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COVER

GPS is an essential system in today's military, not only for integration in aircraft weapons systems and precision guided munitions, but in all other aircraft, networks and everyday military systems. Its use in the US and RAAF Digital Point Precision Data Base (D-Point) is essential for weapons effort planning and employment. Both military and civil air use GPS for navigation. Almost all activities in modern usage today rely on GPS in some way, even if just for the time of day.

Cover by Phil Crowther & Lance Halvorson. *Growler photo: RAAF*

FEATURE

REGULARS

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Summer Issue - 14 October
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USQ gives Amelia wings

They say time flies when you're having fun, and that's certainly the case for Amelia Murphy.

Now in her second semester at USQ, the first-year Bachelor of Aviation student is soaring to new heights.

"I always dreamed of having an office in the sky," Amelia said. "And thanks to USQ, that dream is fast becoming a reality."

The 20 year-old Melbourne woman moved to Brisbane earlier this year in the hope of earning her wings at USQ Springfield.

Working part-time as a Personnel Capability Specialist with the Air Force Reserves at the RAAF Base Amberley – a varied role that supports Air and Ground Operations for the Royal Australian Air Force – Amelia is determined to accelerate her career.

"The idea of becoming an Australian Defence Force pilot appeals to me because it's exciting and fast-paced," Amelia said.

"How high I go all depends on what I do next."

USQ's Bachelor of Aviation offers majors in Aviation Management and Flight Operations, allowing students to undertake flight training during their second academic year before having the opportunity to complete the third year of their degree online.

Students can see and experience the aviation industry first-hand with access to a state-of-the-art flight simulator – the first of its kind in Queensland.

Based on the Boeing 737-800 airliner, the narrow body jet is able to replicate an entire flight, with normal and abnormal scenarios, while simultaneously prompting students to complete checks and procedures, just like airline pilots do.

Along with seven other women, Amelia is among 45 first-year students enrolled in USQ's Aviation program this year.

Just like aviation pioneer Amelia Earhart, she believes the image of pilots being a male-dominated profession is changing with more opportunities than ever before for aspiring female pilots who have the passion to fly.

"There are no barriers or walls stopping women from becoming pilots," Amelia said.

"I am determined to show females that it is simple to make a start in the aviation industry, and that it's an exciting career to have."

Graduates of USQ's Bachelor of Aviation (Flight Operations) program gain professional pilot qualifications issued by the Australian Civil Aviation Safety Authority.

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Anyone considering a career as a pilot is welcome to attend a USQ Open Day – the first step to changing your world is spending a few hours in ours.

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After 10 years as Editor, I have decided to handover the keyboard, and Photoshop, to another to carry on the task of producing the content for Wings. With effect from the Spring 2017 issue (Sep 17), I now hand over to Mark Eaton, who will carry on as Editor of a great aviation and veterans' publication.

After a working party review of Wings back in 2007, when I assumed the Editor position, the content was changed to include articles of a greater national appeal and import. The 'new' content includes items that relate to the Air Force Today, important to show how the RAAF meets Australia's interests as a significant participant in world affairs. They also identify The Future Air Force and how the RAAF will become the world's first 5th generation Air Force.

Of course our history is important in identifying where RAAF is going as it needs to know where it has come from. RAAF Association members know this—you all had a part in making it happen. We have a proud heritage and with the appointment of the Director-General History and Heritage (DGHH-AF) , the Chief of Air Force knows its importance, as do most RAAF members— and Association members.

My job as Editor has been 'full-on' but gratifying to see the content produced in such a good, easily read format by Kylie at Flight Publishing. Meeting deadlines and the provision of content has been challenging and always will be—helped by members who have provided great articles. There have been a few brickbats and the odd 'curved ball', all of which were deflected with little effort. But the bouquets out-numbered and out-shone the negatives; to these, I thank.

The National President has supported Wings with interesting 'Words from National' and VP Advocacy and Entitlements has always produced well prepared articles for veterans with so many very important messages. The Office of Air Force History and the Air Power Development Centre have been excellent on permitting articles to be reprinted—the Air Force Association (USAF) magazine have also allowed reprinting of important air power activities in USA, many of which affect the RAAF.

The Air Force Image Library has many action images of today's Air Force; they have been a great source. AWM has also been the source of aviation imagery of years gone, often the only source. DVA have provided many articles of importance to veterans.

Of course, Wings would not be the quality magazine it is without the support from Flight Publishing and Kylie McQueen, the layout and designer. The well laid out format is easy to read for all and especially for 'tired eyes'. The covers that Phil Crowther has designed over many years have had a great impact on the appeal of Wings, the 'wow' factor has been significant. To all who have assisted and supported me in Wings over the last 10 years, I thank you.

Lance Halvorson
Past Editor
September 2017

'Airspeed, altitude, and brains. Two of these are always necessary to successfully complete the mission.'

'It is generally inadvisable to eject directly over the area you just bombed.' - US Air Force Manual

Advocacy, Entitlements and Support

The pace of change in veterans' affairs is accelerating. Regrettably, there is a loud cadre within the veterans' community that are still baying for a Royal Commission into DVA. Let's look in this edition at some of the progress being made. You might also like to go back to the Winter edition to remind yourself of some of the other gains that I've not mentioned here. I must add that the views expressed in this article are my own and do not necessarily have the approval of the National Council.

In 2014, the (then) Minister for Veterans' Affairs authorised release of the strategic development plan 'DVA Towards 2020'. The plan was updated in 2016 and can be downloaded as a pdf via: https://www.dva.gov.au/sites/default/files/files/publications/corporate/towards2020.pdf

The plan puts teeth into many of the weaknesses and failings that the Australian Public Service Commission identified in its 2014 'Review of DVA'. The report is accessible on: http://www.apsc.gov.au/publications-and-media/current-publications/capability-review-dva

The strategic objectives include development of a completely new information communication technology system, further training of Delegates, and a culture change program. While it is unsubstantiated, I have heard it said that if a Delegate displays an inappropriate attitude to a client, they are counselled. If their behaviour is repeated, they are replaced.

Certainly, in my observation over many months and through multiple contact, the DVA Leadership Team is fully behind Veteran Centric Reform (VCR). In this regard, the attitude of the 'young Turks' is bewildering. As one senior officer has said publically on a number of occasions, the older generation is generally pretty satisfied with the way the Department engages with and supports them; but we just do not know how to build a bridge with the younger veterans.

This, of course, brings us to the strategic direction change that RAAFA has workshopped. A clear consensus I have heard expressed by almost every executive in every traditional ESO is that unless we attract membership by the younger generations of veterans, we will wither away to nothing. In other words, the challenge that the Department faces is one that we share.

In this respect, we – as an ESO community – owe it to our forebears to ask ourselves a series of related question:

- Why is that we are content with the benefits we are eligible for under VEA and SRCA?
- Why is it that a vocal cohort amongst younger veterans feels aggrieved at the benefits they are entitled to under SRCA and MRCA?
- Why is it that we feel that the Department deals fairly with us, and some younger generation veterans vilify Delegates and senior DVA officers at the deeply personal level on Social Media?

Since a young veteran's suicide recently, the Royal Commission into DVA has held a public rally in Melbourne and another is planned in Brisbane before this article is published. Posts on Facebook include photographs of the

deceased veteran's family with ugly captions that 'DVA killed the veteran'. An advocate colleague of mine witnessed the return to DVA Offices of the senior DVA officer who went out to the family's home after the death to convey the Minister, Secretary and Department's condolences and to provide support. My colleague said that he had never seen this officer so profoundly affected. From personal discussion with Delegates, I am aware that the suicide of one of their cases deeply traumatises them.

The depths have been plumbed, and I believe it is time that our generation accepted the responsibility we were handed by our forebears. To do so, we need first to educate ourselves in the legislation, to read the criticisms by the Government's own review authority and the Departmental Secretary's forthright response to those criticisms, to understand in depth the strategic changes for which the first tranche of $166m was appropriated in this year's Budget.

Then, we need to engage the next generation. Interestingly, Facebook posts by younger veterans are now starting to feature expressions of satisfaction about DVA support. We can follow the sites and 'Like' the favourable posts. Where egregious comments are being made we can – on the basis of knowledge gained by researching the facts – seek to redress the misrepresentations. From experience, factual posts antagonise and elicit pretty nasty attack. But, there will also be a smattering of agreement.

It is also interesting to see that other ESOs are starting to draw the line. As one fellow ADSO Member has posted on Facebook under the by-line: What has happened to warrior ethics? He continued: "I am getting increasingly concerned and disappointed in the foul language, hostile vitriol, playing the man and the woman, instead of the ball with what I see and read on social media."

There are some extraordinarily good things happening in the veterans' support space that are already materially improving the responsiveness of the 'system' to the needs of younger veterans. These include:

- the Non-Liability Health Care initiative that opens treatment for mental health conditions to any ex-ADF member with one day's full-time service irrespective of whether the condition is related to service or not
- streamlined processing by which of liability is accepted 'automatically' for a range of musculoskeletal conditions where the veteran has provided service in identified employment categories of a more than a certain minimum period
- the MyService portal that, while still in beta form, allows a veteran to submit a claim online through a Wizard that seeks responses to less than ten questions and with a diagnosis attached processes liability within an average of two days (and has done so in one case in 30 minutes)

The strategic change will, inevitably, be slower that either the Minister, the Department or the veteran community want. But, let's put that into context. The benefits that veterans are entitled to are legislated. Any change of benefit requires a change of legislation. To put an example on the table. At a recent meeting of ESO executives, a senior DVA officer said, I would love to have just one Act covering all veterans; but, unfortunately, I won't see it in my life time no matter how much I want it. Then, once legislated, the benefit must be appropriated. All Government Departments are under the financial constraint that, to improvements in one benefit must be offset by savings in another.

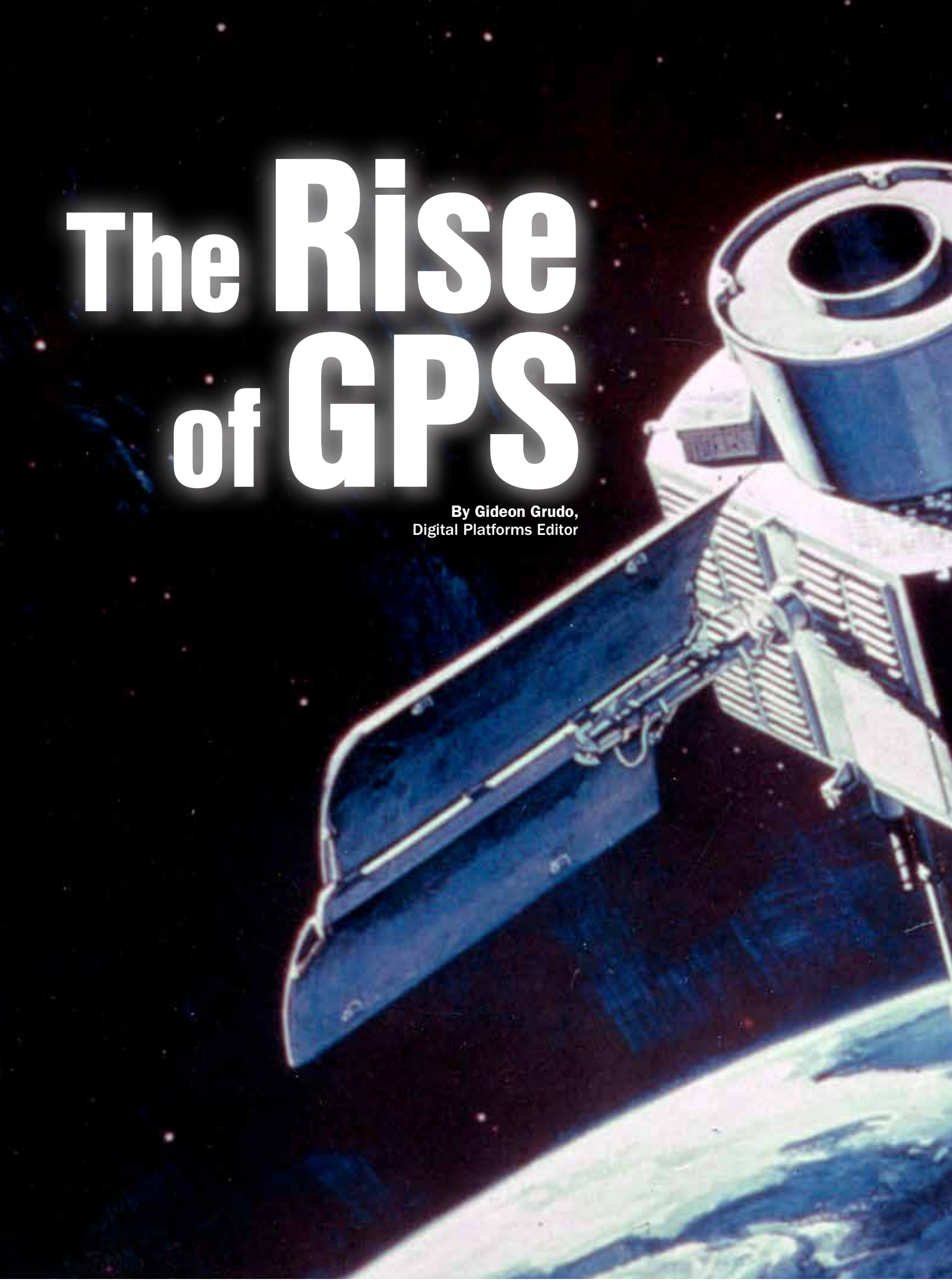
We all have a role to play in guiding the fractious by supporting those that understand. But, we also have an unambiguous role to support those whose conditions are the result of inadequate workplace health and safety regulations. I recently read a report by a small group of ex-RAAF firefighters who, of their own volition, were able to present their case to senior DVA officers and to Chief of Air Force. I feel ashamed that RAAFA neither knew of their concerns nor supported them in progressing them. A lesson, perhaps, that has wide ramifications.

R.N. (Dick) Kelloway, National VP Advocacy and Entitlements

August 2017

The Rise of GPS

By Gideon Grudo,
Digital Platforms Editor



The Air Force's Global Positioning System has quickly revolutionized military accuracy —and civilian life.

The Air Force's Global Positioning System—known worldwide simply as GPS—affects the lives of billions of people every second.

It's how Uber drivers find you; how your automatic teller transactions are timed; and how ships at sea fix their location. It is a global timing and location utility that the Air Force offers for free to the entire world.

GPS is also how USAF delivers precise combat power and exercises precision warfare. In fact, virtually every weapon the Air Force drops in the Middle East today is guided by GPS. Its military worth has been proved in conflicts spanning from Operation Desert Storm in 1991 to Operation Inherent Resolve.

GPS, fully operational for 22 years, traces its roots to the Cold War. The system's genesis came with Sputnik, the Soviet Union's first satellite, which was lofted in 1957.

Massachusetts Institute of Technology scientists, following Sputnik's radio beeps, noticed they increased in frequency as the satellite approached and decreased as it flew away—a classic example of the Doppler effect. The MIT scientists reasoned that they could use this principle, using future satellites, to determine data such as location, speed, and elevation. By 1959, the Navy had launched its Transit system, the forerunner of GPS.

This system, according to GPS World, was based on solar-powered satellites. It provided position data to ballistic missile-carrying submarines every few hours, but it was only accurate to within 25 meters, or about 82 feet.

In 1963, the Aerospace Corp. proposed a system of satellites to provide precise location information to vehicles, especially those moving really fast.

More satellite development programs emerged, including the Naval Research Laboratory's Time and Navigation (TIMATION) program and USAF's Project 621B.

In 1973, Pentagon leaders recognized that separate service programs aimed at a satellite navigation system would create problems and proposed a unified military approach.

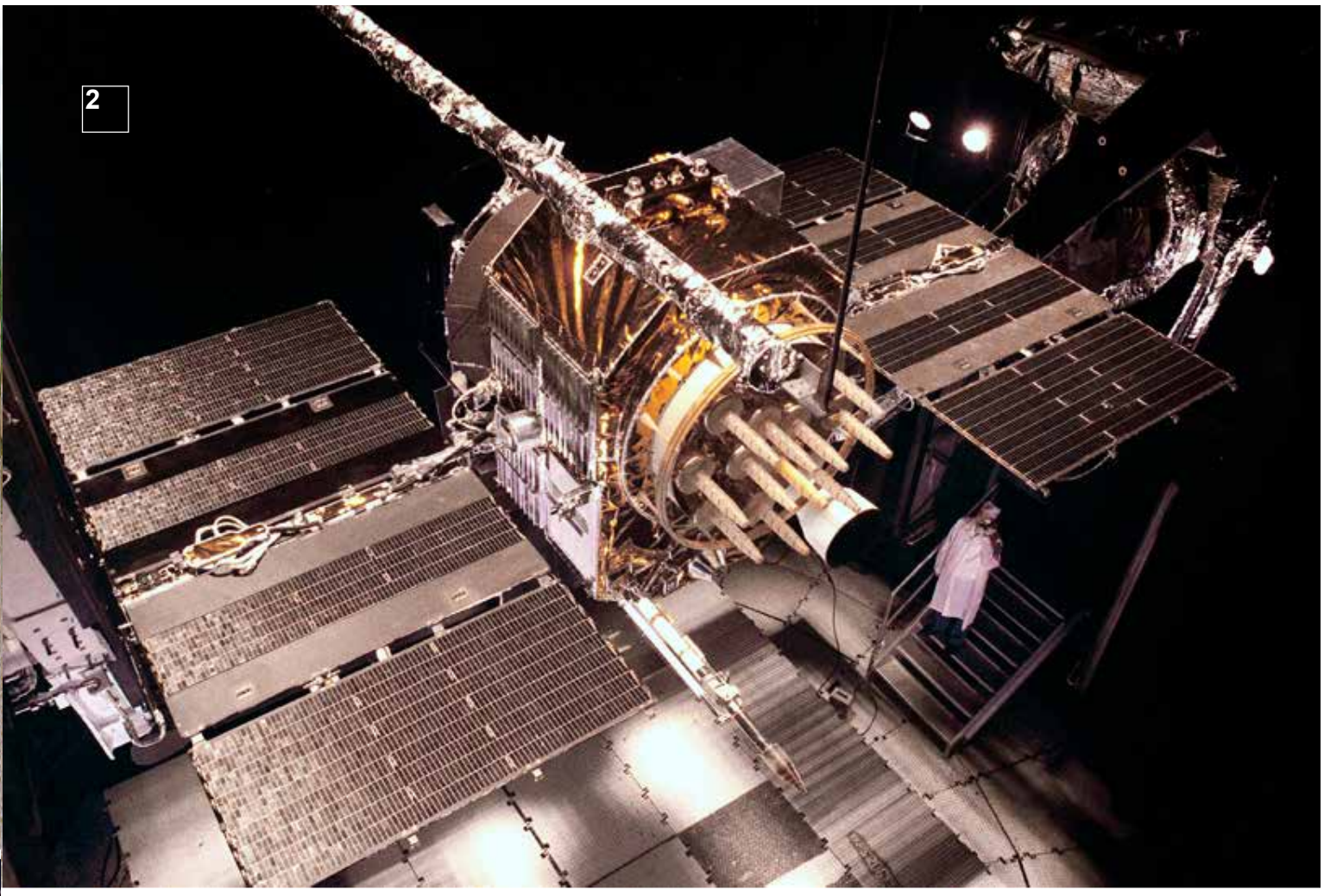
Air Force Col. Bradford Parkinson, director of the NAVSTAR/GPS Joint Program Office, "assembled about a dozen members of the JPO over Labor Day weekend in 1973 and directed them to synthesize the design for a new satellite navigation system," according to Air Force historian Rick W. Sturdevant in 2007's Societal Impact of Spaceflight.

The result, in 1974, was the NAVSTAR system, which, according to Sturdevant was "the first satellite navigation system that enabled users to determine precisely their location in three dimensions and time within billionths of a second."

Good as it was, military users wanted better. The drivers of "GPS development were the need to deliver weapons

Previous pages: An illustration of a NAVSTAR Global Positioning System Block I satellite. This was the GPS demonstration system, and it was followed by the GPS II operational system. In 1974, Rockwell International won a contract to build the first eight GPS Block I satellites. /1/ Soldiers wearing backpack receivers plot their position using NAVSTAR GPS satellites in 1979. /2/ A GPS II satellite undergoes testing in the Mark I Space Chamber at Arnold AFB, Tenn., in 1985. /3/ Personnel at the Mark I Space Chamber take a close look at the stowed solar array panels of a NAVSTAR GPS I satellite. /4/ Sgt. Darrell Harrison, 1002nd Space Systems Support Squadron at Falcon AFS, Colo., loads a magnetic tape reel onto a drive in the NAVSTAR main computer room. /5/ A GPS Block I satellite is prepared for a test at Rockwell International's Thermal Vacuum Chamber in Seal Beach, Calif. /6/ An illustration of a GPS Block II satellite. The first full-scale operational GPS satellites, these were designed to provide 14 days of operation without any contact from controllers. In 1983 Rockwell International was awarded an additional contract to build 28 GPS Block II and Block IIA satellites.

Previous pages: Rockwell Space Division illustration. These pages: DOD via National Archives; USAF; USAF; SSgt. Scott Stewart/USAF via National Archives; Rockwell International; GPS.gov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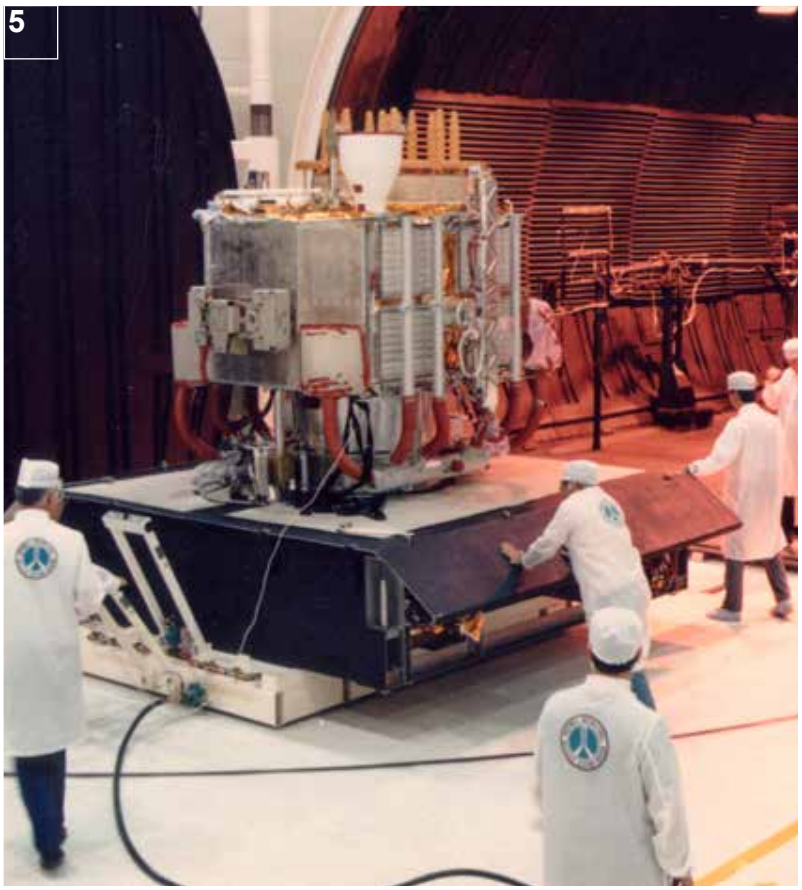
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precisely on target and to reverse the proliferation of navigation systems in the US military," wrote Sturdevant.

However, from the very start, "the Department of Defense (DOD) recognized the usefulness of GPS to the worldwide civilian community."

A GPS prototype launched in 1978. The system worked when a surface or air unit interrogated the satellite for location and timing information. The more satellites that are within line-of-sight to the user, the more accurate the information.

The danger of a nonstop satellite broadcast, though, was that hostile users would be able to take advantage of it. The Air Force designed into GPS a feature called "selective availability," which allowed US and approved allied military users a stronger and more precise GPS signal than that available to commercial entities.

In 1983, GPS became even more broadly available. The tragedy of Korean Airline Flight 007, shot down by Soviet interceptors after straying off course, provided the impetus for making the signal broadly available.

After the Korean Airline incident,"President Ronald Reagan reassured the world that the coarser signal would remain continually and universally available at no cost once GPS became fully operational," Sturdevant wrote. This took another 12 years.

Desert Storm saw the first heavy use of GPS in combat, offering unprecedented precision and changing the way

/1/ B-52G bombers from the 1708th Bomb Wing prepare for a mission during Desert Storm on Feb. 26, 1991. Historians sometimes call it "the first space war" due to the extensive use of space-based satellites. /2/ F-16CJs from the 157th Expeditionary Fighting Squadron wait for a load of 1,000-pound GBU-31A Joint Direct Attack Munitions (JDAMs) during Operation Iraqi Freedom on April 8, 2003. JDAM-equipped bombs are coupled to a GPS receiver, giving them near-precision accuracy. /3/ A soldier holds a GPS receiver used during Desert Storm. /4/ Technicians from Hughes Space and Communications monitor a GPS II satellite during assembly in the 1990s. /5/ TSgt. C. J. McClain, 36th Airlift Squadron, uses a GPS unit during a 2005 exercise at Yokota AB, Japan. /6/ The fifth GPS Block IIR-M satellite is launched in 2007 from Cape Canaveral AFS, Fla. /7/ An illustration of a GPS IIF satellite. Built by Boeing, GPS II consists of 12 satellites featuring enhanced accuracy and robustness. The final satellite was launched on Feb. 5, 2016.

TSgt. Donald McMichael/USAF via National Archives (NA); SMSgt. Edward E. Snyder/USAF (via NA); USAF; Hughes Space & Communications; MSgt. Val Gempis/USAF; GPS.gov; NASA


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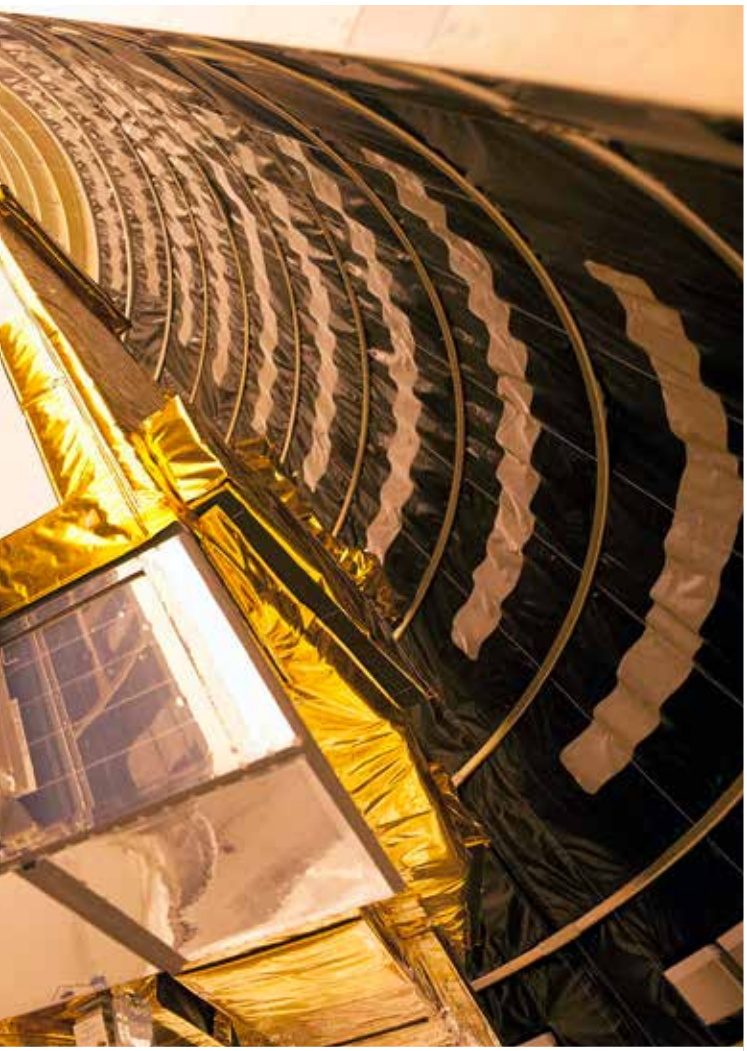
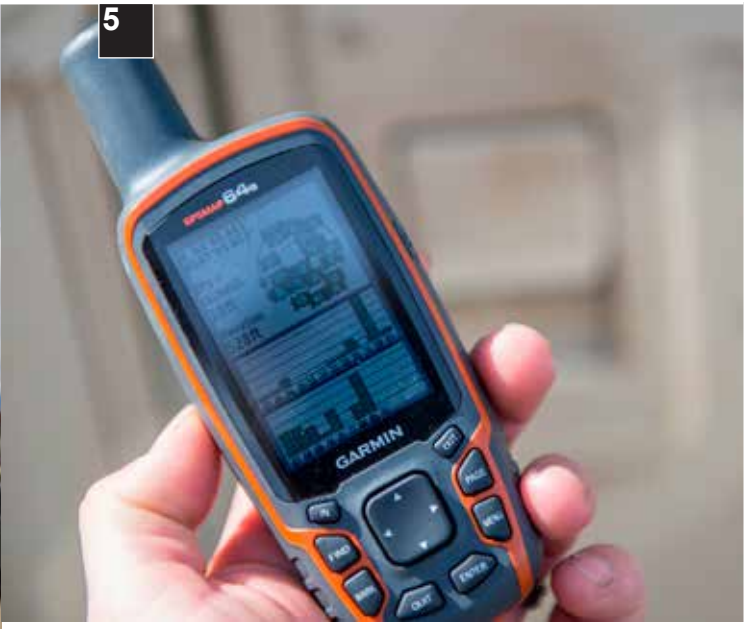




/1/ The third USAF GPS IIF satellite blasts off in 2012 on a United Launch Alliance Delta IV rocket at Cape Canaveral. /2/ A GPS IIF undergoes final encapsulation before launch at Cape Canaveral in 2015. /3/ Avionics technician SSgt. Josh Mitchell, 158th Fighter Wing, Burlington Arpt., Vt., performs a GPS operations check on an F-16 during Red Flag 15-1 at Nellis AFB, Nev., in 2015. /4/ SSgt. Brian Collins (left) and SrA. Travis Mackey, both with the 775th Civil Engineering Squadron, enter coordinates into a GPS receiver during training near the Utah Test and Training Range in 2014. /5/ TSgt. William Henry, 527th Space Aggressor Squadron, demonstrates the capabilities of his handheld GPS unit at Red Flag-Alaska at Eielson AFB, Alaska, in 2016.

wars are fought. Desert Storm also highlighted the critical importance of space contributions to airpower.

"Precision navigation and timing, GPS. That was the dawn of criticality of GPS to military operations," Maj. Gen. Paul T. "PJ" Johnson, who earned an Air Force Cross for his role in Desert Storm, told Air Force Magazine. (See "Perspectives on the Storm," April 2016.)

Desert Storm also saw the debut of the JSTARS aircraft, which gave the coalition the capability to see, track, and target enemy ground formations in any weather, day or night. With all the attack packages airborne, "we saw the ability to dynamically … detect, … characterize, and … target" ground formations, Johnson said.

During Desert Storm, the GPS constellation was limited, with 19 satellites of various generations: GPS I, GPS II, and GPS IIA. These only allowed for 19 to 20 daily hours of 3-D coverage.

Shortly after the war, the Air Force used GPS to position the airdrop of food in Somalia during 1993's Operation Restore Hope. It was used in various peacekeeping operations across the planet, from the Haitian crisis in 1994 to the Balkan crisis in the mid-90s.

On April 27, 1995, GPS became fully operational, with a complete constellation of 24 operational Block II/IIA satellites. It provided information to both military and civilian users.

The new technology allowed the proliferation of what would eventually become the GPS our phones and com-

United Launch Alliance; USAF; SrA. Thomas Spangler/USAF; Amn. Taylor Queen/USAF; SSgt. Shawn Nickel/USAF

puters use. Those satellites are the ones civilians still use today for these purposes.

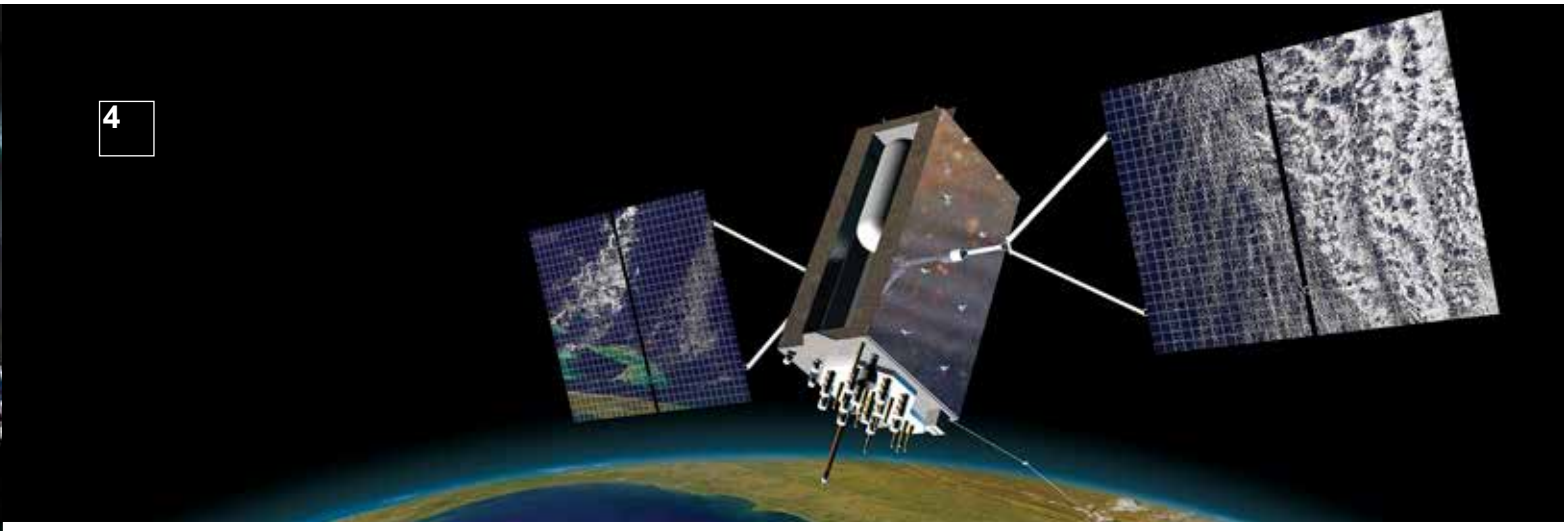
In 1998, Vice President Al Gore said he wanted to see improvements to the GPS system, and Congress obliged with a program christened GPS III. It was approved for development in 2000.

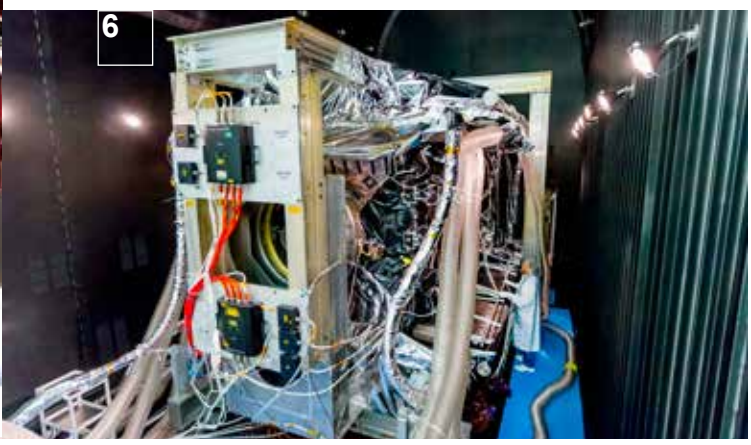
In 2000, President Bill Clinton ordered the end of selective availability, which had offered civilian users slightly degraded accuracy relative to the military signal. Later, in 2007, President George W. Bush agreed to drop the ability to reinstate selective availability from the GPS III requirements.

In recent years, adversaries have experimented with jamming of GPS signals, persuading the Air Force to have "day without space" exercises in which participants don't have access to GPS signals and must resort to more old-fashioned methods of navigation and target identification.

In 2008, Lockheed Martin was awarded the contract to develop the GPS III satellites. According to the company, once these satellites are launched and operating, they will provide signals three times more accurate than current GPS spacecraft, improve the anti-jamming capabilities for military users by eight times, and greatly enhance global connectivity for civilian users.

The first batch of GPS III satellites is expected to reach orbit in spring 2018. ✪





/1/ An illustration of a GPS IIF satellite in orbit. The satellites have allowed a proliferation of technology, bringing GPS to USAF weapon systems, computers, and phones. /2/ Technicians at the Lockheed Martin Anechoic Test Facility in Denver prepare a GPS III satellite in May 2016. /3/ An artist's illustration of a GPS III satellite. /4/ In this artist's concept, a GPS III satellite is shown above the Earth. The first GPS III satellite is expected to launch in 2018. /5/ TSgt. Matt Gerrits, a 307th Aircraft Maintenance Squadron armament specialist, loads a 500-pound JDAM under the wing of a B-52 at Barksdale AFB, La., on Feb. 1, 2017. The JDAM kit converts unguided free-fall bombs into accurate smart munitions by using a GPS receiver to steer the weapon after release. /6/ A technician works on Lockheed Martin's first GPS III satellite for the Air Force. It successfully completed system-level thermal vacuum testing, validating the satellite design. The test confirmed the satellite's integrity and capabilities by exposing it to a long cycle of simulated space temperature extremes in a depressurized chamber.

Boeing; Patrick H. Corkery/Lockheed Martin; Lockheed Martin illustration; Lockheed Martin illustration; TSgt. Ted Daigle/USAF; Lockheed Martin

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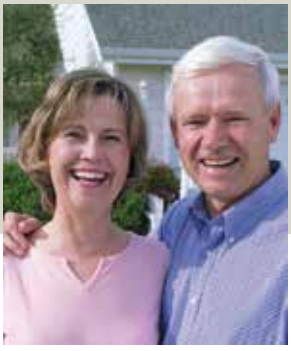

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Weapons Effort Planning

In the overall strategy of war, the destruction of some targets will be essential to meet the aims of the military situation. Some targets will be critical to the advancement of any operational situation, ie, their destruction or not. In many cases, a 'firepower kill' is sufficient to render a target low threat to any operation, with the result it can be bypassed.

Some targets may be so heavily defended that a strike would be very high risk, rendering any attack aircraft highly vulnerable. In such cases, the value of the destruction of the target must be assessed against the potential loss of aircraft and crew/s; ie, is it economic to attack such a target and what will its destruction achieve in the overall strategy. Equally, what are the ramifications to the tactical situation if the target is not destroyed; will a firepower kill (Pk) suffice? Analysis must be carried out to determine if the strike is 'worth it'.

This article reviews how Weapons Effort Planning evolved and why it became so important in achieving the most effective use of air power for aircraft, weapons and targets. These three major factors were not always matched; even in the days since they were identified as essential. Political and bureaucratic interference have cancelled or changed the outcomes of many weapons systems in their formative stages. These factors are not discussed in any length, nor is the strategic use of air power following World War II.

Weapons Effort Planning involves analysis to provide the best assessment of the value of the target, whether its destruction is attainable at reasonable 'cost' and if the aim is achievable. Such an assessment cannot make the decision, but it can identify the likelihood or not of success. The most suitable delivery platform is not often a determinant in this analysis, because there was little choice in many cases and in other situations, it was obvious.

Following a decision that a target is 'high priority', the target's vulnerability to attack must be determined— its construction, size and shape. Analysis of the target location and defences (SAMs, AAA, ECM) at the target and on the approach is essential. A high threat environment could inhibit an attack. In the current renditions of the Law of Armed Conflict (LOAC), the Rules of Engagement (RofE) must also be considered to limit collateral damage.

Traditionally, weapons effort planning is very systematic and logical in its approach to arrive at a force requirement calculation, ie, the number and types of weapons and aircraft to achieve the required level of damage. Targets will usually require direct hits, or close 'misses', to achieve a specific damage level (ie, destroyed, immobilised, firepower kill) and the force required to achieve the desired probability of success.

The basis for calculations in determining the success is the 'single shot probability' (SSP), which depends on the target dimensions and the aiming accuracy, the circular error probable— CEP[1] (or 50%CE). Before the days of precision guided munitions (PGM), the over target requirements were astronomical and in many cases, unachievable. However, CEP is a statistic, with all the variables its use implies.

Notwithstanding the large number of bombing sorties, weapons effort planning was in its infancy in World War II. It came of age after the war when the damage effects of the vast number of weapons were analysed in detail by the RAF and USAF. Weapons Manuals AP 642G (RAF) and JMEMS (USAF) became the bible/s for Squadron and Wing Weapons Officers.

In analysing the over target requirements, a number of other factors need to be considered: weapons systems suitability (usually, few options available), target acquisition, crew training, weapons systems serviceability, degraded accuracies due to target defences, possible counter air opposition, ie, fighter aircraft and the weather.

Allowances must then be made for various ineffectives such as:

- Expected weapon failures.
- Aircraft unserviceability, on the ground before take-off and enroute to the target.
- Aircraft which, for various reasons, fail to acquire the target.
- Attrition due to enemy action.

While some of the processes detailed above may seem academic, or self explanatory, most require serious consideration in the weapons effort planning processes. The advent of PGMs has certainly changed the planning processes, but consideration of the factors is still essential. As an example, the success of USAF strike operations by F-111F aircraft in Libya using PGMs was demonstrated. 18 x F-111F aircraft (six spares returned after 1st AAR) flew Mission Ghost Rider from RAF Lakenheath in UK, with air-to-air refuelling and, skirting Europe, to strike at targets in Libya. Each aircraft employed used Pave Tack and released GBU-10 2000lb Paveway II munitions on the selected targets.

As well as tankers, four EF-111A electronic warfare aircraft jammed Libyan radars and their communications systems. Nine F-111F aircraft attacked the Azziziyah Barracks in Tripoli, six attacked the airport and three attacked the terrorist training camps at Sidi Bilal. One F-111F, and the last to attack, was shot down and the crew listed as MIA. Navy EA-6s and A-7s suppressed radar sites and attacked two sites in Benghazi. Post mission analysis of cockpit video recordings clearly showed the success of the attacks.

World War II

At the outbreak of the war in September 1939, the primary instrument of the UK air power lay with RAF Bomber Command. However, during the first 18 months of World War II, the Command's operations had been many and varied,

[1] CEP is defined as the radius of a circle into which 50% of all individually aimed weapons are expected to fall. It also means that there is a 50% probability that a weapon, or weapons, could fall within the CEP— it does not infer certainty in hitting a target. A further deduction is that if the target is of the same size as the CEP, the SSP is 0.5.

ranging from leaflet dropping to an attempt at launching a strategic bombing offensive against Germany.

The period following the declaration of war in September 1939 was called the 'phony war'. The war started in earnest on the morning of 10 May 1940, when the Germans invaded the Netherlands, Belgium and France In an air of crisis, a coalition government was formed with Winston Churchill as Prime Minister and Minister of Defence. One of the first acts of the new War Cabinet was to authorize unlimited bombing to the east of the Rhine River.

Despite the heroism of the crews who flew about 21,000 sorties (17,500 night) in 1940, Bomber Command's role in the war was being diverted at the whims of the War Cabinet, the Ministry of Economic Warfare and the Admiralty. Insufficient attention was being given to the Allied Bombing Campaign against Germany, in particular, to the targeting of transport communications and oil supplies and sources.

Further diversification of effort occurred in 1941—and events that questioned the very existence of Bomber Command. There was growing skepticism about the accuracy and effects of raids on Germany and elsewhere. The Butt Report[2] confirmed that only about 25% of crews reached the target on the night sorties; and in the haze of the Ruhr, only one in 10 dropped its bombs within 8km of the designated target. All pointed to the simple fact that available navigation aids could not provide the accuracy required to acquire the target/s.

With continued demands on Bomber Command's resources from the Admiralty, RAF Middle East and Coastal Command, the Air Staff halted operations in December 1941 to conserve the Command as a viable entity. Over the period July to December 1941, Bomber command flew 14,833 night and 1643 day sorties; 605 bombers failed to return and another 200 were otherwise destroyed. Bomber command had provided poor dividends for the resources invested.[3]

A concerted effort was made on the night of 11-12 May 1942 when 18 Whitleys and 18 Hampdens (with five in-flight aborts) attacked road and rail communications in the Mönchengladbach area in Germany. The aircraft navigated to the target by 'dead reckoning' (DR) navigation and bombed through cloud, even though the target could not be positively identified. One Whitley and two Hampdens failed to return. Little knowledge of the dimensions and constructions of the targets were known; the assumption is that targeting analysts determined that general purpose (GP) bombs would result in some blast and fragmentation damage to the structure/s, and probably with little expectation of significant damage other than a 'nuisance' factor.

The Strategic Bombing Offensive

The strategic bombing offensive against the Reich started in May 1940 when 99 Wellingtons, Whitleys and Hampdens attacked steel and oil targets in the Ruhr. Other targets attacked in May were the oil storage tanks at Hamburg and Bremen, oil refineries near Hannover and the rail and road communications. In June 1940, aircraft factories and fabrication plants were included as targets.

However, in the attacks that followed, only a fraction of the small force (30-60 aircraft) released their 250-lb (113-kg) GP or 500-lb (227-kg) GP bombs near the selected target, even in moonlight and with little enemy opposition. The damage sustained by German industry was inconsequential.[4] It became obvious that at night, contending with German air defences, crews could not find precision targets like oil plants or even marshalling yards—if these were to remain as the main targets, most of the bombs would fail to cause any damage.

Bombers had to be given more effective navigations aids so that crews could find their targets. The only navaids available were astro/sextant, visual and limited radio navaids. While the navigator used the airplot/manual DR, aircraft manoeuvring in enemy airspace and the frequent bad weather, made target identification extremely difficult. Cloudless moonlit nights made navigation easier, but it also made it easier for German night fighters.

Bomber Command then turned to attacking targets it could find and hit; German towns and cities. The concept was called 'area or carpet bombing'. Bomber Command considered it the only policy to achieve any effects at all. The aim in attacking German towns was intended to cause such destruction and dislocation that the industrial areas and transport locations would cease to function. Small targets such as factories could not be identified and attacked by the bomber force at the time.

During these early periods, two other factors became important—the effect of severe weather conditions on heavily-laden bombers of relatively low performance and the diversion of the primary aim. Following Italy's declaration of war on 10 June 1940, Bomber Command, tasked 36 Whitley bombers on a 1195nm (2175-km) round trip to Turin with the Fiat works as the primary target. After refuelling in the Channel Islands the 'force' hit severe icing and turbulence with cumulo-nimbus (Cb) thunderclouds rising to over 25,000ft (7620 m) enroute. Of the total tasked, 23 aborted, two bombed the Genoa docks and 10 claimed to hit the targets in Turin.

If Bomber Command could not quickly induce a German collapse under the impact of the area offensive, or if the USAAF could not stop production of German fighters, then the continued combined bomber offensive was heading for a crisis.

The Allied expectations that 'things would get better' following the Dambuster raids in May 1943, the Battle of Berlin in late 1943-early 1944 and the USAAF experience in the attack on Schweinfurt, did not materialise. In the attack on Schweinfurt, 290 B-17s pressed on against waves of German fighters and attacked the target; however, 60 aircraft were shot down and 17 heavily damaged.

Operations against targets that required precision bombing, both day and night, could not be continued. Had they continued in similar circumstances, the USAAF bombing

[2] A report ordered by the Prime Minister's Scientific Adviser, Lord Cherwell, and conducted by D.M. Butt, a member of the Cabinet Secretariat, on 600 night sorties in June & July 1941, and submitted on 18 August 1941. RAF *Historical Division,* 1983

[3] *History of the Second World War*; Imperial War Museum, Purnell & Sons 1968

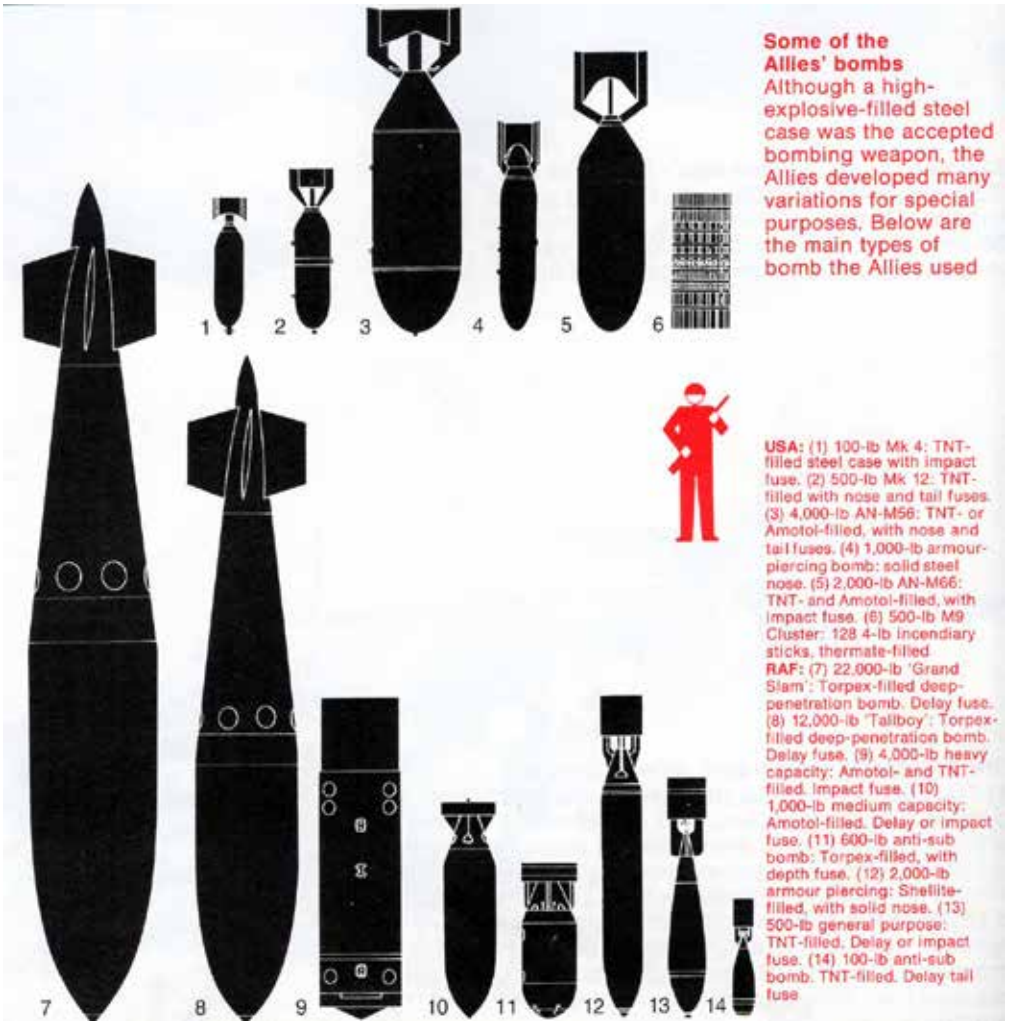
[4] Survey of Allied Bombing. - post war by RAF

forces could not have prevailed. The American plan to strike selectively at German industry by daylight heavy bombing precision attacks had apparently been decisively defeated by the German fighter force.

In the Battles of Berlin, the Ruhr, Nuremburg and Hamburg, Bomber Command lost substantially more aircraft and crews than it had available for operations. Such losses could not be sustained. Bomber Command shifted their offensive from Berlin and the German towns to the railway infrastructure in northern France.

Strong Medicine

Although both the RAF and USAAF sustained significant losses in the operations described, the introduction of the Lancaster and the Mosquito, airborne radar and technology advances in airborne equipment and weapons demonstrated a new degree of air warfare. Targets could be acquired, identified and attacked which resulted in significant levels of damage. Essen, the home of Krupps, and Hamburg were severely damaged. Surely this medicine would prove too strong. Surely the destruction wreaked would be the *coup de grâce* for Germany.



Some of the Allies' bombs Although a high-explosive-filled steel case was the accepted bombing weapon, the Allies developed many variations for special purposes. Below are the main types of bomb the Allies used

USA: (1) 100-lb Mk 4: TNT-filled steel case with impact fuse. (2) 500-lb Mk 12: TNT-filled with nose and tail fuses. (3) 4,000-lb AN-M56: TNT- or Amotol-filled, with nose and tail fuses. (4) 1,000-lb armour-piercing bomb: solid steel nose. (5) 2,000-lb AN-M66: TNT- and Amotol-filled, with impact fuse. (6) 500-lb M9 Cluster: 128 4-lb incendiary sticks, thermate-filled
RAF: (7) 22,000-lb 'Grand Slam': Torpex-filled deep-penetration bomb. Delay fuse. (8) 12,000-lb 'Tallboy': Torpex-filled deep-penetration bomb. Delay fuse. (9) 4,000-lb heavy capacity: Amotol- and TNT-filled. Impact fuse. (10) 1,000-lb medium capacity: Amotol-filled. Delay or impact fuse. (11) 600-lb anti-sub bomb: Torpex-filled, with depth fuse. (12) 2,000-lb armour piercing: Shellite-filled, with solid nose. (13) 500-lb general purpose: TNT-filled. Delay or impact fuse. (14) 100-lb anti-sub bomb. TNT-filled. Delay tail fuse

Success in the Battle of Hamburg had turned not only upon the great weight of the attack delivered but upon the unusually high degree of accuracy achieved and the very short space of time into which the operations were compressed. Apart from some harassing and the light American daylight attacks, Bomber Command completed the Battle, over four nights in July and August 1943, with over 700 bombers. Over 3,000 sorties were flown and nearly 9,000 tons of bombs dropped. In all but the last attack, when the weather was bad, highly concentrated patterns of incendiary bombs, of which about 4,500 tons were dropped, were achieved, with the result that the fires in Hamburg got out of control.[5]

Target Matching and Bombs

In the early days of the World War II, weapon to target matching was not often carried out. Initially, crews flew against targets with what bombs the RAF had. British bombs were less effective than German bombs—their charge/weight (CW) ratio was half that of a German bomb of the same weight. Most British bombs had CW ratios of 50-60% and were classed as medium capacity (MC) bombs. Amatol, a relatively inefficient explosive, was used as the main filling and many failed to detonate, ie, unexploded bombs (UXB).

As the war progressed, specialist bombs were developed for specific targets, eg, Barnes Wallis' mine, to breach the Möhne and Eder dams by 617 SQN RAF, the famous Dambusters. Very large bombs were developed; the 'earthquake' bombs —the Grand Slam of 22,000lbs (10,000kg) and the Tall Boy of 10,000lbs (4500kg)—designed to penetrate concrete structures, sending out shock waves to damage foundations. They were employed against targets with large structures, eg, submarine pens, railway bridges/tunnels/ viaducts and the V2 rocket site/s at Peenemünde.

[5] RAF Official History

Just Jane at East Kirkby Photo: M. Keen Lincolnshire Aviation

Last Phase of the War

In the last phase of the war, the combined Anglo-American bombing offensive had three main targets: oil, transport and general attack on major cities. However, RAF Air Staffs and the Commander US Strategic Air Forces Europe (USAFE), GEN Carl Spaatz, held different and conflicting views on the target priorities. As the war progressed, these views assumed a real strategic importance. The options increased and the effectiveness of strategic bombing increased. However, the importance of choosing the right targets was essential.

The introduction of the P-51C Mustang fighter, fitted with the Rolls Royce Merlin engine, in early 1944 changed the air battle scene for good. The long range of the Mustang resulted in US domination of the German airspace in daylight hours. Together with advance of the Allied armies across France, the collapse of the German air defences (both fighters and radar), the USAAF and Bomber Command bomber loss rate dropped markedly. However, both Air Forces still had to contend with AA and the often appalling weather.

In September 1944, it seemed that the strategic air forces were poised for a final knockout blow against Germany, by concentrating on the target priorities. However, the continuing failure to concentrate the immense capabilities on the competing priorities of oil, transport, cities and general industrial dislocation, could not be achieved.

While the spread of bombing across these targets produced a certain collapse in Germany (in 1945), concentration of targeting on Germany's oil supplies in the last four months of 1944, may have had a different and earlier outcome. However, only one-third of Bomber Command's effort was directed against targets in Germany, largely because of the demands of land campaigns and other operations[6] . Area bombing of cities and towns, while devastating, had little effect on armament, aircraft or tank production in 1943-44

Post war analysis suggests that targeting communications and the synthetic oil industry earlier in 1944 may have hastened Germany's defeat. When the air offensive did concentrate on these targets, the *Luftwaffe* was severely limited in fighter operations and the mobility of the Panzer Corps suffered. In addition, the capacity to produce and deliver armaments to the forward areas was severely curtailed. It was the destruction of the oil plants and the transport network that broke the resistance of the Reich, not the bombing of the towns.

Hindsight may thus suggest that the air war over Europe might have been waged differently if presented as an academic military planning exercise in a vacuum. Given the ever-present factors of British, American and Russian divergent post-war aims, a plethora of planning and operational committees, competing inter-service and intra-service interests and the prevalent desire to over-insure in times of military plenty, it is difficult to envisage the deployment of air power in a fashion radically different from that which occurred.[7]

Post war

The RAF and the USAF developed a number of weapons to suit their in- service aircraft. However, the RAAF only employed British WWII bombs while fighter aircraft employed both British and US bombs and rockets, both practice and HE/fragmentation.

In addition to stand-off weapons, the forerunner of cruise missiles, USA and Britain were in various stages of development of nuclear weapons for their aircraft and delivery systems. While some aspects of planning of air launched nuclear weapons are similar to conventional planning, weapons-target matching and damage effects are dissimilar and planning for these weapons won't be discussed further in this article.

Canberra Aircraft

Initially, the Air Staff Requirement for the Canberra aircraft specified a radar bombing system. However, production aircraft were equipped with visual bombing systems; the radar systems were reputedly reserved for the RAF V Bomber force.

Canberra being loaded with 1000lb bombs during Malayan Emergency, RAAF Butterworth 1959. *Photo Brian McSkimming*

[6] Air Power Over Europe, by John Herington. Australian War Memorial 1963

[7] ibid

The earlier versions were designed for high and medium level bombing and later RAF (interdictor) versions (B-8 and B-12) employed bombs, 4 x 20mm cannons in a gun pack in the bomb bay and underwing rocket pods—a version that would have been well received in the RAAF.

Bombing accuracies (ie, the CEP) at these high and medium levels quickly revealed the futility of achieving a required level of damage on any potential target with the small force available. 82 Wing squadrons eventually started low level bombing at 1000-1500ft, with increased accuracies. Even so, with the GP bombs available, lower CEPs were still necessary to achieve any damage effect on small, pinpoint targets.

Other than 25lb practice bombs, the RAAF Canberra aircraft were limited to standard GP bombs of British design, generally medium capacity (MC) bombs of 500lb and 1000lb weight. In addition to rockets, Sabre and Mirage aircraft usually employed 11lb practice and 500lb HE bombs.

The Air War in Vietnam

During the air war in Vietnam, major areas and high value targets suitable for attack by US air power were out of bounds because such attacks might 'involve' nationals of China, the Soviet Union or other 'non-participants'. The total economic loss to North Vietnam in 1967 due to air attack was wildly guessed at $130 million, although probably an overestimate. It took 122,960 missions to accomplish this, so on these figures, each mission destroyed $1057 of unknown worth. But the direct cost of each mission for fuel, spare parts and other consumables (excluding ordnance) averaged $8400, not including the very high cost of personnel.

Air attacks were carried out on 'lesser value' targets, the military value of which were doubtful in the overall military aims. Some targets were deemed to be major transport routes and were attacked by flights of tactical aircraft. However, many aircraft were lost due to SAMs and AAA and their destruction at such great cost was questionable. Clearly the number of missions needed to destroy small targets could be reduced by using precision weapons and aircraft precision-delivery systems. Other than attacks on enemy 'troops-in-contact', results were hard to determine with any accuracy. Killed by air (KBA) became the usual bomb damage assessment (BDA) and a measure of success against the enemy.

Laser Guidance

No long-range missile was used in Vietnam, though the US forces had many. Such sophisticated weapons were judged in Washington to be politically unacceptable. But the Vietnam war did see the first major use of the kind of missile for which the adjective 'smart' was originally coined: the LGB or laser-guided bomb, the widely used Paveway series of weapons. The LGBs were standard bombs (usually the Mk80 series) to which a laser guidance kit was installed. Following release, the laser receiver on the nose then sent commands to the control servos in the kit to 'home' the bomb automatically onto laser energy reflected from the target, illuminated by a friendly 'designating' laser on the ground, a laser in the attacking aircraft or in another friendly aircraft nearby.

The accuracy of the LGB was impressive. Provided the target remained continuously illuminated with a laser beam, the bomb had a high probability of a direct hit. In the early 'Rolling Thunder' bombing campaign, five McDonnell Douglas F-4Es hit the Thanh Hoa bridge multiple times with 2000 lb (907kg) smart bombs on 27 April 1972 and put it out of action; follow-up missions of 14 F-4Es with LGBs damaged the bridge further.

The bridge was attacked again by four A-7Es with Walleye AGM-62 and 2 x Mk84 2000lb bombs, before the bridge was damaged beyond repair, by the Mk84 bombs. 871 missions were flown against the Thanh Hoa railway bridge with the loss of 11 aircraft, without significant effect until smart weapons were employed. However, although the *coup de grâce* was delivered by 'dumb bombs', no aircraft were lost following the LGB attacks.

Similarly, the Paul Doumer bridge was heavily damaged by F-105s in December 1967; however, traffic across the Red River was soon restored. Smart weapons had their debut in Vietnam. When an F-111 pilot at Tahkli AB was asked: "Do you have smart bombs?", the answer was reputed to have been: "No, but we've got smart airplanes." The F-111 was the only aircraft in the Vietnam war that did not employ/deliver smart ordnance—or need them.

Other Bomb Types

There were many other types of air delivered ordnance used in Vietnam. The USAF employed many improved types of high explosive (HE) bombs, eg, 250lb, 500lb and 750lb, (115kg, 227kg, 340kg), cluster bomb units (CBU), rockets of many types and napalm. A WWII bomb, the 10,000lb (4545kg) M-121 was used, with air burst fusing, to create instant helicopter landing zones in the dense jungle—these were dropped by C-130s or helicopters.

B-52 aircraft were modified to carry 108 x M-117 750lb (340kg) GP bombs: 84 internal and 24 on wing bomb racks. The aircraft were employed on *Arc Light* sorties, legendary for those who have witnessed the results of these engagements, in both South and North Vietnam. Sorties were primarily carpet bombing and little weapons effort planning went into any of these operations, other than to saturate the drop zone with bombs.

WW II bombs ready for loading on Canberra aircraft, Phan Rang, 1967. *Photo: Lance Halvorson*

RAAF Canberras of No 2 Squadron released bombs of varying capacities, 500lb (227kg) and 1000lb (455kg) GP medium capacity of World War II stocks and 1000lb high speed armour piercing (HAHS) bombs of the Cold War era. No weapons effort planning was involved, other than "...expend all the stocks of bombs." It took about 10 months to deplete the 'war stocks', after which the RAAF employed the USAF M-117 750lb (340kg) MC bomb.

The US Air Force installed MSQ-77 Combat Skyspot Systems (CSS), ground-directed bombing systems, to direct aircraft to release bombs on targets that the crews could not identify visually. The system employed existing SAC mobile ground radar units used for radar bomb scoring (RBS) and permitted great flexibility in that target selection would no longer depended on a nearby, prominent geographical feature; aircraft had only to be within radar range of the MSQ-77 antenna. After initial radio contact, a controller would give the pilot headings to steer until bomb release countdown, when the navigator would release the bombs. The aircraft were tasked by HQ 7th Air Force, via Base Operations Centres; target co-ordinates were determined by Mission Planning in Saigon.

After five months on CSS operations, 2SQN flew mostly day visual sorties although they did fly some '*Night Owl*' sorties, releasing visually under flare drops by C-119 flare ships.

Bombing accuracies on the daylight sorties were determined by vertical photography. Bomb damage assessment (BDA) was difficult to assess, although ground photos and FAC assessments gave some indication by the killed-by-air (KBA) count, a highly unreliable analysis. Most of the targets were non-structural, ie, 'soft-skinned'.

AC-47, AC-119 and AC-130 'gunships' were examples of using aircraft not designed for the tasks they were assigned. However, the employment of high rate of fire mini-guns and later 20mm cannon, together with the long loiter times, was devastating to the enemy. Matching the weapons and the delivery platforms to the target was achieved with great success in these operations.

Other successful uses of the right aircraft for putting weapons on the targets were the A-1E Skyraiders, the B-26B, the B-57, the venerable F-4 Phantoms and in Linebacker II, the F-111. The use of the B-52 bombers was highly successful; in June 1966, following their first year of action in SE Asia, they were employed on a daily basis in operations in both the north and southern areas. The B-52 in Vietnam and post-war is the subject of an article in a separate *Wings* issue.

The 1980s

When procured, the F-111C had a PGM capability, albeit with Vietnam era weapons, eg, AGM45 Shrike anti-radiation missile (ARM), AGM65 Maverick and AGM62 Walleye missiles. As the navigation and bombing system (NBS) was integrated, navigation and bombing accuracy was dependent on an accurate inertial navigation platform and the bombing system. While very accurate for an all-weather system, the F-111's CEP was still inadequate to damage likely heavy structured pin-point targets. Suitable for wide area targets, eg, dispersed aircraft and 'soft skinned' targets in general, precision guide munitions were the obvious answer.

The concept of operations for the F-111 in the early years was single aircraft, night TFR attack against a single high-value target. After experience was gained, multiple co-ordinated strikes against land and maritime targets were introduced, with aircraft 30-60 seconds separation over the target. An additional capability, the F-111C NBS had an offset bombing mode, which allowed crews to identify, on radar, prominent feature/s, but release bombs on the target. With the acquisition of a portable radar transponder beacon in the late 1970s, Special Forces could operate the beacon at their location which the attacking aircraft could acquire on the aircraft radar/NBS. The Special Forces provided the crews with the target co-ordinates, and the F-111 crew 'aimed' on the beacon, but bombed the target.

As with all strike aircraft like the F-111 that used a navigation and weapons system, the altitude correction, or 'd' value, ('alticor' system in the Canberra) was essential to provide the true altitude to the system, critical in achieving bombing accuracy. In the F-111, an altitude calibration, at a geographic location of known elevation (AMSL), was part of the weapons checks before running into the target. PGMs removed this pre-target requirement; however, in the current Digital Point Precision Data Base (DPPDB or 'D-Point') system in use in the USAF and RAAF, target elevation, or the Z measurement in the co-ordinate system, remains a critical factor.

Precision Guided Munitions (PGM)

The integration of Pave Tack, a forward looking infra-red acquisition and laser designation system, and AGM 84 Harpoon anti-shipping missile and the GBU-15, a 2000lb Mk84 glide bomb guided by data link, was undoubtedly the start of the modern PGM capabilities in the F-111 aircraft in the RAAF.

A F-111C with Pave Tack and LGBs. Near Amberley, 1987.
Photo: RAAF

The advanced weapons systems were often implemented without the weapons for which they were designed—the dreaded 'fitted for but not with'. If ever there were ill-conceived decisions, they were it. How Defence Department could contemplate acquiring weapons systems of advanced technologies without the weapons to provide the capabilities

for which they were designed, is beyond comprehension and logic. However, the lack of capabilities was gradually provided in the 1980s, 1990s and 2000s and common sense began to prevail.

Precision weapon delivery has had a great impact in the air-to-ground domain. As the accuracy of bomb delivery increased, the number of bombs required 'on target' has reduced as the probability of hitting the target increased. Achieving a direct hit, or a near miss, the target could often be destroyed. However, an important fact is that the measurement of accuracy, CEP, is a statistic and is not representative of every bomb release—unguided bombs, ie, 'dumb bombs' do hit the target, and when they do, the target is often totally destroyed.

Technological development has emphasised both precise aim with precision guidance and control of the weapon itself. Precision by accurate aiming is an important aspect of air power, but history shows that the best combination is, not surprisingly, the trained operator on a smart platform with smart sensors and delivering a smart weapon.

Aircraft, Guided Missiles and Air Strike: The use of aircraft and guided missiles by air, land or sea forces against military objectives is clearly legal under international law, and has been confirmed by the extensive practice of states in wars during the 20th Century. This is despite attempts by states, at various diplomatic conferences, to outlaw the use of aircraft; the most recent being during negotiation of the Additional Protocols, between 1974 and 1977. The use of aircraft (like any weapon system) in armed conflict today, is subject to specific regulation, much of it emanating from Additional Protocol.[8]

Lance Halvorson

Part 2 of Weapons Effort Planning will consider PGMs and the platforms for delivering the weapons on the target.

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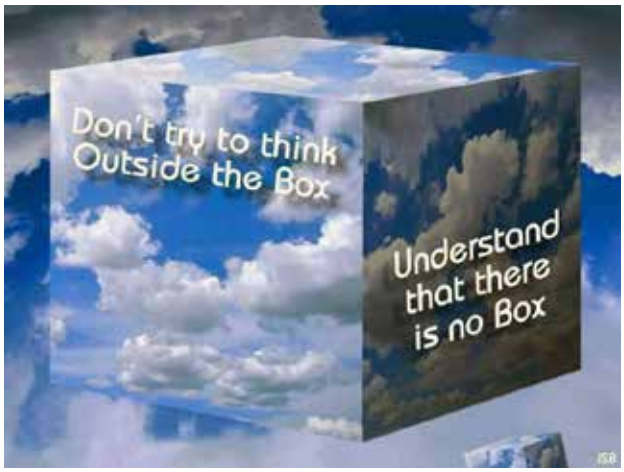

[8] AAP1003 RAAF 'Operations Law for RAAF Commanders' APDC 2004

Aquila Engineering to Provide In-Country Engineering Support of Pilatus PC-21

Aquila Engineering of Sale in Victoria and Pilatus Aircraft Ltd of Switzerland have signed a contract for Aquila to provide In-Country Engineering and Logistics Support for the new Royal Australian Air Force (RAAF) PC-21 aircraft fleet, as part of the AIR 5428 Pilot Training System, primed by Lockheed Martin Australia. This contract will mean the continuation of, and commitment to, in-country engineering and logistics support of the ADF pilot training program.

Jenny Marshall, Aquila Engineering General Manager, said "The company is very excited to be entering into this new contract with Pilatus. Pilatus and Aquila first partnered in 2004 to provide in-country engineering and logistics support to the current RAAF pilot training platform. The initiative to set-up the in-country technical capability has been very successful in supporting the customer's needs; particularly with Aquila being based in Sale, Victoria and Perth, Western Australia being the two primary RAAF pilot training bases. This same system will now support the PC-21 platform, which has the same customer, roles and operating bases and will therefore benefit from a proven and responsive engineering capability to support the new performance based contract through an SME entity with its head-office located in rural Victoria."

Rob Oliver, Pilatus' Director Defence Australia, said, "We are looking forward to this renewed long-term partnership and are pleased to continue our relationship with Aquila Engineering; an in-country arrangement for the engineering support further increases our commitment to Australian industry capability supporting the PC-21."

The Operations Manager for Aquila Engineering, Ian Alt, said "Pilatus and Aquila are pro-actively working with the customer to pre-position for the introduction of the new Defence Regulations regarding engineering support of the PC/9-A platform. This acquired knowledge and benefit will flow directly onto the new PC-21 platform. Additionally, Aquila is in the final stages of obtaining CASR Sub-Part 21 J Approved Design Organisation Certification, being only the third company in Australia to achieve this status. This further shows the commitment by an Australian SME to provide the best service possible going forward on the PC-21 aircraft."

The contract for the PC-21 engineering and logistics support formally commenced on 1 July 2017 and will operate concurrently with the PC-9/A support capability through to the 29 year old fleet's withdrawal from service in 2019. This ensures Pilatus continues the best possible outcomes for the Royal Australian Air Force fleet of PC-9/A aircraft transitioning to the new PC-21 aircraft.

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P-8A Poseidon

Under the 2016 Defence White Paper, Project Air 7000 plans to acquire eight P-8A Poseidon maritime surveillance and response aircraft; the first was delivered to the RAAF in November 2016, with all eight aircraft fully operational by 2021. Seven additional aircraft are planned in the 2020s bringing the total to 15 aircraft .

The P-8 aircraft have a range of over 7,500 kilometres and can be refuelled in the air by the RAAF KC-30A air-to-air refuelling aircraft, extending their range significantly. In addition to being able to undertake sophisticated surveillance operations at great distances, the P-8A can undertake offensive operations against submarines and ships, as well as supporting search and rescue operations. The last AP-3C was scheduled to be retired in 2018 after providing 30 years of almost continuous service.

A RAAF Boeing P-8A Poseidon landing at RAAF Base Darwin, March 2017. *Photo: ABIS Kayla Hayes*

The RAAF's first P-8A Poseidon in formation with a current AP-3C Orion and past No 11 Squadron aircraft, the Lockheed Neptune and Catalina. *Photo: CPL Craig Barrett*

To complement the surveillance capabilities of the Poseidon, the Government plans to acquire seven high altitude MQ-4C Triton unmanned aircraft from the early 2020s as part of the Intelligence, Surveillance and Reconnaissance capability. The Triton is an unarmed, long-range, remotely piloted aircraft that will operate in Australia's maritime area of interest to provide significant intelligence, surveillance and reconnaissance capabilities.

No 11 Squadron recently operated the P-8A Poseidon out of RAAF Base Darwin and RAAF Base Learmonth in March 2017 to conduct operational test and evaluation activities in the lead up to Initial Operating Capability (IOC). Operating from these two forward bases is an important part of ensuring the P-8A Poseidon can effectively sustain operations to the northern and north-western approaches of Australia.

11SQN FLGOFF Damien Greaves in the cockpit of a P-8A Poseidon, Darwin MAR17. *Photo: ABIS Kayla Hayes*

11SQN LAC Bradley Pascall refuels the P-8A Poseidon at RAAF Base Darwin, MAR17. *Photo: ABIS Kayla Hayes*

Following the deployment of the Poseidon to RAAF Darwin and RAAF Learmonth bases, the Boeing-built Poseidon deployed to Malaysia in support of the operational test and evaluation of the P-8A as it is introduced to service. The deployment was a key milestone to declaring IOC for the aircraft and its system over the next 12 months. The RMAF Butterworth deployment is the first overseas deployment of the P-8A since the first aircraft arrived in November 2016.

The Poseidon's predecessor, the AP 3C Orion, has operated from RMAF Butterworth for a number of decades as part of the bilateral Malaysian and Australian Operation Gateway, which is part of Australia's contribution to the preservation of regional security and stability in south-east Asia. The

11SQN QFI FLTLT Josh Brown carrying out a pre-flight inspection of the P-8A Poseidon, Darwin MAR17
Photo: ABIS Kayla Hayes

operation provides maritime surveillance patrols in the north Indian Ocean and South China Sea.

The first P-8A Poseidon, A47-001 in formation with a current AP-3C Orion near RAAF Base Edinburgh, SA. NOV 16.
Photo: CPL Craig Barrett.

Commander of Surveillance and Response Group AIRCDRE Craig Heap said the successful first overseas deployment of the Poseidon was a significant step towards realising the full capability of the P-8A in an Australian context. "Maritime surveillance in this part of the world has been a core mission of Number 92 Wing for decades, with the Poseidon's capabilities well suited to continue this role," he said. "The aircraft, the aircrew who operate it and the maintenance and support teams that keep the jet flying, have all performed extremely well during the deployment."

The Poseidon flew missions in the northern Indian Ocean and South China Sea and refined operations in these environments. During each mission the aircraft conducted routine maritime surveillance on merchant and naval shipping along some of the world's busiest shipping routes.

"With this overseas deployment complete, the next step from June through to July will be the completion of the operational evaluation of the Poseidon's Search and Rescue capability. This will be another important step as we move toward declaring initial operational capability of the P-8A system," AIRCDRE Heap said.

A development possible for future implementation for Increment Two is a stand-off torpedo capability in the form of the US Navy's High Altitude Anti Submarine Weapons Concept (HAAWC), for which Lockheed Martin and Raytheon are respectively developing their LongShot and Fish Hawk concepts. HAAWC is a wing kit that is designed to strap on to the Mk 54 torpedo and allow it to be launched from well outside a submarine or surface vessel's defensive armament,

Project Air 7000 provides upgrades to facilities, infrastructure and airfields at the 'home base' of RAAF Base Edinburgh (SA) and to forward bases at RAAF Bases Darwin (NT), Pearce, (WA) and Townsville (QLD). In addition, works are planned to refurbish the existing Torpedo Maintenance Facility and construct new Explosive Ordnance storage at HMAS Stirling, WA.

RAAF Base Edinburgh - 92WG Facilities

As an example, works to be carried out at RAAF Base Pearce are:

- **Runway extension.** The proposed runway extension will extend the runway to 2960 metres (9757ft) allowing the P-8A Poseidon to take off at maximum-all-up-weight at ambient temperature up to 34°C. Both runway thresholds will require strengthening as the current strength of the pavements will not endure the loading of P-8A Poseidon aircraft.
- **Parking apron.** Construction of a new apron abutting the existing light duty apron is proposed in order to accommodate three P-8A Poseidon aircraft.
- **Aircraft rinse facility.** The existing aircraft rinse facility is proposed to be upgraded to allow P-8A Poseidon aircraft to provide regular rinsing of the aircraft to reduce the build up of airborne contaminants arising from low flying operations, especially salt laden contaminants.
- **Redevelopment of the existing Ordnance Loading Apron (OLA).** The existing maritime OLA does not have the strength to accommodate the P-8A Poseidon. The OLA is proposed to be upgraded to a fully rigid pavement to support P-8A Poseidon aircraft operations.

Courtesy P-8A Poseidon Project Office, RAAF

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Soft Power

Soft power—getting others to want the outcomes that you want, to frame the issues, to set the agenda—co-opts people rather than coerces them. The power to attract has its roots in thousands of years of human experience. Skillful leaders have always understood that attractiveness stems from credibility and legitimacy. Soft power has always been a key element of leadership. Power has never flowed solely from the barrel of a gun; even the most brutal dictators have relied on attraction as well as fear.[1]

Portland, a strategic consultancy company in USA, recently published The Soft Power 30, a global ranking of Soft Power 2017. The 2017 Index is the third published by the company since 2015 and is a clear and accurate measurement of a nation's soft power resources—the aim of The Soft Power 30 index, the world's most comprehensive comparative assessment of global soft power. It combines objective data and international polling to build what Professor Nye has described as "the clearest picture of global soft power to date." The objective data covers government, digital, culture, enterprise, engagement and education from a number of contributors in government, universities and study centres in USA, UK and Europe.

The top five countries are, in ranked order, France, UK, USA, Germany and Canada. The next ranked five are Japan, Switzerland, Australia, Sweden and Netherlands. Predictably, China and Russia are down in the list, at 25 and 26 respectively. Australia has slipped from sixth ranking in 2015 and 2016 to eighth.

There are a number of reasons given for the rise of France and the slide of USA— mainly the diplomacy of President Macron and the presidential style of President Donald Trump. However, the US decline is more from sentiment than fact.

The Report states, "Australia has fallen to eighth position despite an improved score. This movement reflects the need for Australia (and indeed New Zealand which has also fallen two places) to avoid complacency in its soft power assets. Australia saw its overall score in the international polling component of the index slip ever so slightly. Despite its overall increased score, the improved performances from Japan and Switzerland proved enough to displace Australia's two year run in holding down the 6th spot".[2]

Australia scores in the first 10 countries on Culture, Education and Enterprise, but not in the first 10 on Digital, Government and Engagement. China, South Korea, Japan and Singapore figure in all categories, except Government. No reasons are given for the scores on Australia, but recent comments from the 'offenderati' concluded that it was all due to the current government policies and even to the US President.

Some of the other 'active groups' in Australia would probably draw similar conclusions on Australia.

Importantly, the scores, but not the opinions, are derived from the views of informed people who have served in government, diplomatic service, consultants in global strategy/foreign affairs and academics and are measured in a global context, some probably left leaning. Significantly, the digital world involving the internet, social networks and the use of smart phones are major 'players' in this context, and the views of the younger users who use these media will impact the scores in future soft power assessments.

Lance Halvorson

[1] Executive Summary 'The Soft Power 30', Portland 2017. A copy of the report is available at http://softpower30.portland-communications.com/wp-content/uploads/2017/07/The-Soft-Power-30-Report-2017-Web-1.pdf

[2] 'The Soft Power 30', Portland 2017. A copy of the report is available at http://softpower30.portland-communications.com/wp-content/uploads/2017/07/The-Soft-Power-30-Report-2017-Web-1.pdf

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New Multi-purpose Jacket

The multi-purpose 'soft shell' – style jacket has arrived and will be issued to all Air Force personnel over the period June 2017 to December 2018.

The Chief of Air Force recognised the need for an alternate wanted a jacket that was versatile, functional and could be integrated with current service garments, while presenting Air Force as a professional force.

Warrant Officer of the Air Force Robert Swanwick is all smiles as he holds up the new Air Force multi-purpose 'soft shell' jacket, as Warrant Officer of the Navy Gary Wright holds up Navy's equivalent. *Photo: CPL Bill Solomou RAAF*

Due to the close working relationship with the Warrant Officer of the Navy, and after observing first-hand the benefit of the Navy cold weather jacket variant, the Warrant Officer of the Air Force (WOFF-AF) recognised an opportunity was at hand. After much discussion and co-ordination with the Clothing Systems Program Office , Air Force conducted a wearer trial of the Navy cold weather jacket variant. The intent was to obtain Air Force member's perspectives on design features; and comfort and utility, while undertaking normal daily duties. The result is the multi-purpose jacket tailored to suit the Air Force working environment in moderate to cold climates.

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PATHFINDER
AIR POWER DEVELOPMENT CENTRE BULLETIN Issue 285, April 2017
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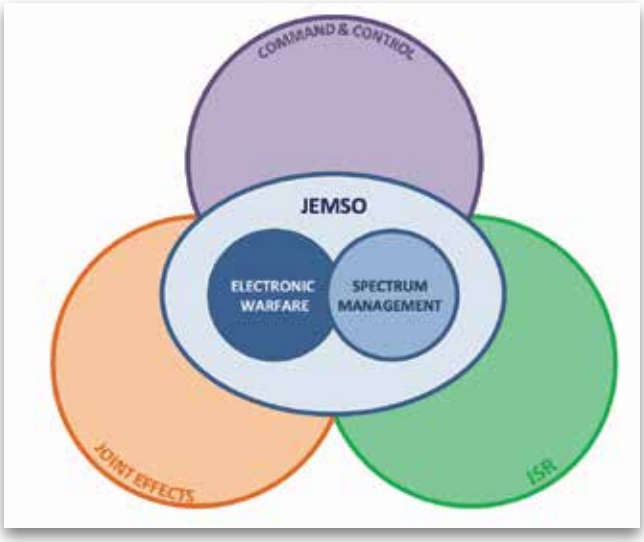
INTEGRATING AIRBORNE ELECTRONIC ATTACK INTO THE AUSTRALIAN DEFENCE FORCE

Future conflicts will not be won simply by using the EM spectrum and cyberspace; they will be won within the EM spectrum and cyberspace. This will require changes to our operating concepts, military systems and, most importantly, a new way of thinking.

Admiral Jonathan W Greenert,
Chief of US Naval Operations, 2011-2015.

At 1332 Pacific Standard Time on 24 January 2017, two EA-18G Growlers of No 6 Squadron RAAF roared into the air from Naval Air Station Whidbey Island. These first flights marked the Growler Airborne Electronic Attack (AEA) transition from acquisition to in-service. The RAAF has become the only operator of Growler outside of the United States Navy, the result of a dedicated, collaborative effort from both sides of the Pacific. The exceptional level of integration between the two services was showcased during the Australian International Air Show in March 2017 with the US Commander Electronic Attack Wing Pacific flying on board one of the RAAF Growlers.

The initial cadre of Australian aircrew commenced training with the US Navy in 2013. They flew in various operational and instructional roles embedded within US Navy squadrons to maximise experience. The aircrew transitioned back from this secondment at the same time as No 6 Squadron's switch from being a Super Hornet squadron to a Growler squadron in December 2016. The squadron, however, will continue to operate from Whidbey Island until June 2017. The US basing is required to complete acceptance of all twelve Growlers and to conduct initial operational test and evaluation. The test activities will conclude with a deployment to Naval Air Weapons Station China Lake for advanced electronic warfare and weapons testing. Once back in Australia, the focus will be on integrating the Growler capability into Air Force and the wider Defence. This level of electronic attack and electronic warfare capability will, as Admiral Greenert observed, be a transformational activity to the way the ADF conducts training and operations.



Joint Electromagnetic Spectrum Operations

From purely a platform perspective, Growler is ready to be unleashed. The aircraft is 90 per cent common with the F/A-18F model, demanding expansion, but not wholesale change to support services. Despite the airframe similarities, the unique electronic attack role provides several challenges for Air Force. The Growler is not a fighter aircraft and although the aircrew require similar core skills, No 6 Squadron will not operate in any way like an existing fighter unit. Instead, concurrent, small deployments in support of the joint force will be the norm. Growler is also not a traditional intelligence, surveillance and reconnaissance (ISR) platform; it delivers the capability to influence the electromagnetic spectrum rather than just monitor it. Successfully integrating this capability into the ADF will be the challenge for declaring Initial Operating Capability (IOC) in July 2018.

Some elements of the capability will require significant change and introduction of the support base. Training Growler aircrew for current and future threats is a case in point. The electronic attack project includes resources to introduce force-level electronic warfare training at Delamere Air Weapons Range This will be delivered in the form of the Mobile Threat Training Emitter System; emitters designed to provide electronic warfare training for other ADF aircraft as well as targets for Growler. The

A No 6 Squadron EA-18G Growler on transit to the Australian International Air Show.

infrastructure, security procedures and information flow at Delamere is shaping future RAAF range management. Delamere is providing the 'live' starting point for the Air Warfare Centre's endeavour to deliver a robust live, virtual and constructive (LVC) training environment. The training complexity in high-threat scenarios and the integrated nature of mission sets steer Growler toward this future of this level of simulation and training. Additionally, a distributed mission training system is required to ensure the electronic attack capability becomes a normal part of exercises and operations. It is to ensure Australian forces achieve their objectives in the congested and increasingly contested electromagnetic spectrum.

Like the F-35, the EA-18G is the sharp end of allied intelligence and operational data and analysis. It fuses this intelligence with data from on-board sensors and other capabilities in order to provide enhanced understanding of the battlespace, which in turn, enhances the capabilities of the joint force. The wider Australian intelligence community is key to the production and management of this intelligence data. Significant success has already been achieved through the commitment and support between Australian agencies and the US Navy in particular, but a lot of work remains for Defence and industry to develop the systems and architecture required to counter complex future threats. The Growler project is already contributing a number of personnel to intelligence agencies in order to drive production of the data that is required.

Growler is the first 'cab off the rank' of several major systems coming for the ADF that will operate in and affect the electromagnetic spectrum. EA-18G is therefore both the champion and test case for groundbreaking reform across the operational level of command. Growler is a true joint force capability, with the ability to both support and affect activities across the spectrum of operations. Growler will require an unprecedented level of integration into operational planning and execution across the joint force. Integration will require the use of innovative new planning and execution tools to support revised operational processes. Industry will have a significant role to play in helping to define and develop these integration tools. The Growler project is at the vanguard of significant change to define new requirements, mission planning tools and processes, particularly those of joint electromagnetic spectrum operations. This year the Growler project is providing establishment to the Air Operations Centre in order to create and develop the Air Force Electromagnetic Spectrum Operations Cell; force-level electronic warfare is about to be realised as a new capability.

Growler is a catalyst for change in force training and electronic warfare command and control throughout the ADF. The transformation will extend well into the next decade as the airborne electronic attack capability matures and fighting in the electromagnetic spectrum becomes part and parcel of normal operations. The challenge for Air Force will be to ensure that when Growler strikes, it will do so as a controlled, coordinated and precise effect in the battlespace.

Key Points

- *Growler is now part of the RAAF inventory with IOC scheduled for July 2018.*
- *As the only operator of the EA-18G outside of the US Navy, Australia is now able to deliver a force-level EW capability to influence the electromagnetic spectrum.*
- *The Growler capability requires change throughout Defence in training and EW command and control systems.*

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Reprinted courtesy of *Air Power Development Centre*

"Ameri-Straya": The Story of the People Behind the U.S.-Australian Partnership In Electronic Warfare

By CDR Michael Lisa, USN | January 5, 2017

Delivering the EA-18G to the Royal Australian Air Force (RAAF) will be a highly celebrated event, and rightfully so. This December, RAAF Six Squadron began their transition from the F/A-18F to the EA-18G. In January of 2017, the RAAF will take custody of their EA-18Gs and begin flight operations at Naval Air Station Whidbey Island. In February of 2017, the RAAF EA-18Gs will fly-in to the Avalon Air Show, Melbourne Australia – a capstone event for the U.S.-Australian team orchestrating the foreign military sale (FMS). Unfortunately, media announcements and fanfare may not adequately capture or commemorate the storied relationships, close partnership and hard work of the team that made this epic milestone possible.

The Electronic Warfare (EW) landscape has been one of the most heavily-guarded domains of the U.S. military portfolio. The marking "NOFORN" was the default classification for all EW information, indicating that EW information was not be shared with any foreigner. Growing up in this environment, it seemed inconceivable we would one day execute the EW mission side-by-side with any partner nation.

That changed in 2013 when the RAAF redefined their EW posture and requested twelve brand-new EA-18Gs, two electronic warfare ranges, a training contract for EW aircrew, intelligence officers, and maintenance professionals. This pivot exponentially expanded the RAAF's ability to sustain an EW infrastructure and offensive capability for years to come. The RAAF and wider Australian Defense organizations designed the EW material acquisition plan impeccably. The plan accelerated the EA-18G's "capability realization" through an academically disciplined architecture of networked FMS cases. The RAAF EW portfolio encompassed all elements to support the EA-18G as a "platform," or in other words "EW equipment."

A straightforward move on paper, but EW tacticians will understand that EW requires a vast depth of knowledge beyond the equipment. To quip, if EW had a Facebook status it would read: "*it's complicated.*" There is a *"je ne se sais quoi"* ingredient to EW. As the RAAF realized, this ingredient lies within the people and the know-how. Traditional FMS transactional activity could not capture the *"je ne sais quoi"* ingredient, it required compressing seven decades of EW "corporate knowledge" into 24 months. If anyone could make that leap, it's the RAAF.

Aligning EW methodologies is an incredible asset to both Australia and the U.S. Aligning tactical know-how and EW methodology is critical to our shared interests, and it was imperative that Australia gain this knowledge. EW is unlike kinetic air-to-ground payloads that simply require target coordinates, or an air-to-air missile that needs an appropriate target. It requires our sensors to call the signals the exact same thing, employ the exact same waveforms/payloads, and deliver at the exact same time with exact positioning. If we do not put the "right" payloads on the "right" target, we undo each other's effects, degrade blue systems (called electromagnetic interference – EMI), or completely miss the target. Simply put, having the same equipment is not enough. Mission effectiveness requires that we think alike, train alike, and speak the same EW language.

To achieve total alignment and close the "corporate knowledge gap," the U.S. and RAAF established a personnel exchange program (PEP), to embed RAAF pilots and aircrew in operational U.S. Navy Expeditionary EA-18G squadrons. In July of 2013, only three months after signing the FMS for twelve EA-18Gs, we ambitiously planned to start training aircrew in October of 2013 at the Fleet Replacement Squadron (FRS), with RAAF aircrew serving two year stints in deployable units by early 2014. This aggressive timeline represented the hardest path to traverse in our fledgling EW partnership.

Integrating RAAF aircrew into the FRS and then into operational VAQ units meant moving mountains. Mountains made from decades of cultural biases resisting the precise things we were trying to accomplish. This meant assembling a team and working through painstaking details, dubbed "stubby pencil work" by one of the most vital and experienced active duty EW experts leading our team.

Cockpit view of an Australian EA-18G Growler off the Coast of California, August, 2016. Courtesy FLTLT Todd "Woody" Woodford

The short story is that we did it. A cross-functional team including professionals from the Naval service and other wider DoD organizations changed the tactical EW realm from "NOFORN" to "YESFORN." Men and women worked long hours, gave up "flex-Fridays", curtailed summer leave plans, even skipped convalescent leave and poured their hearts and souls into the mission. Senior Navy, U.S. DoD, and RAAF officials took risks, trusted their teams and approved the necessary things to ensure the partnership would be durable. The team believed in the mission and got it done.

The fruits of the combined Navy and RAAF endeavor are nothing short of epic. During their two years of service, RAAF aircrew did more than simply learn EW tradecraft and "tick the box," or "tick" as the Aussies would say. Instead, RAAF officers excelled at nearly every squadron leadership position including, but not limited to: acting Executive Officer, Operations Officer, Training Officer, Division Officer(s), and Standardization Officer. RAAF officers served in every critical billet in an EA-18G squadron and did so with the utmost professionalism and dedication.

This experience and its success continues to be all about the people. It is about the dedication to establish the partnership, the camaraderie forged on deployments, the life-long

friendships and bonds that will never be forgotten. There should be little doubt that the capital effort put forth by RAAF officers in U.S. Navy squadrons will persist and carry them to commanding heights within their organizations, just as they "raised the bar" of excellence within ours.

These conspicuous achievements send a clear message that "this thing isn't over, it's just warming up." The way forward includes Growlers in Australia, an indefinite U.S. Navy-RAAF officer exchange beginning in 2017, continued RAAF training at FRS Squadron 129 (the cradle of U.S. Navy EW), and select RAAF aircrew attendance at the EA-18G graduate course HAVOC. The combination of these institutional and close interpersonal relationships will forever align and bond our countries in the EW domain, a massive "tick."

Without a doubt, the celebration and congratulations for the incredible hard work of the many people in the EA-18G RAAF program is well deserved and symbolized by the Avalon fly-in. This piece was nothing more than a reflection on the incredible depth of the successes forged by people. As our unassuming RAAF brothers and sisters would say in celebrating years of hard work, "cheers mate, well done."

USN Institute Blog

Upgrades to USAF GPS Equipment

As many know, GPS is an essential system in today's military, not only for integration in aircraft weapons systems and precision guided munitions, but in all other aircraft, networks and everyday military systems. Its use in the US and RAAF Digital Point Precision Data Base (D-Point) is essential for operations planning and execution. Both military and civil air use GPS for navigation. Almost all activities in modern usage today rely on GPS in some way, even if just for the time of day.

With its universal use, particularly in the military, accuracy is of great importance. Accuracy and precision in weapons systems are critical to success in achieving weapons on the right target and minimising collateral damage. Of equal importance is the reliability and availability of the system. The upgrades to GPS III are designed to provide the capabilities that the US Government considers essential for secure operations that use GPS.

Digital GPS Anti-jam Receiver

CEDAR RAPIDS, Iowa (Aug. 24, 2017) – Rockwell Collins recently delivered the latest generation of Digital GPS Anti-Jam Receiver (DIGAR) airborne anti-jam and anti-spoofing technology to the U.S. Air Force Special Operations Command (AFSOC). The enhanced solution provides unsurpassed airborne anti-jam capability with over 10,000 times improved jamming resistance over the previous model.

"From advanced fifth-generation aircraft to ground and maritime applications, this receiver is the most reliable military-grade GPS solution available due to its unmatched anti-jam protection levels," said Troy Brunk, vice president and general manager, Communication, Navigation & Electronic Warfare Systems for Rockwell Collins. "This delivery demonstrates a major advancement in military technology and ensures that warfighters will have critical positioning, navigation and timing information when it's needed most."

The integration and testing of the new equipment is being worked through the Program Executive Office Fixed Wing (PEO-FW) at U.S. Special Operations Command (USSOCOM) and represents the highest level of GPS assurance for airborne markets. With several installations planned for both forward fit and retrofit applications, DIGAR is built on an open systems architecture that enables growth capabilities across a variety of aircraft platforms that include rotary wing, fixed wing fighter, bomber, transport aircraft and small to large unmanned aerial systems (UAS).

Rockwell Collins has delivered over 100,000 anti-jam systems across weapons, aircraft and soldier systems over the last 10 years. With a wealth of Air Force Research Laboratory (AFRL) simulations and live sky tests, DIGAR assures a high Technology Readiness Level (TRL) product with a flexible, programmable implementation that provides a low risk approach to mitigating the evolving jamming landscape.

GPS M-Code receiver U.S. Air Force Space and Missile Systems Center

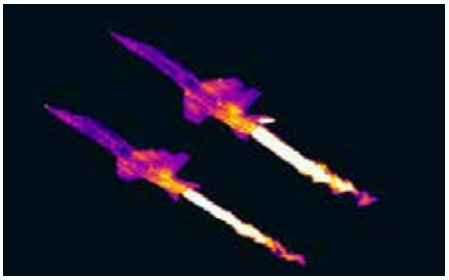
Last month, Rockwell Collins delivered the last of a 770 Military-Code (M-Code) Global Positioning System (GPS) receiver order to the U.S. Air Force Space and Missile Systems Center (USAF SMC). Committed to the Military GPS User Equipment (MGUE) program, the M-Code receiver operates using a more powerful signal, resistant to cyber threats.

"From advanced fifth-generation aircraft to ground and maritime applications, this technology meets the warfighters' needs for reliable and secure GPS navigation for increased situational awareness," said Troy Brunk, vice president and general manager, Communication, Navigation & Electronic Warfare Systems for Rockwell Collins. "This delivery demonstrates a major advancement in military technology."

M-Code not only enhances traditional GPS for military use, but coexists with existing signals without interfering with current or future civilian or military user equipment. It is also designed to be autonomous so users can calculate their positions solely using the M-Code signal compared to existing signals where more than one signal code is required. M-Code receivers can be applied to new and retrofitted platforms.

Rockwell Collins began work on this MGUE contract in 2012. Created by USAF SMC, the program will enhance GPS capabilities for the warfighter where current signals may be unavailable. As part of the contract, the company developed, delivered and will aid in the transition to M-Code receivers, a process complemented by Rockwell Collins' decades of experience and expertise in modernization solutions.

Articles courtesy of *Rockwell Collins*



An IR image of USN Blue Angel F/A-18s in a low pass.
Photo: FLIR

E-350 Expedition

Pacific Aerospace in New Zealand are the new manufacturers of the E-350 Expedition. This aircraft is a real complement to the P-750 XSTOL operating out in the bush off semi-prepared air strips and carrying a good payload over a long distance. The E-350 evolved from the Bush Hawk manufactured by an old aircraft company called Found Aircraft in Canada and was built specially for rugged bush flying but lent itself to be pushed into other markets.

The E-350 Expedition is a breakthrough for general aviation in regards to its abilities and versatility. The E-350 offers general aviation pilots a rugged aircraft with superior STOL performance, useful load and versatility.

The construction of the Expedition E350 is meant to be rugged, versatile and practical. The epicenter of this design is its steel frame. The E350 is one of the few aircraft on the market that utilizes a steel frame to protect its occupants.

The E350's rugged landing gear means that it is not limited to taking off and landing on asphalt runways. Built specifically for backcountry operations, the E350 thrives on rough grass and gravel airstrips.

This makes the Expedition very appealing for use out of ranches, farms and other underdeveloped areas. Adding to its versatility is its ability to be equipped with floats. Every Expedition comes standard with float attachment brackets on its steel frame, Y-brace and lifting hard points.

The E350 is built to haul big loads, and its wing, gear and fuselage have been tested to the highest levels of FAA certification.

The Expedition's rear cabin is very versatile. Its three rear seats can be easily removed by turning two pins behind each seat. The rear cabin is accessed through two large doors. That means you can load large items into the rear cabin very easily.

The E350 is by far the most versatile aircraft on the market today. A STOL aircraft, a family cruiser, a heavy hauler, a utility aircraft, an amphibious aircraft, a backcountry aircraft all wrapped into one.

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Seaplane Pilots Association Australia

'SPLASHDOWN 2017' PILOTS CONFERENCE

Are you interested in amphibious flying boats or float planes? If so, then don't miss the biennial SPAA 'SPLASHDOWN' Seaplane Conference at Rathmines NSW from 26 to 28 October 2017.

Delegates from around Australia and overseas will on averge at the former RAAF flying boat base on Lake Macquarie to discuss safety equipment, waterways access requirements and specialised Seaplane operating techniques. It is also a great chance to meet other Seaplane Pilots and enthusiasts. A variety of different amphibious aircraft types will splash-in at the lake and tie down at this historic location for the duration of the conference.

To attend the conference register at: www.seaplanes.org.au

RATHMINES CATALINA FESTIVAL

The Rathmines Catalina Memorial Park Association will old its annual 'Rathmines Catalina Festival' on Sunday 29 October. The Air Force Roulettes will perform a formation aerobatic display at the festival, along with many other interesting aircraft and other attractions. One highlight will be a flying display at Rathmines on Sunday afternoon by the HARS Black Cat PBY-6A known as 'Felix'. This beautifully restored Catalina will lumber up along the coast from the HARS base at Albion Park to remind the Rathmines crowd of WW2 flying boat activity at this vital base.

The festival supports the establishment of an interactive museum and hangar complex at Rathmines to house a restored Catalina aircraft. This will be a fitting tribute to the thousands of RAAF and WRAAF personnel who served at the base, and commemorate the bravery of some 332 Australian Airmen lost in WW2 flying boat operations.

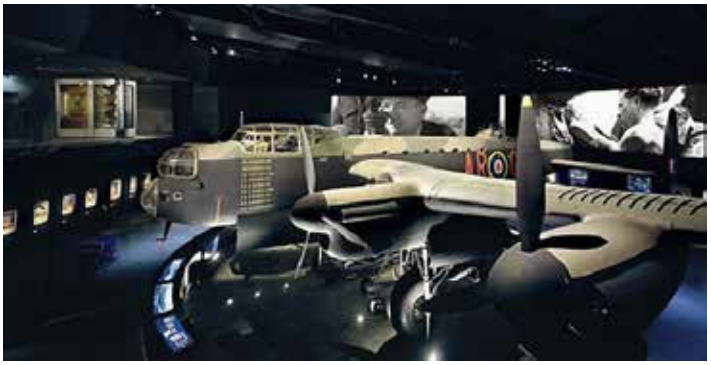
75th Anniversary of RAAF Squadrons in Bomber Command

The veterans of Bomber Command commemorated the 75th Anniversary of the establishment of some of the RAAF Squadrons established under Article XV in RAF Bomber Command at a weekend in Canberra on 3-4 June 2017.

The weekend Commemorations started with a Last Post Ceremony at the Australian War Memorial on Friday 3 June when FLTLT Williams was honoured. A Meet and Greet followed in the Anzac Hall alongside Lancaster G- George, the 460SQN aircraft, the same evening. Former Lancaster pilot Murray Maxton 'checked out' the cockpit of the Lancaster, again, after 70 years absence. The Director of the AWM, Dr Brendan Nelson, accompanied Murray on his aircraft re-familiarisation.

The Commemoration Ceremony was held Sunday morning at the Bomber Command Memorial at the Australian War Memorial. More than 500 veterans and guests gathered for the ceremony, when Dr Nelson gave the excellent key-note address. 34 Bomber Command veterans attended the Commemoration Service.

To commemorate the 75th Anniversary of the commencement of RAAF Squadrons operations with Bomber Command, Dr Nelson had earlier offered a Commemoration Day luncheon in the Anzac Hall, in lieu of the annual lunch usually held. Dr Nelson's address at the lunch received a standing ovation from the veterans and the luncheon guests, following his usual excellent address.



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75th Anniversary of RAAF Squadrons in Bomber Command

Air League Expands in Queensland

The last 18 months has seen the Australian Air League expand in Queensland with the recent addition of several former Royal Australian Air Force members to the Air League's Queensland Group as Officers.

Former RAAF Operations Officer Todd Oakley re-joined the Air League in 2015 after a 12 year break from the organisation. Two months ago, Todd was appointed the Air League's senior officer for Queensland.

"It's a real honour to be chosen to lead the Air League in Queensland" Todd said, "I returned to the League because I was looking to volunteer with an organisation where my experience and contribution was valued, and my previous service taught me that the Air League was that organisation."

Lt.Comr Todd Oakley (left) with Wg.Capt Walter Savell and Comr. Brian Grinter at the Aviation Careers Expo – Brisbane Airport

Todd's Air Force experience includes postings to No's 6 and 23 Squadrons as well as Headquarters Air Command, and states that the experience that he gained in the Air Force is highly valued within the Air League.

"The passion for aviation and the professionalism and dedication that are the hallmarks of Air Force training and service are highly prized commodities in an aviation youth development organisation like the Air League" Todd commented. "It's great to see that these traits and skills developed in the RAAF are now being used to benefit our local communities".

Former Air Force Avionics Technician David Shaw recently returned to the League and is working towards opening an Air League squadron in Townsville. "I did several years as a cadet, and volunteered as an Officer at the local Squadron when I was posted to RAAF Richmond, but had to leave when I was posted away" David said. "I've really missed it, and now that I am out of the RAAF and have settled in Townsville I am really keen to get involved again".

David considered volunteering with other groups, but chose to return to the League instead.

"it's a known quantity to me," David explained, "and besides I think the League's approach is better. In my opinion, the Air League certainly has a broad approach to aviation and youth development in its education program and that means a lot more opportunities."

David and Todd have recently been joined by two other former Air Force members on the Gold Coast who are now in training to re-open the Air Leagues Southport Squadron later this year. With the addition of a new Townsville Squadron and a Sunshine Coast Squadron being opened by Todd, these four former "RAAFies" will have supported the League's expansion within three local Queensland communities in one year.

If you would like to learn more about the Australian Air League in Queensland or are interested in volunteering, please contact Todd Oakley gexc.qld@airleague.com.au or call 1800 502 175.

For further information please contact
Australian Air League
Phone: 1800 502 175 Email: info@airleague.com.au

No 5 Airfield Construction Squadron

Early in 1942, the Air Board realised the urgent need for 'an organisation capable of producing airfields in forward areas at short notice while under threat of air attack'. The various Mobile Works Squadrons (MWS) and Airfield Construction Squadrons (ACS) performed sterling work throughout Australia and the Pacific during WW II.

When the armistice with Japan was announced on 15 August 1945, there were 146 officers and 4,836 airmen on active service in ten Airfield Construction Squadrons, located at Tarakan, Balikpapan, Labuan, Morotai, Bougainville, New Britain and Aitape. By the end of 1945 eight of the ten Airfield Construction Squadrons had disbanded with No 5 ACS serving in Japan repairing airfield facilities at Bofu, Iwakuni and Miho, before disbanding at Iwakuni on 30 June 1949.

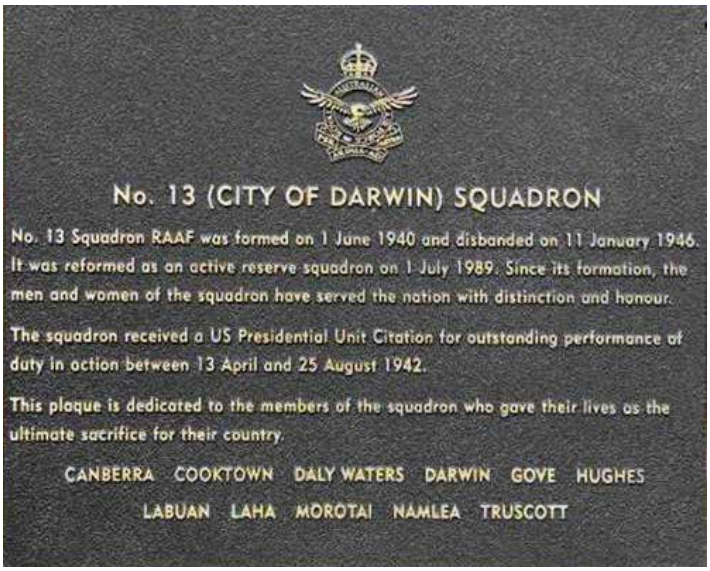
Learmonth Airfield under construction by 5 ACS, 1971. *Photo: RAAF*

5 ACS was re-formed at Bankstown, NSW on 5 August 1951. Over the next 23 years, the squadron worked on projects including Williamtown, Regents Park, Bankstown, Kingswood, the Monte Bello Islands, Woomera Test Range, Darwin, Amberley, East Sale, Tindal, Vung Tau and Phan Rang (Vietnam), Ubon Air Force Base (Thailand) before embarking on the squadron's last major project, the construction of Learmonth.

Initial works there began in March 1970 and Learmonth was officially opened on 15 December 1972. In August 1973 it was announced that the squadron would be disbanded; this occurred at Learmonth on 15 December 1974.

13 Squadron in Timor

After being withdrawn from Laha, Ambon in the Netherlands East Indies in February 1942 to Hughes airstrip in the Northern Territory, No 13 Squadron continued to mount operations against the Japanese. On 10 August 1942, nine Lockheed Hudson aircraft attacked Japanese vessels at Beco, Timor. The attack was launched in response to intelligence provided by Australian commandos based on Timor as part of Sparrow Force. The squadron claimed two Japanese vessels sunk and one damaged.



13 SQN plaque at AWM. *Photo: RAAF*

Two Hudsons also attacked an enemy destroyer and a small motor vessel; a stick of bombs straddled the bow of the destroyer but any damage was insufficient to stop the vessel. The destroyer responded with anti-aircraft fire. All aircraft returned safely to Darwin.

No 13 Squadron was later awarded the United States Presidential Unit Citation (PUC) for its operations over Timor between 13 April - 25 August 1942 and was one of only two RAAF squadrons to have been awarded this honour; the other unit was No 2 Squadron, which also was awarded a PUC for its outstanding performance of duty over the same period.

More on the fighting in Timor in 1942 is here: https://www.awm.gov.au/articles/event/timor

No 24 (Citizen Air Force) Squadron

Following the re-formation of No 24 Squadron as a Citizen Air Force (CAF) unit on 30 April 1951, the first four CAC P-51D Mustang aircraft arrived at RAAF Mallala from Tocumwal, NSW, on 16 July 1951. In addition, two CAC Wirraways arrived from Point Cook on 27 July and two De Havilland Tiger Moths from RAAF Richmond on 1 August, to be used for *ab initio* training. Two additional Mustangs arrived on 16 October 1951.

No 24 Squadron Mustang aircraft at Malalla. *Photo: RAAF*

CAC Winjeels eventually replaced the Tiger Moths on 28 January 1959. Reorganisation of the Citizen Air Force in 1960 changed the role of all CAF Squadrons from flying training to ground training. By November 1959, the Mustangs had been retired leaving only four Winjeels at the squadron. The four Winjeels departed No 24 Squadron on 8 February 1960; on 1 March 1960, No 24 Squadron became No. 24 (City of Adelaide) (Auxiliary) Squadron, and moved from RAAF Mallala to a temporary home at RAAF North Adelaide, before moving to RAAF Base Edinburgh in May 1960. During the Squadron's time at Mallala, CAF personnel conducted 191 weekend camps.

No 37 Squadron Formed at Laverton

No 37 Squadron was raised at Laverton, Victoria, on 15 July 1943 with an establishment of 28 officers and 141 airmen. On 29 July 1943, a Northrop aircraft was allotted to the squadron and the first of the unit's Lodestar aircraft arrived on 23 August 1943, still with United States insignia painted on the wings and fuselage. The RAAF roundel was soon painted on the aircraft.

With the arrival of additional aircraft, building up to a total of 10 aircraft, the unit became fully operational on 11 October 1943. At that time routine courier flights were: three flights to Darwin, via Perth; three flights via Alice Springs; and each week a flight to Maryborough, QLD, via units in NSW. In January 1944, squadron aircraft flew a service twice each weekday to Launceston carrying personnel for the three services, as the normal passenger vessel plying Bass Strait had been requisitioned for naval service.

In mid-1944 the courier run to Maryborough was phased out and was replaced by a courier flight which went up the east coast of Australia, initially to Merauke on the south coast of Dutch New Guinea, and later to the north coast of New Guinea and Dutch New Guinea, as the bases at Wewak, Noemfoor and Hollandia were taken from the Japanese.

37SQN Lodestar, Merauke, Dec 44 *Photo: AWM*

At the beginning of 1945, Douglas Dakota C-47B aircraft replaced the Lodestars and an additional courier run was established in May 1945 from Darwin to Morotai. By June 1946 the establishment of aircraft was down to 12 and an advance party was sent to Schofields, NSW, before the squadron's transfer there on 27 July 1946, to join No 86 Wing.

On 30 September, the Squadron took over the courier service to Japan from No 36 Squadron, providing three services per week. This arrangement continued until February 1948 when the unit took over a courier service from Richmond to Lae and later to Rabaul. In addition, special courier duties were undertaken until the unit was disbanded on 24 February 1948.

The squadron was re-formed again in February 1966 at RAAF Base Richmond and equipped with the C-130E Hercules. It converted to the C-130J model in 1999, and between 2006 and 2012 also operated C-130Hs formerly of No 36 Squadron. No 37 Squadron came under the control of a re-formed No 86 Wing from 1987 until 2010, when it transferred to No 84 Wing.

C-130J Hercules, A97-448, arrives at Douglas Aerospace hangar at Wagga Airport , the last to be repainted in the new camouflage two-tone dark grey scheme, as displayed by the C-130J in the background. *Photo: SGT Michael Formosa*

No 31 Squadron Formed

On 14 August 1942, No 31 Squadron was formed at the Forest Hill base near Wagga Wagga, NSW. After equipping with the Bristol Beaufighter and being brought up to strength, the unit moved to Batchelor in the Northern Territory in October and then to its new home at Coomalie Creek, south of Darwin, in November.

31SQN members, Coomalie Creek, Oct 44. *Photo: AWM*

The squadron's first combat operation took place on 17 November 1942; over the next two years, No 31 Squadron flew ground attack sorties against the Japanese in Timor and the Netherlands East Indies, as well as anti-shipping patrols and convoy protection missions. In November 1944, the squadron deployed to Noemfoor before moving again to Morotai in late December to attack Japanese positions in the Celebes and Halmahera Islands.

Setting up on Tarakan in May 1945, No 31 Squadron carried out strikes in support of the Australian landings in Borneo and Brunei in June and the operations that followed. After the Japanese surrendered on 15 August, the squadron dropped leaflets over the Halmaheras to inform the garrison of those islands that the war was over. No 31 Squadron returned to Australia in December 1945 and disbanded at RAAF Base Williamtown on 6 July 1946.

CAC CA-27 Sabre in RAAF service

Based on the North American F-86F Sabre, the prototype of the extensively modified Sabre first flew on 3 August 1953 and the first production Commonwealth Aircraft Corporation (CAC) CA-27 Sabre on 13 July 1954. The last CAC Sabre, A94-371, completed acceptance trials on 19 December 1961.

All CAC Sabres were modified throughout their RAAF service with ARDU (from 1954), No 75 Squadron (the first Sabre squadron, from April 1955); No 3 Squadron (from March 1956), No 77 Squadron (from November 1956) and No 76 Squadron (from January 1960). Sabres saw service in SE Asia with Nos 3 and 77 Squadron (Malaya) and No 79 Squadron at Ubon, Thailand.

The Mirage III began to replace the Sabre from 1964 and—as the Sabres were phased out—several were put up for sale. Both Malaysia and Indonesia were gifted Sabres from RAAF inventories. A total of 122 Sabres were built; 22 CA-27 Sabre Mk 30s, 21 Mk 31s and 69 Mk 32s. The CAC-built Mk 26 Avon engine was retrofitted to all Sabre Mk. 30/31/32 models, along with the new wing, which effectively brought the entire force to Mk 32 standard. The last Sabre officially retired from the RAAF on 31 July 1971.

Sabre flown at the Temora Aviation Museum *Photo: RAAF*

Office of Air Force History

Empire Flying Boats

Centaurus at Rose Bay, NSW 1938

During 1939-40, the RAAF impressed into service four Short Empire S23 flying boats from QANTAS and Imperial Airways; A18-10 (ex G-ADUT, "Centaurus"), A18-11 (ex G-AEUA, "Calypso"), A18-12, (ex VH-ABC, "Coogee") and A18-13 (ex VH-ABB, "Coolangatta").

"Coogee" was written off in a landing accident at Townsville on 27 February 1942 and a few days later, on 3 March, "Centaurus" was destroyed during a Japanese air raid on Broome. Consequently, a fifth flying-boat, A18-14 (ex G-AFPZ, "Clifton") was impressed into service on 9 March 1942; this aircraft was an S33, a hybrid with a strengthened hull for a payload of 53,000lb (24,040kg). During RAAF service, the flying-boats operated with Nos 11, 20, 33 and 42 Squadrons in the transport and medevac roles.

On 8 August 1942, No 33 Squadron boat "Calypso" was lost during an attempt to rescue survivors from the torpedoed steamship *Mamuta,* near Daru, New Guinea. During a landing in rough seas, the hull collapsed and the aircraft sank. One airman was lost and one *Mamuta* survivor joined the crew aboard their two rafts. The crew spent three days adrift before reaching the Papua New Guinea coast. It was a further six days before they made civilisation.

Canberra Air Disaster

While approaching to land at Canberra on 13 August 1940, No 2 Squadron Lockheed Hudson bomber A16-97 carrying VIPs stalled and crashed into low hills beside the airfield. Killed in the disaster were the Minister for Air (James Fairbairn), Minister for the Army (Geoffrey Street), Vice-President of the Executive Council (Sir Henry Gullett), Chief of the General Staff (General Sir Brudenell White), two officials, and the four-man crew.

The crash site of the 2SQN Hudson, Canberra. *Photo: RAAF*

Although rumours immediately began circulating that Fairbairn (himself a civil pilot) may have been at the controls of the Hudson while on its fatal approach, a Judicial Court of Inquiry into the accident found no evidence to support such claims. Instead, the inquiry issued a warning to RAAF pilots regarding the stalling characteristics of the Hudson when the aircraft's speed was allowed to reduce too far.

The Canberra Air Disaster Memorial is situated at the crash site, near the Canberra Airport.

A commemorative plaque at the memorial site lists the victims of the disaster.

Operation Kiribati Assist - Ordnance Disposal on Kiribati

On 7 August 2008, 22 members of Joint Task Force 637 arrived on Kiribati to begin the planned clearance and disposal of American and Japanese unexploded ordnance (UXO) bombs and other ordnance left littering this Central Pacific country's 33 islands following the World War II battle of Tarawa in November 1943.

The mission was undertaken in response to a request to Australia for assistance, and included a command group, Clearance Diving personnel from the Royal Australian Navy, and Explosive Ordnance Disposal teams from both Army and RAAF. After five days, the Task Force conducted its first 'demolition' of unexploded ordnance in deep water, off the main island of Tarawa. The ordnance included Japanese and American naval and artillery shells, one or two Japanese sea mines, rockets, mortars, bombs and hand grenades—much of was left exposed on Kiribati's coral reefs.

The battle for Tarawa lasted from November 20-23, 1943. It pitted a well prepared elite Japanese force of approximately 4500 men supported by some coastal battery guns, artillery pieces and 14 tanks against an overwhelming American force of 17 aircraft carriers, 12 battleships, 12 cruisers, 66 destroyers and 35,000 marines and soldiers. The cost to both sides was enormous, with the Americans losing almost 1000 marines and soldiers and 687 naval personnel with another 2300 wounded. Of the Japanese/Korean force, only one Japanese officer and 16 enlisted men and 129 Koreans survived.

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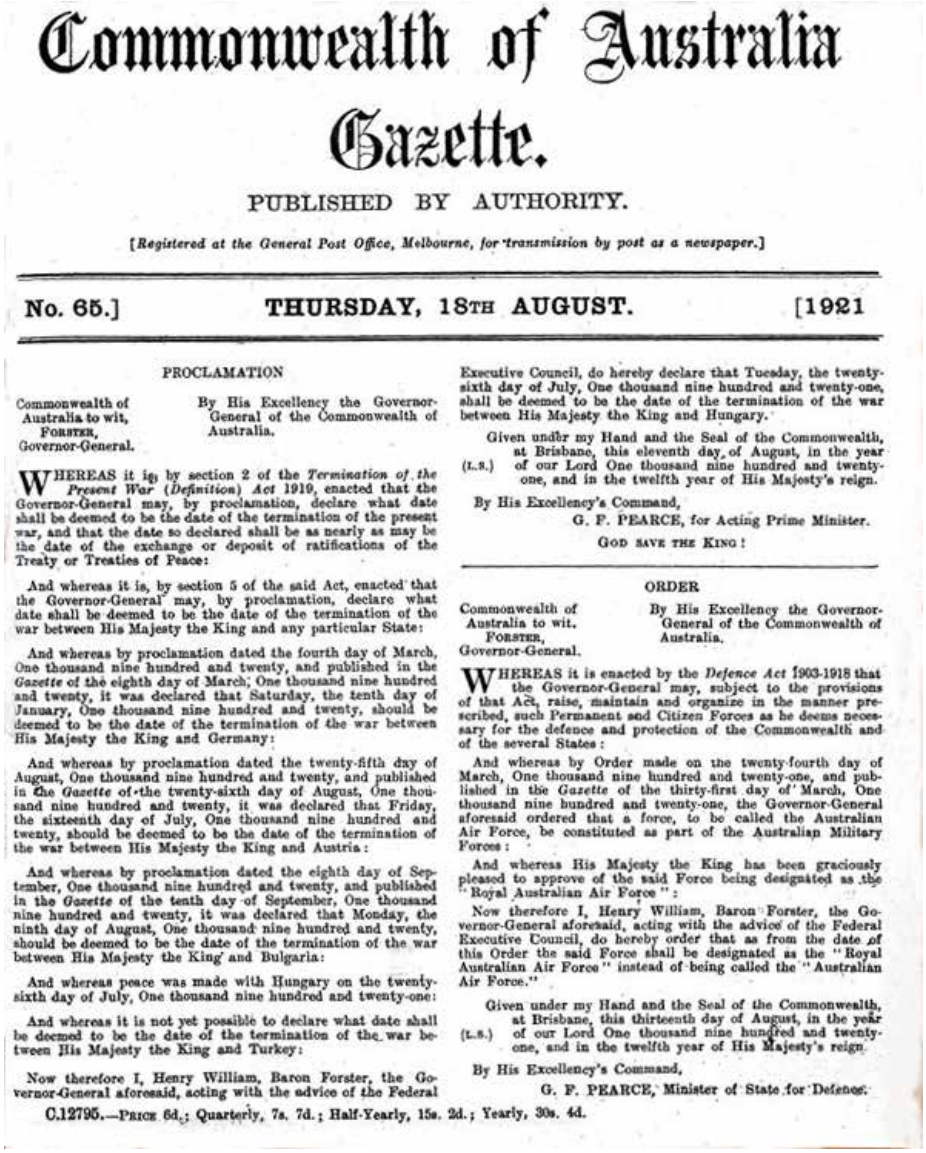
"Royal" Prefix - Royal Australian Air Force

When Australia's air service was officially established in March 1921, its title was simply the 'Australian Air Force'. A proposal had already been made, however, in the Air Council the previous month, to seek the granting of the 'Royal' prefix for the new Service. The request was submitted, and on 11 May the Governor-General, Lord Forster, was advised in a dispatch from London that the King had given his approval.

This advice was relayed to the Defence Department on 20 June. Although the news appeared in the press three days later, it was not until 13 August 1921 that the change was formally ordered by the Governor-General, making this the start date for use of the RAAF name. The order was published in the Commonwealth Gazette on 18 August (No. 65, 1921, p. 1207).



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PROCLAMATION

Commonwealth of Australia to wit, FORSTER, Governor-General.

By His Excellency the Governor-General of the Commonwealth of Australia.

WHEREAS it is by section 2 of the *Termination of the Present War (Definition) Act* 1919, enacted that the Governor-General may, by proclamation, declare what date shall be deemed to be the date of the termination of the present war, and that the date so declared shall be as nearly as may be the date of the exchange or deposit of ratifications of the Treaty or Treaties of Peace:

And whereas it is, by section 5 of the said Act, enacted that the Governor-General may, by proclamation, declare what date shall be deemed to be the date of the termination of the war between His Majesty the King and any particular State:

And whereas by proclamation dated the fourth day of March, One thousand nine hundred and twenty, and published in the *Gazette* of the eighth day of March, One thousand nine hundred and twenty, it was declared that Saturday, the tenth day of January, One thousand nine hundred and twenty, should be deemed to be the date of the termination of the war between His Majesty the King and Germany:

And whereas by proclamation dated the twenty-fifth day of August, One thousand nine hundred and twenty, and published in the *Gazette* of the twenty-sixth day of August, One thousand nine hundred and twenty, it was declared that Friday, the sixteenth day of July, One thousand nine hundred and twenty, should be deemed to be the date of the termination of the war between His Majesty the King and Austria:

And whereas by proclamation dated the eighth day of September, One thousand nine hundred and twenty, and published in the *Gazette* of the tenth day of September, One thousand nine hundred and twenty, it was declared that Monday, the ninth day of August, One thousand nine hundred and twenty, should be deemed to be the date of the termination of the war between His Majesty the King and Bulgaria:

And whereas peace was made with Hungary on the twenty-sixth day of July, One thousand nine hundred and twenty-one:

And whereas it is not yet possible to declare what date shall be deemed to be the date of the termination of the war between His Majesty the King and Turkey:

Now therefore I, Henry William, Baron Forster, the Governor-General aforesaid, acting with the advice of the Federal Executive Council, do hereby declare that Tuesday, the twenty-sixth day of July, One thousand nine hundred and twenty-one, shall be deemed to be the date of the termination of the war between His Majesty the King and Hungary.

Given under my Hand and the Seal of the Commonwealth, at Brisbane, this eleventh day of August, in the year (L.S.) of our Lord One thousand nine hundred and twenty-one, and in the twelfth year of His Majesty's reign.

By His Excellency's Command,
G. F. PEARCE, for Acting Prime Minister.

GOD SAVE THE KING!

ORDER

Commonwealth of Australia to wit, FORSTER, Governor-General.

By His Excellency the Governor-General of the Commonwealth of Australia.

WHEREAS it is enacted by the *Defence Act* 1903-1918 that the Governor-General may, subject to the provisions of that Act, raise, maintain and organize in the manner prescribed, such Permanent and Citizen Forces as he deems necessary for the defence and protection of the Commonwealth and of the several States:

And whereas by Order made on the twenty-fourth day of March, One thousand nine hundred and twenty-one, and published in the *Gazette* of the thirty-first day of March, One thousand nine hundred and twenty-one, the Governor-General aforesaid ordered that a force, to be called the Australian Air Force, be constituted as part of the Australian Military Forces:

And whereas His Majesty the King has been graciously pleased to approve of the said Force being designated as the "Royal Australian Air Force":

Now therefore I, Henry William, Baron Forster, the Governor-General aforesaid, acting with the advice of the Federal Executive Council, do hereby order that as from the date of this Order the said Force shall be designated as the "Royal Australian Air Force" instead of being called the "Australian Air Force."

Given under my Hand and the Seal of the Commonwealth, at Brisbane, this thirteenth day of August, in the year (L.S.) of our Lord One thousand nine hundred and twenty-one, and in the twelfth year of His Majesty's reign.

By His Excellency's Command,
G. F. PEARCE, Minister of State for Defence.

C.12795.—PRICE 6d.; Quarterly, 7s. 7d.; Half-Yearly, 15s. 2d.; Yearly, 30s. 4d.

The Commonwealth Gazette of 18 August 1921.

Sabre Aircraft A94-983

Sabre A94-983 after restoration at Temora Air Museum. *Photo: RAAF*

CAC Mk 32 CA-27/Sabre A94-983 was operated by No 3 Squadron from October 1958, No 76 Squadron from February 1961–July 1963, 2OCU from November 1966 and 5 OTU before completing RAAF service with 2OCU in August 1971. Following service with the RAAF in November 1971, A94-983 was transferred to No 11 Squadron RMAF, flying as FM1983 until 1976.

Back in service with the RAAF, Butterworth-based No 75 Squadron conducted an 'E' servicing over a 12 month period, the Sabre flew again in July 1978. Shipped back to Australia for restoration by Richmond-based No 2 Aircraft Depot, A94-983 was first displayed in public in March 1981. In November 1984 the aircraft carried out a forced landing and over-run at Bendigo.

After suffering minor damage after a forced landing and runway over-run at Bendigo in November 1984, the Sabre continued to be displayed by the RAAF Museum, under the auspices of the Caribou and Historic Aircraft Section (CHAS) at Richmond, until it relocated to Point Cook in 1997.

In January 2006, A94-983 was transported by road to the Temora Aviation Museum where a comprehensive return to service program commenced. The restoration of the Sabre commenced in May 2006 and culminated with the successful post maintenance check flight on 16 July 2009. The aircraft remains at Temora Air Museum, although it does not fly any longer.

Office of Air Force History

Art Exhibition - Vietnam

Peter Bradford (ex-RAAF Pilot) gave the following presentation at an Art Exhibition at the Hornsby RSL on 19 August 1969. Peter has approved its publication in *Wings.*

"National President Returned And Services League of Australia, Mr Rod WHITE, Federal Member for BRADFIELD Mr Paul Fletcher , Federal Member for BEROWRA , Mr Julian Leeser, State Member for HORNSBY, Mr Matt Kean, Mayor of Hornsby Mr Steve Russell, distinguished Guests, Ladies and Gentlemen. I consider it a great privilege to be here tonight to open this wonderful Art Exhibition.

Just a little about me so you know who I am and maybe why I have been asked to open this exhibition. I am a boy from the bush in Queensland who with perseverance and some luck managed to join the RAAF in 1966 and graduate as a pilot. A short tour flying Neptune anti- submarine aircraft, a posting to helicopters to join the increasing RAAF commitment to the war in Vietnam, was an extremely busy start to my flying career. Returning to Australia I was lucky to do a Flying Instructors' course.

Over the next 15 years or so, I spent time as an Instructor on the Macchi Jet trainer, the Iroquois Helicopter, the C130-E Hercules Transport and finally, a VIP Captain and instructor at No 34 Squadron flying the BAC 1-11. Our Federal and State Members will be pleased to know my time was spent at NO 34 Squadron when Malcolm Fraser was PM and Sir Zelman Cowan was the Governor General and Sir James Killen was Minister for Defence.

After resigning from the Air Force in 1985, I joined QANTAS. In 1996, I joined a mate to fly a McDonald Douglas DC-8 for Mr Kerry Packer. I loved Las Vegas!!

But: this night is about Vietnam Veterans and the special place the Battle of Long Tan has in our history. Much has been written of that battle but not a lot about the part No 9 Squadron played in the outcome of that battle. Some years ago, I was invited by the Kingscliff RSL to address the gathering for the Long Tan Day celebration.

Just before the commemoration started, the officiating Padre said he had a lady who would like to say hello. This lady was the daughter of the pilot who flew the first mission to drop ammunition to the beleaguered D Company at Long Tan. That pilot was Flt Lt Frank Riley DFC, a Korean War Veteran. He actually defied his Commander who said that with the torrential rain, the mission was an unacceptable risk. Frank's words, not mine, "pigs' arse, load up!!" A member of D Coy who was at the Kingscliff gathering, told me without that ammo drop, the Coy would most probably have been wiped out.

Ladies and Gentleman, the Sunday Telegraph on the 7th of August, had a two page spread with interviews of diggers from D Company. One digger, 71 year old Peter Doyle said, and I quote, "Only the marvellous flying of the 9 Squadron helicopter pilots, who came in at treetop level in a blinding thunder storm and were able to kick ammunition out the doors and let it fall down through the trees, saved us."

May I say, based on my experience as an Air Force chopper pilot in 1969, I have the greatest admiration for Army, Army combat soldiers in particular. Let us never, ever forget the contribution, NATIONAL SERVICEMAN made to every corps in the ARMY. No 9 Squadron was the first and only Air Force Squadron, in our military history, to work at the front line with Army. The Squadron was there to move them, feed them and extract the wounded and the dead. A large part of our Squadron's operations was inserting and extracting SAS long range Patrols. Those operations have left indelible memories. Our soldiers' bravery, human decency, camaraderie and mateship, is second to none.

There are 2 incidents which I would like to relate to you. They take on special significance tonight. The first occurred on the 21st July 1969, the day that Neil Armstrong and Buzz Aldrin were about to make their way down to the moon from Apollo 11 in the Eagle. On that same day, 3 Platoon 6 RAR were patrolling near the Long Hai Mountains, in mine-infested terrain. An explosion came from nowhere. LT Peter Hinds had stood on a mine. The result was catastrophic!! I will not attempt to describe the situation, except to say, among the wounded were a two man engineering splinter team. These sappers were attached to the infantry platoons to deal with the land mines.

Some 15 years later, this tragic event was to be the catalyst for the iconic song about the Vietnam War, "I WAS ONLY NINETEEN." The words were written by John Schumann from the band "RED GUM." It so happened, John's brother-in-law was wounded in this mine explosion. Do these words SOUND FAMILIAR, "Frankie kicked a mine the day that mankind kicked the MOON". The Battalion CO, LTCOL David Butler and the Battalion Doctor Trevor Anderson had been winched in to assist with the wounded. Unfortunately , the Doc stepped on another mine and was blinded. David Butler was wounded as well. No 9 Squadron, once again, extracted the wounded and the dead.

About 5 months later, on December the 8th 1969, the second incident occurred. One of the previously wounded Splinter Team Sappers from the July event, was all patched up and back in the bush. He was still attached to the 6th Battalion, which was prosecuting a major operation in the May Tau Mountains. After this successful operation the Armoured column and troops proceeded to move back to our base at Nui Dat by air and land. A helicopter crew of which I was part, was tasked to take an engineering team back to the returning armoured column. As we descended to land close by the lead APC, a look out the side window revealed that this APC had suffered catastrophic damage: a part of the nose had been blown off.

We now flared to land, and just a couple of seconds from touchdown, there was an almighty explosion and a shock wave hit the helicopter. May I say, a crash landing ensued. We initially thought we were hit by a missile, but NO, we had tripped another land mine with our rotor wash. Our chopper was mortally wounded. The driver and another soldier in the lead APC , had been killed. Another soldier was catapulted off that same APC many metres to its front and attempts were being made to get him back to safety. My first look at him was one of shock. I doubt his mother would have recognised him. Most of his clothes had been blown off and he appeared to have sun baked for a week. Yes, he was blast burned. Not pretty.

To make him a bit more comfortable, we got a stretcher for him from the chopper. The poor bugger was in some pain with a crook back. Now, he was whinging, he was thirsty, so the crewman retrieved one of our survival packs from the chopper and I said to him, "Here Mate, have some " SYDNEY WATER!" Squadron aircrew had always referred to these cans as "Sydney" water.

After many helicopter sorties to extract the dead and wounded, and the arrival of a Chinook helicopter to airlift our broken chopper back to Vung Tau, we all went our separate ways. The WAR just goes on day after day. You never lingered too long on daily events. To honour the soldiers killed in those two incidents, would you allow me to read their names: LT Peter Hinds, Corporal John Needs, Trooper Vivian French and Sapper John Greene. They never got the chance to GROW OLD.

Can you imagine, 46 years later, 2015, an E mail appeared on the 9 Squadron web site, from a DIGGER wanting to make contact with the pilot who fed him " SYDNEY" water on the 8th Dec 1969. I called in my wife Wendy to read this E mail to which she replied, "That's interesting !!". I said, "Sure is, that was me!!"

NOW, THE DIGGER WHO SENT THAT E MAIL IS THE SAME BLOKE WHO WAS WOUNDED ON THE 21ST OF JULY, MOON LANDING DAY. AND THE SAME PERSON TO WHOM I GAVE SOME 'SYDNEY' WATER. THE ONLY DIGGER I KNOW WHO SURVIVED BEING BLOWN UP TWICE AND LIVED TO TELL THE STORY. MAYBE IT IS APPROPRIATE THAT THE 18TH OF AUGUST IS NOW VIETNAM VETERANS' DAY NOT JUST LONG TAN DAY AS EVERY DIGGER WHO SERVED IN VIETNAM HAS HAD HIS OWN LONG TAN.

THE PAINTING YOU SEE HERE DEPICTS THAT LAST INCIDENT. MAY I INTRODUCE THE BLOKE ON THE STRETCHER TO YOU: NASHO, ENGINEER, ARTIST EXTRAORDINAIRE, GOOD MATE AND FRIEND, SAPPER DAVE STURMER.

Ladies and Gentlemen, consider ART EXHIBITION VIETNAM OPEN."

Vietnam Veterans Day 2017

Vietnam Veterans Day Remembrance Day Service was held at the Australian Vietnam Veterans National Memorial, Canberra, on 18 August 2017.

The Governor-General, His Excellency General the Honourable Sir Peter Cosgrove AK MC (Retd) gave the address on behalf of the Australian people and Major-General, the Honourable Michael Jeffrey AC CVO MC (Retd), gave the address on behalf of Vietnam Veterans.

The Minister for Veterans Affairs, the Hon Dan Tehan MP, CDF ACM Mark Binskin AC and AIRMSHL Leo Davies AO CSC laid tributes to honour those who served, suffered and died as a result of the Vietnam conflict. VP Communications and Media, Lance Halvorson MBE, laid a wreath on behalf of the National President, Air Force Association.

Media Release

The Hon Dan Tehan Mp
Minister For Veterans' Affairs
Minister For Defence Personnel
Minister Assisting The Prime Minister For Cyber Security
Minister Assisting The Prime Minister For The Centenary Of Anzac
7 August 2017

No change

The Australian Government is committed to a stand-alone Department of Veterans' Affairs (DVA). This has been an election commitment by the Coalition over successive elections and remains Government policy.

There are no plans to merge DVA with the Department of Human Services (DHS). There is no meeting planned for this week and there is no agreement to be signed in the near future to subsume DVA into DHS.

DHS manages DVA's ICT infrastructure under a Memorandum of Understanding that was signed in 2011. Prior to this agreement DVA's ICT infrastructure was outsourced to IBM.

There has been no change to DVA's recruitment policy. DVA continues to recruit in-line with Australian Public Service policy, with a priority on hiring staff who are passionate about supporting veterans.

Media Release

The Hon Dan Tehan Mp
Minister For Veterans' Affairs
Minister For Defence Personnel
Minister Assisting The Prime Minister For Cyber Security
Minister Assisting The Prime Minister For The Centenary Of Anzac

14 August 2017

Ministerial statement on veterans and their families

I ask leave of the House to give the first annual Ministerial Statement on Veterans and Their Families.

As the Prime Minister has said, in these centenary years of Anzac, we best honour the Diggers of the First World War by supporting the servicemen and women, the veterans and the families of today.

It is important that all Australians understand the unique nature of service. It is important that all Australians understand what support they currently provide to our veterans. It is important that all Australians understand where our support needs to be targeted into the future.

For the men and women who serve or have served our nation; for their husbands, wives, and children; for their mothers and fathers, sisters and brothers – this Ministerial Statement is for you.

There are currently around 58,000 Australians serving in our Defence Forces. Some will serve overseas. Others will serve in barracks and bases around our country. No matter who they are, all of them will become veterans.

In the Australian community, there are an estimated 320,000 veterans who have been deployed. Many thousands more will not have seen service outside of Australia. These men and women have worn their uniform in both peace time and in conflicts. They have given service from World War Two to the current deployments in Iraq and Afghanistan.

On average, our ADF personnel will serve for around eight and half years. Each year, around 5,200 will leave. Some will leave service and move on to new careers, using the skills and experience of their time in Defence to strengthen our workforce. Some will be business men and women, some will be community leaders, some may enter this Parliament and some will go on to be Governors-General.

However, some may not have a choice in leaving. Through medical or administrative discharge, their time in Defence will come to an end.

For these veterans, it might be the simple things that are harder. It may be that they haven't considered what the future may hold. It may also be that they carry with them the burden of service – mental health conditions or injuries that will require support.

A key focus of this Government is on how these men and women transition out of the Australian Defence Force.

In the last twelve months, over 1,400 members of the Australian Defence Force separated for reasons not of their choosing. Ten years ago, just over 740 members separated involuntarily.

How we help these men and women and provide for their transition is integral to ensuring that none of them fall through the gap between Defence and civilian life.

It is at this point that we as a Government, and as Australians, can make a real difference. This task begins in the Department of Defence and continues with the Department of Veterans' Affairs.

Currently, the Department of Veterans' Affairs supports about 291,000 Australians. Just over half of these people are veterans or currently serving members of the ADF. Around 48 percent are women. Around 82,000 are widows or widowers and around 2,500 are children of veterans.

Today, more than 203,000 of DVA's clients are 65 years or over while about 23,000 are under the age of 40.

This is the state of our veterans in Australia. They are representative of every aspect of service and from every walk of life. They are old and young. They are from the country and the city.

It is why, in the last twelve months, the Government has held the first Female Veterans Forum and the first Veterans Families Forum. It is why we have held the first meeting of State and Territory veterans ministers, to provide input on how we can work together across all levels of government on issues such as veteran homelessness.

Serving our veterans requires our Government and Australians to acknowledge the various backgrounds and needs of the veteran community in order to put our help where it is most needed.

Australians should be proud that we recognise the importance of service and remain one of the only countries with an independent Department to serve our veterans. The Government is committed to maintaining a stand-alone Department for our veterans.

This year, DVA will provide over $11 billion in payments and services. That includes pensions, income support, compensation, healthcare, rehabilitation, counselling services, transport, transition assistance, home care, housing, commemorations, education and grants funding.

Around $6.2 billion, or 54 percent of the Department's budget, will be spent on providing veterans and their families with income support and compensation.

Around $5 billion, 44 percent of the Department's budget will be spent on meeting the healthcare needs of veterans and their families.

I am pleased to note that in the recent renegotiation of hospital agreements we have secured priority for private rooms for veterans, wherever possible.

I'd also like to note that the Department of Veterans' Affairs provides medical services to veterans and war widows by making payments to providers that are significantly higher than Medicare rebates. This ensures the widest possible availability of providers for those we serve.

Around 0.8 percent of the Department's budget will be spent on commemorations and maintaining memorials and headstones.

Over 95 percent of the Department's budget comprises payments that are legislated, fully-funded and uncapped.

If there is a need, it will be funded and the Department will provide assistance.

For example, in the 2017/18 Budget, DVA is estimated to spend $11.3 billion but if more veterans present with eligible claims, this figure may be higher.

The Department employs around 2,000 staff throughout Australia. About a third of them are headquartered in Canberra. The rest are spread across offices in each state and territory, in capital cities and regional towns.

In a typical 9 to 5, five-day week, DVA will process about 95 compensation or income support forms every hour, receive two letters or emails every minute, and take a phone call every couple of seconds.

The administration costs of the Department represent less than three cents of every dollar it spends.

DVA works hard to provide quick and strong support for veterans and their families. But it is not perfect. People make mistakes. As a result, the Department will not always get it right.

In this first Ministerial Statement on Veterans and Their Families, I also want to reflect on what we need to do better.

Some in the veteran community have found the Department of Veterans' Affairs to be adversarial, slow or bureaucratic.

In the Department's satisfaction survey, we have seen a distinct decline in overall satisfaction from 93 percent in 2010 to 83 percent in 2016. While this number is still high, it represents where the Department could have served veterans better.

For example, at the Veterans' Review Board there were over 2,900 decisions made in 2015/16. Of these, nearly half were made to change or reverse the decision of the Department.

If veterans are not satisfied with a decision of the review board, they may apply to the Administrative Appeals Tribunal.

In 2015/16, 223 of the 307 rulings of the Administrative Appeal Tribunal were made against the Department.

We know that getting decisions right the first time can make an enormous difference to veterans. We are working to reduce the number of cases that go to administrative review. This will be good news to our volunteer advocates, who assist veterans with their appeals.

Recently, we have implemented a trial of Alternative Dispute Resolution for veterans who choose to appeal a decision with the Veterans' Review Board. As a result, cases that may have taken up to a year to resolve have been resolved in as little as three months. We are now rolling this out nationwide.

In 2013/14, wait times for initial liability under the Military Rehabilitation and Compensation Act and for the Safety, Rehabilitation and Compensation Act were 144 days and 160 days respectively. They have now come down to 107 and 110 days respectively.

However, permanent impairment claims have gone from 129 days and 112 days to 156 and 148 days respectively. This is not good enough and the Department has been tasked to improve it.

The Department is working on ways to leverage technology to deliver better services and cut paperwork. For example, some claims that used to take 117 days to process now only take 60 days. These trials are promising and the Department is looking at how we can implement them across the system.

However, we can only have a better service from DVA if they have the tools to do the job. We have listened to the veteran community on the need to put them first with DVA.

We have made the first serious investment in years into the Department – $166.6 million towards making DVA a 21st century Department with a 21st century service culture. This includes a significant investment in upgrading DVA's computer systems and processes. Claims and wait times will be cut by this investment, something that is long overdue.

One of the most important services we provide is mental health support. In this first Ministerial Statement on Veterans and Their Families, I would like to focus on the issue of veteran mental health.

The Department of Defence and the Department of Veterans' Affairs spend more than $244 million a year on providing mental health support and treatment to current and former ADF members. This includes services provided by GPs, psychologists, psychiatrists, social workers and hospitals as well as pharmaceuticals and online information and support tools.

It also includes access to the Veteran and Veterans' Family Counselling Service (VVCS), which is at the frontline of the Government's veteran mental health support response and has been for more than 35 years. This service is part of the strong legacy of our Vietnam veterans, whose experience has informed how we care for modern veterans.

VVCS provides free and, importantly, confidential counselling and support for current and former members of the ADF and their families.

It has 26 centres around Australia and a network of more than 1,100 outreach clinicians. It delivers services to more than 27,000 members of the ADF community and their families annually.

We know, the burden of mental health conditions can also fall on families of veterans.

Over two years the Government has expanded VVCS to include as many families as possible. The recent Budget has provided $8.5 million to continue to expand eligibility for VVCS.

We recognise that as a result of a veteran's service, children can be affected. In March the Government allocated $2.1 million over two years to the Australian Kookaburra Kids Foundation to deliver age appropriate mental health education to the children of veterans with a mental health condition.

We know mental health treatments work best when intervention is early. The faster that we provide support to veterans, the better their chances of recovery and for mitigating any long-term impact.

For many years, Governments only provided mental health support when a veteran was able to prove their condition was caused by their service.

Last year, the Turnbull Government decided that Australia should provide its veterans with free and immediate mental health treatment.

Under the scheme, any veteran who had served one day in the full-time ADF would be given full cover for five of the most common mental health conditions: post-traumatic stress, depression, anxiety, alcohol abuse, and substance abuse.

For the first time, an eligible veteran with one of these conditions didn't have to prove it was caused by service. From the moment of contact with the Department to register their need for support, we would be there for them.

The Turnbull Government has now completed this reform.

In this year's budget, we have covered all mental health conditions. From now on any veteran of the full-time ADF will get free and immediate mental health cover.

This programme of non-liability mental healthcare is fully funded and completely uncapped – if there is a need it will be met.

This common sense approach to mental health support is the biggest change in veterans' policy in decades and we must continue to build on it.

As all Australians know, one suicide is one too many. Suicide affects all areas of our community – eight Australians a day take their own life and it remains the greatest cause of death for men between the ages of 14 and 44.

As we have seen, our veterans and members the ADF are sadly not immune. We are determined to address suicide in our community. Everyone has a role to play.

Last year the Government commissioned the Australian Institute of Health and Welfare (AIHW) to provide the first accurate, robust data ever produced on suicide among the serving and ex-serving populations.

This study was independent of the Department of Veterans' Affairs. This research is providing a greater understanding on where and how to help those who are struggling.

The AIHW study has revealed the suicide rate is 53 percent lower for men serving full-time in the ADF and 49 percent lower for men in the reserves when compared to the general population.

In all male ex-serving members, the rate of suicide is 13 percent higher than the general population.

However, men who have left the ADF between the age of 18 and 24 have twice the risk of suicide compared to their peers.

The Government will continue to independently track this data in order to provide support.

This information is informing our approach to suicide prevention.

The Government also asked the National Mental Health Commission to review the suicide prevention services offered by Defence and DVA. Their comprehensive report told us to target four areas:

1. Improving suicide prevention and mental health support for serving ADF, veterans and their families.
2. Improving the transition process from the ADF.
3. Improving family support.
4. Transforming DVA's systems, processes and culture.

These reviews helped inform the Government's action on veterans' mental health in this year's Budget, which included an additional $58.6 million in mental health funding.

As part of this, the Government is investing $9.8 million to pilot new approaches to suicide prevention and improve care and support available to veterans. This will include funding to increase support for those discharging from hospital and who are at risk.

The Department of Veterans' Affairs also has a range of suicide awareness and prevention resources, known collectively as Operation Life.

As I have already said, the moment a member of the ADF becomes a veteran is crucial so we must do better at the transition Process.

Just as members of the ADF prepare for being posted to a deployment, we should prepare them for posting to civilian life.

To give some idea, when a soldier leaves the ADF they may have never filled out a rental application, written a resume or used a Medicare card.

We know that for some ADF personnel, the transition period can bring significant change and with that change comes stress.

For example, until January last year the Department of Defence didn't have the capacity to notify the Department of Veterans' Affairs when a serving member became a veteran. Until a recent change in policy, DVA only knew of around one in five ADF members leaving Defence.

An important component of this is the Early Engagement Model. The aim of the Early Engagement Model is that when a serving or former ADF member needs DVA in the future, they will already be registered with the Department. This will reduce claims processing times.

Another reform that will improve our processes will be to allow Defence, the Department of Veterans' Affairs and the Commonwealth Superannuation Corporation to share medical information on a veteran in order to save them from having to undergo up to three separate medical assessments.

Additionally, this Government took to the last election a commitment to 'No Discharge Without Documentation'. This initiative will ensure all separating members of the ADF leave with the necessary documents to make the transition phase more seamless. This includes their medical and training records.

This ongoing work is led by a Transition Taskforce that was established after the last election.

Veterans need to be able to walk into civilian life with confidence and dignity.

This Government is committed to making that happen through the Prime Minister's Veterans' Employment Initiative.

As the Prime Minister has said, this is not about charity.

We are not asking businesses to engage in some sort of philanthropic exercise. We want to remind business leaders that the servicemen and women of Australia have unique skills and extraordinary experience.

The Initiative is about helping business appreciate the unique skills former ADF members can bring to a job. Launched last November, it highlights the Government's commitment to improving the support provided to veterans during their transition out of the ADF.

Through the program's Industry Advisory Committee on Veterans' Employment we will develop strategies for business to recognise and transfer the talents of our veterans into post-service careers.

Already over 1,000 jobs on the jobactive website have been identified as veteran-preferred and we will have more to say on The Prime Minister's Veterans' Employment initiative in the coming months.

Helping our former Defence personnel find meaningful post-service careers is one of the best ways we can honour their service and sacrifice.

A key reason for giving this statement is to outline how Australia can do better for its veterans.

As a Government we commit today to the following:

1. A stand-alone Department of Veterans' Affairs;
2. A Department that focuses on the needs of the veteran first; and
3. A stronger voice for the veterans' community.

It is imperative that Australia continues to provide veterans with their own Department. It is the best way that their service and unique needs will be recognised and provided for.

However, we acknowledge that the Department must focus on the needs of those it serves as a priority. Veteran Centric Reform, providing funding for the upgrade of the Department's systems, and an improved service culture are the first steps.

Veterans' Affairs legislation is complex. Across three Acts, the support that is provided to different ages and cohorts can be difficult to navigate. Parliament is looking at how we can begin to modernise and simplify this legislation. This includes placing all the relevant Acts under the control of the Minister for Veterans' Affairs.

In any effort to provide support, we should also look to how we can provide payments faster. The time between making a claim and receiving rehabilitation can be lengthy. This year's Budget has provided for a pilot to provide rehabilitation to veterans as soon as they have submitted their claims rather than after approval. If this leads to better outcomes, Parliament should look to developing this model over time across the veteran entitlement system.

Equally, we need to ensure that when the veteran community speaks, it does so with one voice. My challenge to the veteran community is for them to respond to this statement each year with a single voice so that we can better serve all veterans.

In other countries, veterans' organisations have united together into a national confederation or association, with the varied and differing needs of each group within the community putting forward their needs through a single body. I believe it is time that veterans' organisations create a similar body in Australia.

If veterans can form this body and provide a response to this statement with one voice, I will ensure their response is tabled in Parliament annually.

All of these are projects that will make our systems of support for service stronger. We must commit to them each year in order to ensure progress.

Australia should be proud of how it serves and cares for its veterans and their families. It is a core role of any society that we serve those who have served in defence of our country and our values.

As a Parliament it is our duty to watch over the care we provide our veterans. To ensure these men and women are provided for and that future generations understand their sacrifice. This Ministerial Statement on Veterans and Their Families is an important part of that duty. It will be the touchstone of how we mark our service to them each year.

Media Release

The Hon Dan Tehan Mp
Minister For Veterans' Affairs
Minister For Defence Personnel
Minister Assisting The Prime Minister For Cyber Security
Minister Assisting The Prime Minister For The Centenary Of Anzac
15 June 2017

Government passes Gold Cards for BCOF and BNT veterans' legislation

Minister for Veterans' Affairs Dan Tehan today called on surviving participants of the British Nuclear Test (BNT) program in Australia and veterans who served as part of the British Commonwealth Occupation Force (BCOF) to register for free health care.

Mr Tehan said the Department of Veterans' Affairs (DVA) Budget passed the Senate today.

Mr Tehan said the passage of the Bill meant the Government's $133.1 million program to provide a Gold Card to the surviving participants of the BNT program in Australia and veterans who served as part of the BCOF would come into effect from 1 July.

"The Gold Card can be used by eligible former members of the Australian Defence Force to pay for their health care," Mr Tehan said.

"This Budget measure will also provide this health care coverage for affected pastoralists, Indigenous people and other civilians determined to be within the same vicinity as the participants of the BNT.

"I strongly encourage anyone who believes they are eligible under this program to contact DVA and begin the process so everything is in place for the 1 July start.

"Starting the process now will help people get their required paperwork in order in time for 1 July when DVA will be able to begin processing applications."

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Media Release

The Hon Dan Tehan Mp
Minister For Veterans' Affairs
Minister For Defence Personnel
Minister Assisting The Prime Minister For Cyber Security
Minister Assisting The Prime Minister For The Centenary Of Anzac
17 July 2017

International conference to focus on veterans' mental health

Ministers from five countries, including Australia, will meet in London this week to explore challenges faced by contemporary veterans, and how governments can improve support services to help them achieve a fulfilling post-service life.

Veterans' Affairs and Defence Personnel Minister Dan Tehan said the International Ministerial Conference on Veterans' Issues would provide an opportunity to gain insights, in particular, into how our partner nations – Canada, New Zealand, the United Kingdom and United States – deal with mental health issues and suicide prevention.

"As well as learning from the experiences of other nations, Australia will contribute significantly to conference discussions, with presentations on the topics of *Barriers to effective mental health care* and *Current rehabilitation initiatives and proactive intervention for veterans*," Mr Tehan said.

"Ensuring we meet the mental health needs of those who have served our country, and their families, is a fundamental priority for the Turnbull Government.

"We recognise the importance of veterans seeking treatment as early as possible to achieve the best recovery outcomes, which is why in the 2016 Budget the Government expanded eligibility for non-liability health care for certain mental health conditions, post-traumatic stress disorder (PTSD), anxiety, depression, alcohol and substance abuse to anyone with one day of full time service in the Australian Defence Force (ADF)."

In the 2017–18 Budget the Turnbull Government expanded this to cover all mental health conditions. These arrangements mean there is no requirement to establish a causal link between a person's military service and a mental health condition. Treatment is available to anyone who has served one day full-time in the ADF. Treatment is fully funded and uncapped – if an eligible veteran needs treatment, the Government will pay for it. "One suicide is one too many and being transparent about the mental health challenges facing serving and ex-serving Australian Defence personnel is vital," Mr Tehan said.

According to the Australian Bureau of Statistics, in 2015 there were more than eight deaths by suicide in Australia each day. Tragically serving and ex-serving Defence personnel are not immune from this.

In seeking to further address this issue, the Government commissioned the Australian Institute of Health and Welfare to provide the first accurate, robust data ever produced on suicide among the serving, reserve and ex-serving populations.

This work was done independently of the Department of Veterans' Affairs (DVA) and has produced figures on ADF and veteran suicide based on information provided by state and territory coroners.

The Government also commissioned the National Mental Health Commission to review the suicide and self-harm prevention services available to former ADF members and their families. This helped inform the allocation of new funding of $58.6 million in the recent Budget for a range of new mental health initiatives. Mr Tehan said that as a result of these studies we have a greater understanding of where and how to help those who are struggling, but as always there is more work to be done.

Statistics relating to Australia's approach that will be shared at the conference, include:

- Between 2001 and 2015 there were 325 certified suicide deaths among people with at least one day of ADF service. In 2015 there were 25 certified suicide deaths among ex-serving Defence personnel.
- Between 2001 and 2015, there were 166 certified suicide deaths among ex-serving Defence personnel. Ex-serving men aged 18–24 were at particular risk—two times more likely to die from suicide than Australian men of the same age.
- Service characteristics that may be associated with the higher rate of suicide in ex-serving men included: involuntary discharge—particularly medical discharge, short length of service (less than one year) and rank other than a commissioned officer.
- 4,414 veterans had access to PTSD treatment under non-liability health care provisions as at 31 March 2017.
- 1,599 veterans had access to alcohol dependence and abuse treatment under non-liability health care provisions as at 31 March 2017.
- With regard to Australia's longest running military conflict, the war in Afghanistan, DVA has accepted the claims of 1,590 veterans with service-related PTSD since 11 October 2001. The total number of claims determined was 1,634.
- DVA has also accepted the claims of 543 veterans with service-related alcohol dependency and abuse since 11 October 2001. The total number of claims determined was 576.
- Mr Tehan said continuing research and engagement across Australia with ex-service organisations, Defence organisations and with partner countries was an important part of the Government's action on improving veterans' mental health and reducing the incidence of suicide among current and former members of the ADF.

"The Government is committed to addressing suicide and the devastating impact it has on our community. We all have a role to play in encouraging anyone, including our ex-serving men and women, to seek assistance when they need it," Mr Tehan said.

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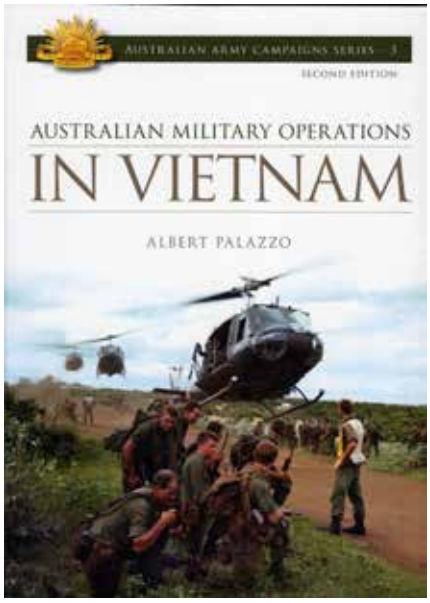

AUSTRALIAN MILITARY OPERATIONS IN VIETNAM

Author: Albert Palazzo

Hard cover: 185 pages, with B&W photos

Publisher: Army History Unit 2006; reprinted 2011. No3 in Australian Army Campaign Series

Availability: www.bigskypublishing.com.au

Price: $20. + Postage

From 1962 to 1972 Australia joined the United States in fighting a communist inspired insurgency war in the jungles of South Vietnam against infiltrators who sought to overthrow the local government. Over 50,000 Australians served in Vietnam, 519 lost their lives, and the conflict ended ignominiously in the insurgents' victory.

Over 30 years later, Australia again finds itself joined with the United States in a struggle against an insurgency, this time in the deserts of Iraq and the mountains of Afghanistan. Although now in the past, the Vietnam War resonates with lessons for the Australian Army as it strives to defeat not Communism but Terrorism. *Australian Military Operations in Vietnam* highlights some of the successes and failures of an earlier generation of officers for the benefit of today's leaders.

Predictably, the book is largely about Australian Army Units. Notwithstanding the cover, RAAF squadrons get few mentions. The RAAF Nursing Service and the C-130 medevac flights from Vung Tau receive well deserved mentions in the book. Lesser known, but well deserved, are mentions of the 32 nursing sisters who flew out of Clark AFB, Philippines with the USAF 902 Medical Evacuation Squadron who flew in USAF C-130 and C-118 aircraft from many bases in Vietnam. These medevacs flew mostly US troops back to Clark AFB.

Albert gives the Tet offensive by the VC forces a large degree of importance. He states that it was the turning and, further, says "Yet, oddly, despite their savage losses, the communists were the ones who emerged as the victors while it was the Americans who tasted defeat". The RAAF knew that from the Tet offensive in early 1968, the enemy were regular North Vietnamese Army (NVA) troops. The US (and Australian) 'defeat' resulted from the lack of support from, largely, middle Americans who were barraged on TV by the left leaning media and anti-war demonstrations who distorted the situation/s. In addition, the White House announcements, the MACV strategies and the US Military's failure to fully understand their enemy, did not assist in achieving a favourable outcome.

If one wants an Army perspective on the war in Vietnam, the book is worth reading, although it is about a war that ceased some years ago, 1975. The number of participating Army units is beyond comprehension and one wonders how or why Army has so many units; the RAAF had so much less. The author returned from service with No 2 Squadron, 50 years ago this October. But, the memories, activities and conclusions are still remembered in some detail.

Lance Halvorson

The National Vietnam Veterans Memorial, Canberra

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Bob Hoover, 'Last Touchstone to the World of Aviation,' 1922-2016

Experimental test pilot and favourite performer at air shows around the world, he performed precision aerobatic maneuvers in the North American Aircraft P-51 Mustang and Aero Commander Shrike.

R. A. "Bob" Hoover, called the "greatest stick-and-rudder pilot who ever lived" by Lt. Gen. James Doolittle, USAF (Ret.), died peacefully of heart and kidney failure, at 94 early Oct. 25, 2016, at Torrance Hospital, near his home in Palos Verdes, Calif. He was a favorite performer at air shows around the world, thrilling his audiences with his precision aerobatic maneuvers in the North American Aircraft P-51 Mustang and Aero Commander Shrike.

"He was our last touchstone to the world of aviation," says aerobatic champion Sean D. Tucker and Hoover's close personal friend. "He knew the Wright brothers, Lindbergh, Doolittle, Yeager, Schirra, Armstrong and Cernan. He was so revered around the world."...


1

"He was every pilot's icon," Bill Fanning (a family friend) said, recalling his friend as one of the premier test pilots of the 1950s and '60s. "Bob tested everything. He flew them all."

Hoover's plane was shot down during World War II and he spent 16 months in a German POW camp. With the war nearing its end, he stole a FW-190 aircraft from a deserted Nazi base and flew it to the newly liberated Netherlands. He realised that it was not a real smart move as a *Luftwaffe* aircraft would not be a welcome sight; but he made it, just.

Some tributes on Tributes.com web site:

I loved his philosophy of how to conduct the correct way to land a wounded airplane: "Fly the thing as far as you can into the crash" meaning never get too slow as to being able to maintain control and land as flat as possible and not cartwheel or nose over.

Never got tired of watching him and always amazed when at the end of his performances he would feather both engines, do a half-loop, roll off the top, a couple of rolls, land and coast up to the crowd line in his twin Shrike Commander—all power-off.

Hoover was known for being the chase pilot for Chuck Yeager, who set an aviation record by breaking the sound barrier in 1947. Hoover went on to set his own transcontinental and "time to climb" speed records.


3

Photos: (1) Bob Hoover, right, with Harrison Ford, who was featured in Flying the Feathered Edge: The Bob Hoover Project.
(2) Bob Hoover and his Mustang, 'ole yeller' at Oshkosh, 2012.
(3) Bob Hoover in his North American Aviation P-51D Mustang 'ole yeller', Cannon AFB NM, April 1968.

Tributes.com

Located just a short 10 minute drive to the west of the Amberley base is the exciting new housing estate of Rosewood Green. Stage one was released late last year and the first houses are starting to take shape. Rosewood green offers families a range of affordable options of house and land packages set in a quiet rural community close to schools (Both private, public primary and high school), shops and electric rail direct to Ipswich and Brisbane. Rosewood is a country community where locals still stop in the street to say g'day and take a genuine interest in the people they meet. It offers families a safe, friendly and caring environment ideal for raising a family outside of the distractions of a bigger city. Rosewood Green is located adjoining the Rosewood golf course and master planning provides for a number of access points throughout the estate for residents to be able to commute to the course. Pedestrian walkways will wind their way around the community to interconnect with the central park complete with playground. Almost a third of the development will be devoted to parks, open spaces and wildlife habitat. The Rosewood community has all of the services you would expect including doctors, a vet, chemist, banks, butcher, hardware, electrical store, post office, newsagency, supa IGA, bakery, cafes, pubs, bottle shops, fashion shopping and a new library planned. Ipswich is only a 15 minute drive away and Brisbane city 50 minutes. Rosewood green is located between the rail stops of Thagoona and the historic station of Rosewood and is on a direct line to the Brisbane CBD.

If you are looking for a new home there are a huge choice of designs from the area's leading builders with packages starting from $312,750. If you have your own design there are a wide range of lot sizes from 450 sqm to a huge 4634sqm on offer for you to build your own dream home. Frontages are also generous and range from 15 metres to over 27! So no matter what style of house you wish to build you will find a suitable lot at Rosewood Green. With the extension of the $ 20,000 first home builders grant to December 31, now is a great time to secure one of the Ipswich Regions most affordable residential developments.

The developers have put a lot of planning into creating a master planned estate that will tie in modern conveniences including being NBN ready without losing the country feel and community spirit. Hundreds of trees have been planted since 2011 to encourage koalas and birdlife to be an integral part of this family orientated development. 15 years in the planning, Rosewood Green is worth the drive to see all the benefits that come with living in a safe country community. The Rosewood Green sales office is open every day 10 am to 4 pm. Visit the web site rosewwodgreen.com.au or call 07 30597400.

Transition

A Defence career provides many strengths, skills and achievements relevant to non-Defence workplace. After basic and trade training, you accrue skills transferable to a civilian workplace, such as Adaptability, Attention to detail, Cooperation, Cultural awareness and sensitivity, Professional ethics, Reliability, Situational awareness, Stress management and teamwork.

After managing teams, you also accumulate skills such as Coaching, Facilitating group discussion, Managing a team to meet deadlines, Mentoring, Personnel management, Supervisory/management skills and Team building and leading.

It is typical to think that your military role equates only to military work. However with broader thinking you will be able to see beyond 'pigeon-holing' yourself into the roles you had in your military career. Take the time to explore career options and seek guidance on aligning your transferable skills to other industries and jobs.

Consider your new career direction well before you leave Defence. What you decide to do is not final or absolute. In today's job market, the average time spent with any one employer is now approximately five years and 'Y Generation' employees are changing jobs every two years. This means long-term careers are becoming less likely. Statistics show that young job seekers who leave school today will change careers (not just jobs) nine times before they retire. Therefore, whatever decision you make today, won't necessarily lock you in until retirement.

These steps should be completed before you leave Defence – know what you have to offer and know the job you're going to apply them to.

Your written application is the "first impression" employers see of you. This includes:

- o CV/Résumé
- o Cover Letter
- o Selection Criteria/Suitability Statement
- o Linked-In profile
- o Social Media presence

Your written application should include more than what's on your Duty Statement. They should include your demilitarised transferable skills that are targeted toward the industry/ job you wish to attract and your workplace achievements. Achievements tell an employer about you from a cultural perspective - for example, your work ethic, initiative, team work, management performance, customer service and desire to improve your professional skillsets.

The most effective written application is one that highlights to the employer how your skills match the required skills for their job vacancy. The same applies to the best way you promote yourself as a job interview.

In everything you do, remove or replace military terms with every-day language. Avoid language like *"I have commanded teams of various sizes on many deployments in different situations",* or *"I managed a team to achieve the Commander's intent at sea and at shore".* While these examples aren't using military-specific terms, they make statements that only you know the context of. If you wish to use statements like these, then add examples of what you refer to. For example *"on my last overseas deployment to Iraq, I managed a team of 10 staff for nine months to provide close protection and surveillance at airports, compounds and small villages."* Or *"I managed a team of four highly skilled technicians over six months to operate the ship's combat radar systems whilst under pressure on high-intensity operations".*

Bottom line - The effectiveness of your application is determined by the ratio of your applications to interviews. How well you promote yourself at a job interview is assessed by the number of job offers you get. If either of these ratios aren't what you'd like, seek help. There are a number of funding sources available if finances are an issue.

Defence invest significant time and money in training you to think and perform your military role to achieve the military mandate. We all know this 'regimented way' of operating is different to most non-Defence workplaces. However, little (to nothing) is offered to help you know how it is different, and how to adjust when engaging with civilian employers and with new team mates when entering a non-Defence workplace.

Typically, the following traits are much stronger in Defence - Focus on safety, Teamwork, Work rate and work ethic, Professionalism and Attitude to task completion.

The greatest transition challenge is relating to civilian employers the value you bring to their organisation. You know you can work hard, but just saying that isn't enough. Most ex-Defence members can get a civilian job in either Operations, Security, Work Health & Safety or Teaching. If you think you have little to offer a commercial organisation, think again.

Your new supervisor may have never managed ex-Defence staff before and they may be unaware of how you are used to thinking and operating. They may have expectations of you that current team members follow easily, but you may not understand because certain things 'go without saying'.

Who is best placed to help you with your transition and find a job on a good salary? Only someone who personally understands how challenging it is to relate military experiences to civilians and who has also worked in commercial workplaces can understand you, your current situation and help you through the next few months of your transition.

Its your choice to either find your feet through trial and error (which will take time), or seek assistance from those who have gone before you. How much time do you have to learn through trial and error on how to compete with other job seekers for commercial opportunities?

Seeking transition assistance can be challenging, given there are so many organisations out there offering help.

But think of it as learning a new language, because talking in military terms to a civilian employer won't work in such a competitive environment. Would you prefer to learn Chinese from the Aussie bloke down the road who has only ever taught from a book, or would you prefer to learn from someone who grew up in China and now lives in Australia? In both circumstances, you will be taught Chinese, but you will be able to speak Chinese much better from someone who knows both languages and can help with the Aussie dialogue. Choose wisely who you seek help from.

For help in making a smooth transition, either Google "Defence transition", or contact Trans-Civ (Transition to Civilian).

Online Course to Enhance Leadership Lessons

CPL Sebastian Beurich

OIC RANSSSS LCDR Col Painter said providing the Advanced Combat Survivability course online would allow more time to be spent on developing leadership skill sets during the residential phase. I 6, 2017 www.defence.gov.au/news/NAVYNEWS TRAINING 21 Sh

Keeping sailors and officers qualified is the name of the game for the RAN School of Survivability and Ship Safety (RANSSSS), and a recent training review will help to achieve that goal.

In response to the Training Force Plan 2018, RANSSSS has looked at ways of improving training delivery and developing individual training using technology.

The first course to be reviewed was the Advanced Combat Survivability (CS) course, focusing on training officers and sailors in damage control scenarios One of the key outcomes of the restructure was to deliver parts of the course online, as a lead-in to the residential component.

OIC RANSSSS LCDR Col Painter said the restructure was a natural progression for the course, and would shift the responsibility to be prepared onto the member.

"The aim of this program is to provide individuals with the confidence in their own ability to lead their teams in a variety of damage control scenarios at sea," he said.

"We recognised that some of our courses could be restructured to provide opportunities to enhance the leadership lessons.

"Adopting this approach to training means more high value and challenging activities can be integrated into CS courses in the future.

"It will mean that our officers and sailors will be better equipped to meet their responsibilities in what could be quite challenging circumstances."

The Australian Defence Electronic Learning Environment (ADELE) has been adopted as the platform to deliver the online training.

"Access to the module will allow members to familiarise themselves with the fundamentals of damage control, which will allow more time to be spent on developing leadership skill sets during the residential phase," LCDR Painter said.

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Melville SHS Aviation Student in Geraldton Mercy Flight

Melville SHS is pumping out Pilots. The Specialist Aviation School has had keen cohorts of students coming through its program who are flying before they finish school. One example is Year 12 student Scott Morgan. Last December Scott was the youngest student in WA to obtain his PPL licence. He is now the first high school student to complete further training to obtain complex aircraft endorsements including retractable undercarriage and variable-pitch propeller, aerobatics rating, multi-engine and Tailwheel endorsement.

Recently Scott had the most exciting day of his aviation career when he volunteered to fly to Geraldton for the final leg with ex-Melville student Thomas Ayoub, to rescue puppies from death row in Dubbo NSW. They flew n 8-seater Piper Navajo in an Australian-first trip for organisation Fly4Paws.

Scott said “I have now flown over 130 hours since starting Year 8 in 2014 with Mr Randall Brink as my instructor. I would now like to start flying for a Commercial Licence. After that, I will be able to get paid for flying and hope to get a job either with DFES conducting ‘Fire-Spotting’ or with a charter company while I build hours for a pathway into an airline”.

Melville SHS is the only school in WA to have two flight simulators, allowing the two course flight instructors to coordinate the many students keen to get experience. Six students have gone solo in the last year ages mainly 16 and 17.

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