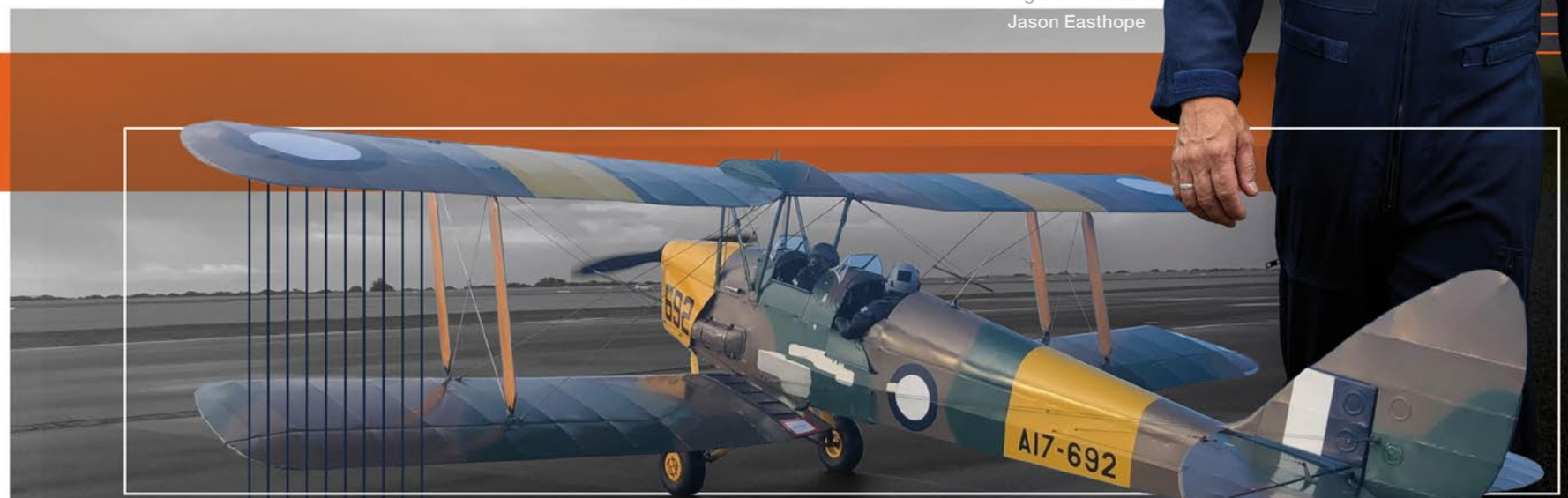
It would seem science fictional and should give us something to consider for what lies ahead. It provides a tangible embodiment of our historic commitment to the defence of the nation. Having a world class, potent Air Force doesn’t happen by accident, everything that has happened before now has shaped that journey.’

In his current role, WGCDR Easthope gets to fly the Mustang and even a Tiger Moth biplane. This involves adjusting to far more rudimentary controls and technology, as well as very different flying characteristics, but it evokes a deep passion and a reverence for what has helped shaped the current force.

‘I feel very privileged to have flown some of the most modern fighters of the time and now to also be flying leading edge military aircraft from the 1930s and 40s is a dream come true,’ he says. ‘I have to pinch myself every time I strap into the Mustang and fire up the mighty V12!

‘Adjusting to the generational difference in technology and design from modern to historic aircraft is not difficult, but it doesn’t happen overnight. It takes committed academic preparation, constant systems knowledge prep and demands a disciplined approach to preparation for each flight. It also takes opportunity, and this is where my military career has created significant opportunity – some would frame that as being “lucky”. It is known that I love to fly and am happiest in the cockpit; that is as true today as it was on my first solo back in 1989.’

Wing Commander Jason Easthope



DEFENCE AVIATION SAFETY AUTHORITY