INSIDE

Volume 69 No 4

Editor
Mark Eaton
wingseditor@hotmail.com

Publisher
Flight Publishing Pty Ltd
wings@flightpublishing.com.au
02 9386 4213

Governance
Bob Bunney

Advocacy & Entitlements
Richard Kelloway OBE

Communications & Media
Lance Halvorson MBE

Secretary
Peter Colliver
natsec@raafa.org.au

Treasurer
Bob Robertson

DIVISION CONTACTS

ACT secactraafa@bigpond.com
0428 622 105
NSW admin@raafansw.org.au
02 9393 3485
QLD raafaqldpres@gmail.com
0417 452 643
SA raafaad@internode.on.net
08 8227 0980
TAS secretary@raafatas.org.au
03 6234 3862
VIC office@raafavic.org.au
03 9813 4600
WA enquiries@raafawa.org.au
08 9288 4710

MATERIAL CLOSING DATES

Autumn Issue - 14 January
Winter Issue - 14 April
Spring Issue - 14 July
Summer Issue - 14 October

JOIN THE RAAF ASSOCIATION

Subscribe online at www.raafa.org.au, click on "**Wings Archive**" and follow the prompts; pay via BPay or funds transfer via your bank. A 12 month subscription is $28.00, incl GST, within Australia and AUD36.00 for Asia and Pacific regional addresses.

18

22

34

FEATURES

REGULARS

Front Cover: Precision guided munitions (PGMs) have changed the planning and employment of air delivered weapons markedly in air forces in the world. The high accuracies of the launch aircraft and the PGM guidance systems result in high probabilities of hitting the target, at the same time as minimizing collateral damage to nearby structures and humans.
Further, their reduced size and delivery speed make them very difficult to intercept by the increasingly advanced enemy target defences.
However, PGMs are not a panacea—they are fallible and subject to humans in the sequence of events; in particular, accurate intelligence. They are not always the 'silver bullet'. *Cover: Mark Eaton*

Scan with your QR app to access our web site

Also available on line at www.raafa.org.au

Discover Amberley's closest master-planned residential estate and save up to $35,000* using our Big Block Builder's Boost, ends 31 December.

BIG BLOCK BUILDER Bonus

Save up to $35k*

Register your interest now at waterlea.com.au/big-blocks

Sales centre open 7 days,
10am to 5pm. T. 1800 996 752
62 Rohl Road, Walloon

OLIVER HUME

*Terms and conditions apply

France demonstrates joint integrated force through FlightPro®

The software system developed by Australian company, Ocean Software, and relied upon by the RAAF to manage operational planning and scheduling of resources and aircraft, is now used in fourteen countries, supporting thirteen militaries, with everything from Air Traffic Control, Recruitment to Retirement Training Management, Maintenance and Communications, to Reporting and Operational Readiness.

The latest customers to adopt FlightPro® are the Belgian Air Component and French Armed Forces. The French, in particular, are demonstrating true information superiority using FlightPro® across all air arms with the three Services as part of the MOSS SCOA programme. The FlightPro® enterprise framework will form the missing link for combined planning, improved situational awareness and collaborative decision support.

For both countries, FlightPro® was selected, after rigorous competitive tender processes, where both the capability of the software, and Ocean Software was thoroughly scrutinised against both global and home-grown competitors.

FlightPro® is a single integrated system, purpose built to manage the end to end processes of military aviation operations and training management. Platform and mission agnostic, it effectively replaces the myriad of stove piped systems, whiteboards, and spreadsheets while the open architecture facilitates interoperability in the joint and coalition environment, to provide an unrivalled common operating picture.

The ability to aggregate vital data in real-time has resulted in FlightPro®'s expansion to support the agencies and communities that support flying operations, including Maintenance, Air Defence Controllers (GCI), Air Traffic Controllers (ATC), Joint Terminal Air Controllers (JTAC's), Fire Services and many other organisations.

FlightPro® delivers considerable Return on Investment (ROI) as the only COTS system with the capability to enterprise manage both front-line operations and school house training in a single toolset.

Both France and Belgium recognised that FlightPro® enabled them to address one of their core challenges, of maintaining their operational edge into the future:

Belgian Air Component Project Officer, Steven Van der Vorst, said: *"Future challenges such as ' do more with less' and increasingly complex weapon systems, including the A400M, NH90 and future fighters will require ever more efficient tools such as FlightPro® in order for the weapon systems to be employed effectively".*

In use by the RAAF since 1994, FlightPro® also plays a vital role in Plan Jericho Project 16, where the Air Force Aviation Academy has adopted Ocean Software's FlightPro® software which includes the (Bluedrop LearningLogics®) LMS and LCMS modules.

AIRCDRE Geoffrey Harland said *"….The LMS capability will provide the academy with a single system where all the operations are scheduled, training is delivered and tracked, and data is stored." "This allows for system monitoring, evaluation, reporting and total system accountability in line with quality management standards."**

FlightPro is well positioned to support the goals of Plan Jericho delivering bottom- up innovation that delivers on many of the requirements of top down design, such as the collective recruitment to retirement training plan, modernizing the Air Forces Education and Training system, and supporting the scheduling and operational needs of Live, Virtual and Constructive capability.

For over 25 years we have sustained, upgraded, and advanced the capabilities of FlightPro to ensure it continues to meet the technological needs of tomorrow.

*RAAF Air Force Newspaper, Oct 5th 2017, Page 20, Streamlined Learning Article

INFORMATION SUPERIORITY

DELIVERING NEXT GENERATION INTEGRATED SYSTEMS TO AUSTRALIAN DEFENCE FOR 25 YEARS

Ocean Software is a 100% Australian owned Data Systems Integrator, with expertise in complex operations, aviation systems, and health knowledge management. We support 13 Militaries across 14 Countries through the development and delivery of high quality COTS software products.

- SOFTWARE ENGINEERING
- REPORTING & DATA ANALYSIS
- E-HEALTH
- AVIATION OPERATIONS
- IT SERVICES & PROJECT MNGMT
- LMS, LCMS & TRAINING SERVICES
- COMMAND & CONTROL
- SYSTEM INTEGRATION
- PROCESS OPTIMISATION
- CURRENCY & QUALIFICATIONS

www.ocean.software

DECONTAMINATION WHEREVER IT'S NEEDED

Scott Safety is a global leader in respiratory protection, personal protective equipment and gas detection technologies. Our commitment is to develop innovative solutions to protect workers against environmental hazards. The Scott Safety **Light Decontamination System (LDS)** is lightweight, flexible and incorporates atomisation that surpasses any existing technology and represents a true major advancement in CBRN decontamination.

TO FIND OUT MORE ABOUT OUR RANGE

VISIT WWW.SCOTTSAFETY.COM
OR CALL US ON 131 772.

3M | SCOTT SAFETY

AirVice-Marshal Brent Espeland AM (Retd) 1948-2017

National President

Brent assumed the National President position at pivotal stage in the Association's evolution. The transition from our World War II cohort had been completed, and a strategic plan had been framed.

Implementation, however, was frustrated and stalled. There was a vision for one Association, but we remained tribal and territorial. Some even feared that an effective national body would somehow diminish the role of the State Divisions

Brent proved to be the oil that smoothed our path and the glue that has held us to it. He believed that in addition to having the best-led, best-trained, best-equipped military in the world, Australia should have the best cared for, best-treated, best-respected veterans in the world.

He had a passionate belief that, though not Air Force, the Association is a creature of Air Force and an integral part of the Air Force family, and of the broader Defence community, and that it has a role to play in advancing and preserving the interests of serving and former Air Force and ADF members, and providing support not elsewhere available.

His ability to handle delicate situations, was demonstrated early in his presidency, when faced with a couple of issues he dealt with them in such a way that the protagonists were able to accept the outcome, even though it wasn't precisely what they had hoped for.

When it was proposed that DFWA, the Naval Association, RAR Corporation, the Special Air Service Association, and the Air Force Association form the Alliance of Defence Service Organizations (ADSO), Brent was determined that this attempt must succeed, where previous attempts at coalition had failed to last.

As a measure of the success to which his background efforts positively contributed, ADSO now comprises some 17 member organizations. An even more significant indicator of the progress that has been made is the joint response to the Federal Minister for Veterans Affairs, which Brent signed, two weeks ago, on behalf of ADSO, together with the National President of the RSL – the first such joint response I can recall in my thirteen years of involvement at the national level.

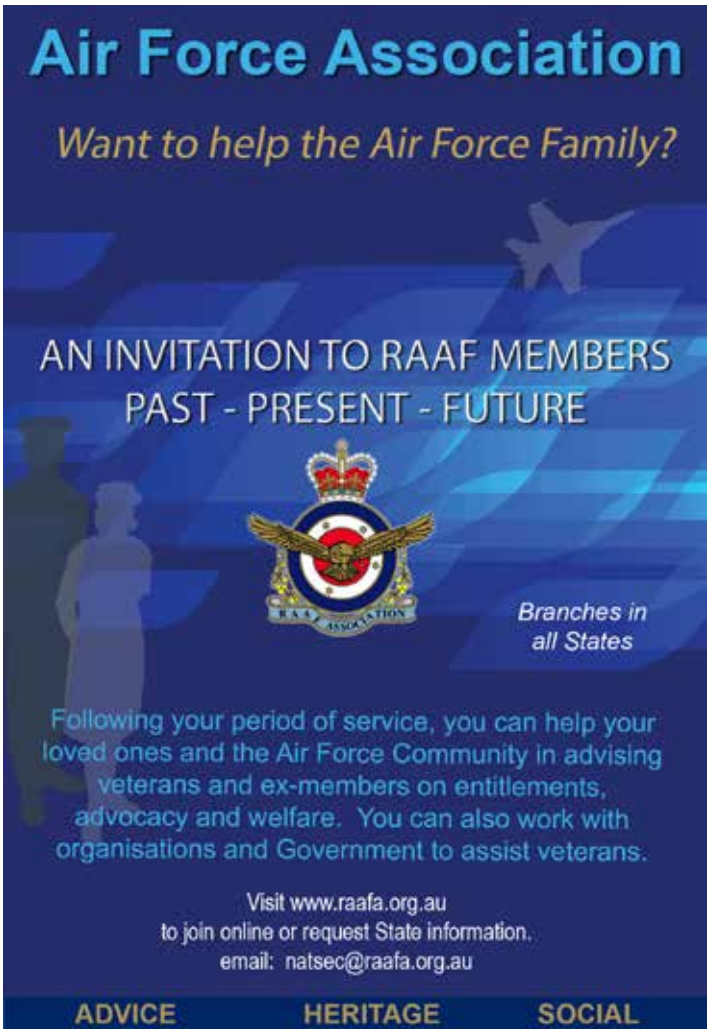
Brent had a real knack for focussing on the essential elements of a situation or debate. He could lead by the nose, if he had to, but he preferred to persuade, to nudge or cajole to achieve the desired outcome. The right outcome, was better than a fast outcome.

He had a tremendous capacity for work, and gave his all to every task he undertook, and to every position he accepted. Weeks after his operation in May 2017, he travelled to Melbourne, after a medical procedure in the morning, to chair a meeting of our National Council.

In August he joined our strategic planning session by Skype from his hospital room. His insightful contributions helped us to re-shape our plan and our vision for the future.

He may not have been large in stature, but he leaves big shoes to fill. Our lasting tribute to him will be to give substance to his vision.

Peter Colliver,
National Secretary



Weapons Effort Planning

As described in Part 1 of Weapons Effort Planning, precision guided munitions (PGMs) have changed the planning processes markedly in air forces in the world. An accepted definition of precision-guided munitions (PGM, smart weapon, smart munition, smart bomb) is a guided munition intended to precisely hit a specific target, to minimize collateral damage and increase lethality against intended targets[1]. The munition can include air target weapons, but only air-to-ground weapons are discussed here.

As stated in Pt 1, the Vietnam war saw the first use of laser guided bombs (LGBs), the widely used Paveway series of weapons. The LGBs were standard bombs (usually the Mk84 GBU10 2000lb bomb) to which a laser guidance kit was installed. Their accuracy was impressive and LGBs were credited with destroying two main bridges, the Paul Doumer and the Thanh Hoa bridges.

The advantage of PGMs was obvious to many professional airmen and planners. With a CEP approaching 25m, if crews could find the target, largely certain with modern inertial based weapons systems, a weapon had an increased probability of impact nearer the target. With weapons employed, a direct hit would destroy the target. Against SAM sites, vehicles and point targets, PGMs were devastating.

However, as determined in Vietnam, PGMs were of little use against area targets, eg, railway marshalling yards, as their damage effects were too restricted. Target characteristics and damage levels required needed to be matched with the weapons employed. In the example, the area bombing was not an option (politically) due to the unacceptability of probable collateral damage; with the weapons and delivery systems available, forecast to be significant. Post-strike analysis showed that, while the B-52 strikes crippled the North Vietnamese rail transport system, it had little overall effect as most supplies were moved into North Vietnam by trucks from China

AIR POWER AND COLLATERAL DAMAGE

Air power has advanced a lot since Vietnam, the Persian Gulf War 1991 and even the Gulf War in 2003. Modern air power is capable of neutralising even a very small target with precision, discrimination and proportionality. With timely and accurate intelligence, air power can and does carry out strikes with almost no collateral damage.

A USAF B-2 bomber releases Mk83 bombs on a test range in USA- probably resulting in some collateral damage. *Photo: USAF*

A minimum level of unintended collateral damage may be tolerable in state-on-state conflicts in which the antagonists tend to operate within a broad spread of the Law of Armed Conflict (LOAC). This could also be because of the relative ease with which combatants and non-combatants can be differentiated in a conventional conflict[2].

PRECISION GUIDED MUNITIONS

Precision Guided Munitions (PGMs) have undergone continuous development and implementation since Vietnam. Many

[1] USAF definition.

[2] Air Power and Collateral Damage; Air Power and Development Centre Pathfinder, #247 July 2015.

types have been developed with various profiles and parameters for employment, mid-course and terminal guidance. Most conventional PGMs employ blast/ fragmentation or shaped-charge warheads; however, some special type non-nuclear warheads have been developed.

A number of PGMS, while retaining their original number designation, eg, AGM-114 Hellfire, have been in production for many years; they are still in use after 15 or more versions. Similarly, the AGM-65 Maverick has been 'around' for some years. However, only the more recent PGMs versions, and relevant to Australia, are discussed further.

ARDU technicians load the JASSM on to the test Hornet at RAAF Base Williamtown during the trial. *Photo: SGT Shane Gidall*

JOINT DIRECT ATTACK MUNITION

The Joint Direct Attack Munition (JDAM) GBU-31 is a tail kit fitted to 'free-fall' bombs to produce a high accuracy, all-weather, autonomous, conventional bombing capability. JDAM can be launched from approximately 15 miles from the target and each is independently targeted. JDAM is not intended to replace any existing weapon system, but upgrades the existing inventory of Mk83 1,000lb and Mk84 2,000lb GP bombs by integrating a guidance kit consisting of an inertial navigation system/global positioning system guidance kit. The 1,000lb variant is designated the GBU-31 and the 2,000lb version is designated the GBU-32. The Mk82 500lb version is the GBU-30.

Following in-flight weapon selection, the weapon automatically initialises its inertial navigation system (INS) with the aircraft system, after which the targeting data is automatically down loaded to the weapon.

Once released, the bomb's INS/ GPS guides the bomb to its target, regardless of weather. Accuracy in GPS-aided INS modes is about 13m (CEP) and in INS-only modes, 30m (CEP). In the event JDAM is unable to receive GPS signals after launch, because of jamming or otherwise, the INS will provide the navigation/targeting solution. The Guidance Control Unit provides accurate guidance in both GPS-aided INS modes of operation and INS-only modes of operation.

Following a requirement for a laser designated capability, Boeing developed a Laser JDAM (LJDAM) to provide both types of guidance in a single kit, designated the GBU-54. Based on the existing JDAM configurations, a laser guidance package is added to a GPS/ INS-guided weapon to increase its overall accuracy. In addition, Raytheon has developed the Enhanced Pave Way family, which adds GPS/INS guidance to their family of laser-guidance packages.

These "hybrid" laser and GPS guided weapons permit the carriage of fewer weapons types, retaining mission flexibility, as these weapons can be employed equally against moving and fixed targets, or targets of opportunity. A typical weapons load on an F-16 in the Iraq War included a single 2,000-lb JDAM and two 1,000-lb LGBs. With LJDAM, and the new GBU-39 Small Diameter Bomb (SDB), these aircraft can carry more bombs if necessary, and have the option of satellite or laser guidance for each weapon release.

JOINT AIR TO SURFACE MISSILE

The Joint Air to Surface Standoff Missile (JASSM), AGM-158, is a precision cruise missile designed for launch from outside area defences to kill hard, medium-hardened, soft, and area type targets. The missile is being fitted to the B-52H, F-16C/D, F/A-18E/F, F-15E, F-117, B-1B, B-2 and the P-3C.

The weapon is designed to be launched beyond enemy air defences against both fixed and re-locatable targets. JASSM's midcourse guidance is provided by a Global Positioning System (GPS)-aided inertial navigation system (INS) protected by a new high, anti-jam GPS. In the terminal phase, JASSM is guided by an imaging infrared seeker and a general pattern match-autonomous target recognition system that provides aimpoint detection, tracking and strike.

The introduction into RAAF service of an all-weather long-range air-to-surface missile started three years ago when a test AGM-158A JASSM was successfully released from an F/A-18 at the Jervis Bay range facility.

The RAAF acquired the missile through Project Air 5418 Phase 1 – Follow-On Stand-Off Weapon, under contracts with Lockheed Martin and the US Air Force. The DMO project office is teamed with the Hornet Weapons Integration Project Team, from the Tactical Fighter Systems Program Office, to integrate JASSM onto the Air Force 'classic' F/A-18A/B+ Hornet aircraft and achieved Initial Operational Capability (IOC) at end of 2009.

A F/A-18A, loaded with a JDAM weapon. *Photo: RAAF*

JOINT STRIKE MISSILE NSM/ JSM

The Royal Norwegian Air Force (RNoAF) needed an effective strike weapon for its F-35/JSF fighters. Based on the proven Naval Strike Missile technology, RNoAF, in conjunction with Kongsberg, developed the Joint Strike Missile (JSM). The missile is designed to attack highly defended targets at sea and land, including operations on open sea, in the littorals and confined waters. Due to its unique target recognition capabilities, it can be used in congested areas, with a mix of enemy and friendly targets/ installations.

The JSM has extremely good defence penetration capabilities, the seeker system provides a programmable hit-point and the intelligent programmable fuse ensures the required damage in the target. Funded by RNoAF and Australia, integration work has been ongoing since 2004, a close co-operation between Kongsberg and Lockheed Martin.

The air-launched Joint Strike Missile (JSM) variant is designed to be carried and launched internally from the F-35 Lightning II fighter's 2 internal bays (1 missile per bay), or carried on external hardpoints by any aircraft type that has integrated the weapon with its systems. Though it shares many characteristics of the Naval Strike Missile (NSM), Kongsberg changed the wings, moved the intake to the missile's sides, and added other modifications as the missile was developed.

Development included detail design and integration/fit checks for the F-18, F/A-18 Super Hornet, and F-35A. The missile is guided by Imaging IR, Inertial, GPS and terrain matching and has a Link 16 compatible data link for target update, re-targeting, bomb hit indication and mission abort. The highly effective warhead (100Kg) with titanium casing and programmable fuse provides a destruction capability equivalent to a 500lb (227Kg) bomb. Primary destruction effect is blast, with secondary effects from controlled fragmentation.

The development is funded by Norway through phase 3 (final system integration and flight testing) which ends in 2017. The first flight tests took place early 2015. Phase 3 will give opportunities for other nations to become part of the JSM program, and several of the JSF/F-35 partner nations have shown strong interest.

SMALL DIAMETER BOMBS

Development of small diameter bombs (SDB) started in 2006 for a 250 pounds (113 kg) class bomb that can identify and strike mobile targets from standoff distances in all weather conditions. They were integrated on the F-15E and F-35 fighters in 2009 but the project was put on hold for some years.

The GBU-39 bomb can use a GPS/ INS system to guide itself into the general vicinity of a moving target during the initial search phase, with course correction updates provided using a Link 16 over UHF data link. The bomb has three modes of target acquisition: radar, infrared homing using an uncooled imaging seeker, and semi-active laser homing. The bomb had a shaped charge warhead with both blast and fragmentation effects, which made it effective against infantry, armour (including MBTs), unhardened structures and buildings, as well as patrol craft sized boats and other soft targets. Production of the GBU-39 finished in 2013; a total of 12,300 were made.

After many delays, the SDB-II GBU-53/B is now in slow rate production by Raytheon and is now the US manufactured air-launched, precision-guided glide bomb. The bomb weighs about 200 lbs (90Kg) and has jam-resistant GPS/INS targeting and a seeker with three modes of operation: semi-active laser, millimetre-wave radar and uncooled imaging infrared.

By combining these 3 modes, the GBU-53 can have excellent performance against a variety of target types, under any weather conditions, while making it much more difficult to use countermeasures or decoys successfully.

Link-16 makes the weapon part of a much larger system and gives SDB-II the ability to be released by one platform and then targeted or re-targeted by another. The bomb can also be sent an abort command, if necessary. If the link is lost, the bomb will continue to the target using its own on-board seekers.

As different targets require different warhead types, the GBU-53 contains a warhead that delivers shaped charge, blast and fragmentation effects at the same time. The multi 'effects' shaped charge, blast and fragmentation warhead makes it deadly against armour, buildings and soft-skinned targets.

The US State Department has cleared a potential sale of GBU-53/B Small Diameter Bomb Increment II weapons to Australia. The RAAF plans to purchase 3,900 GBU-53/B Small Diameter Bombs and related equipment and services, through the FMS process, from manufacturer Raytheon. Extras include weapon load crew trainers, practical explosive ordinance disposal trainers, bomb containers, support, and ground crew test equipment. Transportation, warranties, repair and return, maintenance, publications, and technical documentation round out the package.

The US Defense Security Cooperation Agency (DSCA), said the sale will complement the ongoing sale of F-35A Joint Strike Fighter aircraft to the RAAF. The capability will strengthen combined

The Raytheon GBU-53/B: *Photo: artist impression from Raytheon*

operations, particularly air to ground strike missions in all-weather conditions, and increase interoperability between the United States and the RAAF.

US plans to equip F-15E Strike Eagles, F/A-18 E/F, F-16, F-22A, F-35A, B-52, B-1B, and B-2A bombers and to replace the Hellfire missiles on MQ-9 Reaper drones with the GBU-53/B.

Special Operations Command is even considering it for their AC-130 gunships.

OTHER PRECISION PLATFORMS

There are a number of other platforms and means that can be classed as Precision Guided Munitions:

• Remotely Piloted Aircraft (RPAs), sometimes called Uninhabited Aerial Vehicles (UAVs) or Uninhabited Combat Aerial Vehicles (UCAVs), while not munitions, carry and launch PGMs, eg, the Hellfire weapons on the MQ-1 Predator and the MQ-9 Reaper aircraft.

• Cruise missiles: Air and Submarine Launched Cruise Missiles (ALCM/SLCM) - major 'players' in the Gulf War, essential to the USAF strategic bomber fleet—the B-52H, B-1B Lancer, B-2 Spirit and the B-21 Raider, and to the USN. It includes nuclear and non-nuclear weapons; these are separate topics.

• Airborne Electronic Attack (AEA)—a topic for a major capability in any future operation, and of critical importance . A major capability provided by the EA-18G Growler EW aircraft and used for kinetic and non-kinetic attack and essential for Australia.

• Counter-electronics High-powered Microwave Advanced Missile Project (CHAMP) which renders electronic targets useless, is a non-kinetic alternative to traditional explosive weapons. CHAMP emits bursts of high-powered energy, effectively knocking out the target's data and electronic subsystems and allows for selective high-frequency radio wave strikes against numerous targets during a single mission. In the near future, this technology may be used to render an enemy's electronic and data systems useless even before the first troops or aircraft arrive.

• Cyber Means—allied with AEA and CHAMP, can be provided by aircraft or other means and affects all computer systems, the Internet, social networks and any radio device that radiates an electromagnetic signal, eg, the 'smart phone', Wi-Fi, Bluetooth; countermeasures to these threats are vital for Australia.

Artist depiction of EA-18G, equipped with the ALQ249 Next Generation Jammer (NGJ). *Photo: Raytheon*

SUMMARY

The most effective use of air power is the correct design of aircraft and their matching to the role/s envisaged, frequently not achieved because of politics, service rivalry and money. Together with aircraft introduced into service for offensive operations, weapons systems are essential to provide viable and sustainable capabilities to achieve the operational aim. In their employment, weapons to target matching is essential to achieve the required damage at the least cost in aircrews, aircraft, civilians and non-military infrastructure in the target area, ie, collateral damage. All of these have not always been achievable or have been given due consideration.

Although PGMs, stand-off weapons and small diameter bombs do have an effect in producing better targeting outcomes, they are not a panacea—they are fallible and subject to humans in the sequence of events. While the reduced size and increased accuracy of SDBs may help to reduce collateral damage, a major benefit in their employment is that they are very difficult to intercept, due to their speed and size, by the increasingly advanced target defences.

Governments require a greater emphasis on non-kinetic weapons, ie, weapons that can damage an enemy's capabilities and functions without causing structural and visible damage to infrastructure or result in trauma and impact injuries to civilians. Such requirements can only be provided by Airborne Electronic Attack, or other electronic means, in operational areas.

Kinetic weapons that can limit casualties are the preferred option in areas where the 'gentle approach' is not feasible and the reduction in civilian casualties cannot be guaranteed or is not paramount in a physical attack. However, achieving a reduction in collateral damage places greater demands on the intelligence, surveillance and reconnaissance (ISR) than ever before. Destroying the wrong target because of faulty intelligence is not a rare occurrence.

Geospatial information and geocoding of targets provided by the latest geographical information systems (GIS), in conjunction with GPS positional data is essential to future operations. Artificial Intelligence (AI) is not the answer or the 'silver bullet' as AI systems have humans in the chain to design the algorithm, program the device and provide the data. But, they may be prominent in operational spheres in the future.

Lance Halvorson

With acknowledgement to:
The US Defense Security Cooperation Agency (DSCA),
Lockheed Martin Corp
Raytheon
USAF
RAAF
Kongsberg

Main picture: Artist impression of JSM and a RAAF F-35. *Photo: Kongsberg*

Founded in 2001, Milskil is a unique 100% Australian owned Company that provides sovereign operational training for Australia's warfighters. As a strategic air combat training partner of the Royal Australian Air Force, Milskil has been supporting simulator and ground school training for aircrew of the Classic and Super Hornet for over 15 years. Growler has recently joined this list.

Milskil understands that quality operational training is a key discriminator leading to success in battle. Milskil readily integrates into the ADF training continuum and offers high-end instruction ranging from operational conversion, through to weapons school training and mission rehearsal. As a Fundamental Input to Operational Capability, Milskil takes very seriously its responsibility to train the next generation of warfighters.

Milskil has also provided training to Air Battle Managers of the Air Defence Ground Environment and Airborne Early Warning and Control capabilities, as well as delivering Electronic Warfare and JTAC training. Milskil offers operational support services such as range training and safety officers training, capability planning and management, staff augmentation, exercise control and white force staff. Our extensive experience designing, developing and executing constructive events, and integrating complex devices into multi-layered security domains is second to none in the Australian domain.

Milskil looks forward to continuing to provide support to the Air Force and other Defence aviation elements as 5th Generation systems are introduced and matured and as organisation structures are evolved with an increasing focus upon operational training and advanced, integrated warfighting capabilities.

Targeting GPS Weapons – not as simple as you may think

The ability to get a weapon on a target has been a critical enabler of air power since the beginning of aviation. With the introduction of high-technology navigation systems, such as Global Positioning System (GPS), the geosciences of mapping and locational accuracy became even more important to the targeting process.

The most primitive form of navigation used features on the Earth's surface, such as mountains, coastlines and rivers. This evolved with the mathematics of trigonometry to give us survey and targeting as science. Later navigators used observations of the sun, planets, moon or stars to calculate their absolute position which is position determined without reference to surface features. Even some relatively advanced systems used astronavigation. The first generation of intercontinental jet airliners and ballistic missiles navigated by the stars until more accurate systems were developed. GPS introduced the concept of absolute position referenced to a man-made constellation of satellites instead of natural constellations.

The heart of the GPS is a constellation of satellites which orbit the Earth twice per day at an altitude of some 20 000 km. The GPS receiver determines its position by comparing the time of arrival of signals from a number of satellites and displays this as latitude, longitude and elevation.

Traditionally, targeting was done by one of two methods. The first method was line-of-sight where the target was sighted and the weapon was released at a point determined by operator experience or guidance from a bombsight. Later, technology provided a second method in which a weapon release point was calculated in the form of range and bearing from the target. The aircraft was flown to the release point using radar or inertial navigation system positional information, and the weapon released without the target ever being sighted. Laser designation gave us unheralded accuracy and precision as targets were illuminated with a laser spot to which weapons could home on. The introduction of GPS in 1995 allowed a new form of targeting where the weapon, once released, flew to its target's coordinates using GPS information alone. However, the accuracy and simplicity of this last method was not without its difficulties and presented two major challenges.

The first challenge is the accuracy of elevation information. The most common use of GPS in navigation is in two-dimensional situations such as driving or walking on the Earth's surface. Location is presented as a marker on a map. When the third dimension of elevation is required, some problems start to appear. In the past, elevation was provided in the form of height above mean sea level, the datum for which was an imaginary sphere of constant radius from the centre of the Earth. But this led to inaccuracies because the world is not a sphere—it is an oblate spheroid with significant lumps and bumps. Inaccuracies in elevation data would not be a problem if bombs fell vertically, but when they follow a trajectory, an elevation error of several metres can cause the weapon to miss its target.

To provide the accuracy required to drop weapons, a new reference system called the Digital Point Precision Data Base (DPPDB) or 'D-Point- was created by the US Department of Defense. DPPDB is a fundamental change from historical projections in that it references every point on earth to an X, Y and Z measurement from a theoretical centre point of the Earth.

Key Points

- **GPS provides unparalleled accuracy and precision in targeting.**
- **Targeting coordinates used in GPS-aided weapons have multiple error risks from many sources.**
- **These risks demand rigorous governance and the ADF has achieved and retained accreditation in GPS targeting.**

The second great challenge came from the issue that there are places that we can never set foot due to either inaccessible terrain or the closed borders of a hostile nation. This problem is addressed by imaging satellites, which provide the ultimate 'high ground' from which to observe and record. Orbiting satellites take overlapping two-dimensional images and, by the use of stereoscopic analysis, recreate a three-dimensional model of the surface. However, in doing so, sophisticated algorithms are needed to stretch and compress the flat images back into an accurate model. The greater the vertical change or slope, the greater is the possibility of error in the height or elevation. In dense urban terrain such as Manhattan or the Sydney CBD, the heights of adjacent surfaces (tops of buildings) may vary by 200 metres or more. A similar problem in mountainous terrain can also introduce significant errors.

Accuracy in the selection of target coordinates is critical; any error may result in, at best, a miss or at worst, collateral damage that could undermine legitimacy of a targeting activity in the first place. Hence, in urban warfare, where the risk of collateral damage is greatest, the likelihood of vertical error is also greatest.

Identifying this risk, the US introduced the Precise Point Mensuration (PPM) program whereby units were rigorously tested in an accreditation program. The selection of aim points in the targeting process became a controlled activity limited to certified organisations and individuals. Target coordinates were 'dropped' a number of times and assessed by independent assessors. Selected aim points have a 'life' before needing revalidation in recognition of changes that frequently occur in the human terrain.

The introduction of GPS weapons into the ADF was accompanied by recognition of the need for governance of the use of GPS in targeting. The ADF PPM Program Management Office was awarded accreditation in 2013, the first entity outside of the United States to be awarded accreditation by the United States National Geospatial Intelligence Organisation. Full accreditation was renewed in May 2017 ensuring ADF precision targeting remains world best practice.

The key point to remember about GPS-aided weapons is that they are released with a set of three-dimensional coordinates that will determine where the weapon strikes. The coordinates were determined from significant mathematical modelling while drawing data from two satellites systems wobbling in their orbits as they pass through variations in the Earth's gravitation field. The coordinates may have also been based on imagery collected through electro-optical lenses that were subject to the rigours of space, recorded on a flat collector frame and reconstructed, after transmission to a ground station, by superimposing two stereoscopic flat images to reconstruct a three-dimensional image based on an Earth-centred, Earth-fixed global reference frame.

Every precaution should be taken to ensure the coordinates are as accurate as possible. Too much is at stake to let avoidable errors creep in.

Reprinted courtesy of Air Power Development Centre Canberra ACT
www.airforce.gov.au/airpower
airpower@defence.gov.au

ACE in the HOLE

By Amy McCullough,
News Editor

PACAF's new validated concept - Agile Combat Employment - has changed the front lines in the Pacific Theater.

The threats and operational environment in the Pacific Theater have been evolving rapidly. China is ramping up military activity in the South and East China seas, North Korea is growing more aggressive with its ballistic missile launches and development program, and Russia is deploying more long-range aviation assets to the area and flying them in a more aggressive manner.

That's why Pacific Air Forces recently validated a new concept called Agile Combat Employment, or ACE. It is intended to ensure all forward deployed forces are ready for a potential contingency with little notice.

"As we continue to focus on our readiness and credibility of forces deployed forward, we see our adversaries and potential adversaries changing," said Pacific Air Forces Commander Gen. Terrence J. O'Shaughnessy at AFA's Air Warfare Symposium in Orlando, Fla., in March. "We see they have potentially shrunk the theater. For example, folks in Alaska and Guam are now on the front lines."

As of early March, North Korean leader Kim Jong Un had already fired 117 ballistic missiles in just five years of rule. That's an enormous increase from his father, Kim Jong Il, who fired 34 ballistic missiles over the course of 17 years. On March 6, the rogue regime fired off a salvo of five missiles toward Japan, in what North Korea described as "practice" for an attack on US bases in Japan. Four of the missiles landed in the sea near Japan; one failed to leave the launch area.

China continues to build up runways and military facilities on three man-made islands of dubious legality in the South China Sea. In response, Vietnam is extending a runway on one of the islands it claims in the South China Sea, with some think tanks estimating the runway could be extended from less than 2,500 feet to more than 4,000 feet. This would enable maritime surveillance aircraft, transport planes, and combat aircraft to operate from the island.

AGILITY WORK

Russia, too, is expanding its presence in the region. The Russian Defense Ministry announced last year the formation of a new heavy bomber air division, to be located in the country's far east and made up of Tu-95MS

strategic missile carriers and Tu-22M3 long-range bombers. Russian state media reported the aircraft would be tasked with patrolling the Pacific near Japan, Hawaii, and Guam. Russia also is conducting military exercises with China.

Considering these operational developments, "the risk of tactical miscalculations that result in a strategic situation that's adverse to the United States is becoming more and more real," O'Shaughnessy said.

The Air Force continues to work on its agility so it can meet these new challenges and it is changing the way its forces operate. Instead of sending a whole squadron of F-22s, USAF may

now deploy a smaller cadre of F-22s along with a smaller logistics tail.

That was the thinking behind the Rapid Raptor concept, which was first introduced in 2013. The Air Force has tested that concept several times since then, but is now looking to take it a step further.

Agile Combat Employment builds on Rapid Raptor, which focused mostly on logistics and fuel. "Now we're taking it to the larger concept of, 'How do we operationally maneuver that? How do we work the command and control for that? How do we make sure that the aircraft that are out, potentially in smaller locations, still tie into the bigger picture?' " O'Shaughnessy said.

The command tested pieces of ACE with the recent deployment of F-22 Raptors to Australia in February for the Avalon Airshow in Geelong. Twelve F-22s from the 90th Fighter Squadron at JB Elmendorf-Richardson, Alaska, flew to RAAF Base Tindal, Australia, a typical forward operating base. From there, two F-22s roceeded to the much smaller RAAF Base Townsville, where they conducted a bare-base operation, said

O'Shaughnessy. The goal was to exercise the ACE concept of operations "by concurrently conducting fifth generation fighter operations from a main operating base and a forward, austere operating base," according to PACAF.

STAYING CONNECTED

The fifth generation fighters brought just one C-17 and one KC-135 with them. After landing, however, as a support team established mobile secure communications with the 613th Air and Space Operations Center (AOC) at JB Pearl Harbor-Hickam, Hawaii, maintainers refueled the F-22s on the ground from the C-17's wing tanks.

O'Shaughnessy said under ACE it is possible the Navy or Army might provide fuel bladders to refuel the fighters, noting the concept also can be applied to F-15s, F-16s, or allied aircraft.

In addition to carrying the necessary equipment for the Raptors, the C-17 can be used for command and control, ensuring a mission commander is always connected. During the recent deployment to Australia, O'Shaughnessy said an F-22 pilot rode on the C-17 and remained in constant contact with the 613th AOC. At one point, the pilot received a retasking order from the AOC and relayed that information to the Raptors.

The C-17 also carried missiles that were unloaded once the contingent landed, and crews practiced loading

them onto the F-22s. "The pilots used the secure communications to finalize mission planning and launched again in less than three hours to return to RAAF Base Tindal," according to an ACE fact sheet provided to *Air ForceMagazine*.

O'Shaughnessy said PACAF can take advantage of pre-positioned stock or it could land a joint force, such as Marine Corps or USAF F-35s.

BRINGING IN THE F-35

Brig. Gen. Craig D. Wills, Pacific Air Forces director of strategic plans, requirements, and programs, said USAF has tested the ACE concept on a "very limited basis with F-35s" assigned to Hill AFB, Utah—the Air Force's first operational unit—during a deployment to Mountain Home AFB, Idaho. Although the service is currently focused primarily on introducing the F-35 in to the fleet, Wills said the command intends to expand the "scope and scale" of the F-35's participation in ACE in the coming months and years.

ACE provides more flexibility by enabling US forces to operate just about anywhere in the Indo-Asia-Pacific, even though there may not be a lot of established infrastructure or the environment may be contested.

"We're looking to find things like air superiority. … In recent history we've always been able to get that relatively [easily]. That won't always be the case in the future," said O'Shaughnessy.

"We have to make sure we have the ability to project power within the Pacific. We have to make sure we're able, through operational maneuver, … to maintain air superiority even though our adversaries may be trying to set up an A2/AD [anti-access, area denial] type environment."

Elliot Springs – Soaring Views Just For You

While your career at RAAF Base Townsville takes off for new heights, make sure the place you call home is somewhere you can really spread your wings.

Elliot Springs –a brand new residential community by Lendlease – is the perfect place for anyone looking for stunning views, a natural setting, plenty of fresh air and wide open spaces.

Yet this master planned community also offers the ultimate in convenience and lifestyle with its array of amenities and abundance of infrastructure.

Just 15km from Townsville's CBD, Elliot Springs is nothing short of a homeowners' dream, with 360 degree views of mountain ranges, neighbouring bushland and ridge walks with views to Magnetic Island and the Coral Sea.

Whether you're a nature lover, adventure seeker, family provider or savvy investor, Elliot Springs is the perfect place to feel inspired, feel relaxed, and feel right at home.

In fact, Elliot Springs is one of Townsville's most ambitious master planned communities with:

• Over 10,000 residential dwellings;

A 57-hectare enterprise park for commercial businesses;

• A full range of public and private education facilities from childcare and early learning through to primary and secondary schooling;

• A town centre and up to 3 neighbourhood centres throughout the community.

But it's Elliot Springs' dedication to its natural surroundings that makes this an unrivalled opportunity.

With more than 30 per cent of the land committed to open space, Lendlease plans to maintain the character and beauty of the site with a network of natural creek lines and a conservation zone.

Playgrounds, sporting fields, bushland corridors and habitat sanctuaries will all be linked together by walking and cycling paths.

For so many people, wide open spaces and sweeping views are an unreachable dream. But at Elliot Springs, that dream easily becomes a reality, and at an affordable price.

Lendlease Regional Development Manager for Elliot Springs, Simon Walker, said the unique offering of larger lots at great prices is attracting buyers from all over the country.

"Buyers have told us they are excited about the vision for Elliot Springs as it promises to be much more than a place to live.

"The open space, proximity to the major employment, larger lot sizes and amenities combined with the natural beauty of the surrounding ranges make it an ideal place to start a new and exciting life," he said.

Elliot Springs provides an opportunity to be part of Townsville's next chapter.

To find out more about Elliot Springs, visit elliotspring.com.au or call 1800 881 091

LOVE WHERE YOU LIVE. LOVE ELLIOT SPRINGS.

LOTS OVER 700M² FROM JUST $159,000*

Visit our Sales & Information Kiosk at Fairfield Central
elliotsprings.com.au | 1800 881 091

*Price correct as at 12th October 2017. Price and availability subject to change without notice.

ELLIOT SPRINGS

lendlease

Here Come the Spartans

The C-27J Battlefield Airlifter

"Mobility is the true test of a supply system."

—B. H. Liddell Hart

In December 2016, Defence declared Initial Operating Capability (IOC) for the C-27J Spartan Battlefield Airlifter. While ostensibly the replacement for the DHC-4 Caribou, the C-27J represents a quantum leap in Air Force capability to deliver tactical air power effects. Unlike the Caribou, the Spartan has the ability to operate in the modern integrated battlespace, carrying larger loads further while mitigating threats through a combination of increased performance, a modern Electronic Warfare Self Protection (EWSP) suite, and battlefield situational awareness equipment. Moreover, its powerful Rolls Royce AE2100 engines and weather/ground mapping radar allow it to operate in all weather and uncontrolled airspace environments, increasing mission assuredness and reach.

The decision to acquire the Spartan marked the culmination of a series of projects whose genesis lay in a 1978 study to identify a potential replacement for the Caribou. The study concluded that no viable alternative existed at the time; a conclusion also drawn by Government in 1986 when direction was given to replace the Caribou no later than 1990. By 1990, the field of primary contenders had grown to three, the CASA C-295M, CASA CN-235-300M and C-27J Spartan. Although the Spartan was deemed to present the best value for money, the aircraft was still under development and unaffordable within the constraints of the approved budget.

An ideal opportunity to re-invigorate efforts to replace the Caribou was presented in 2007, when the US Government decided to procure the C-27J to fulfil its Joint Cargo Aircraft (JCA) requirement. The Australian Government subsequently made the decision in April 2012 to purchase ten C-27J (JCA variant) aircraft from the US Government through a Foreign Military Sale (FMS) purchase. While the US Government subsequently divested itself of the majority of Spartans following a period of budgetary pressures, a small number still remain in service with the United States Coast Guard and US Army Special Operations Command.

The C-27J is the latest iteration of the Fiat Aviazione G.222, and is manufactured by Leonardo Aircraft Division of Italy. The Italian-built aircraft were flown to the United States for additional modifications prior to delivery to the RAAF. Although it bears a passing resemblance to the C-130J Hercules, and shares common avionics architecture and engines, the C-27J stands alone in its ability to bridge the gap between the ADF's rotary wing assets and medium air mobility aircraft. The C-27J's reduced footprint on pavement areas, when compared with the C-130J, allows it to access more landing surfaces across the globe. While its Short Take Off and Landing (STOL) capability cannot match that of rotary wing assets, the C-27J has a vastly increased cargo carrying capacity over a much greater range, which can reach in excess of 2,000 nautical miles.

A key strength of the C-27J is its versatility. While it possesses many of the features of a conventional air mobility asset, including the Brooks and Perkins Cargo Handling System—common with the C-130J—the Spartan has also proven its ability to execute a variety of missions in foreign air force service. The Italian Air Force (ItAF) has been particularly innovative in exploiting the aircraft's capability of disrupting the traditional role of a battlefield airlifter. Through use of modular 'roll-on, roll-off' components, the ItAF has fielded the Spartan in EC-27J Jedi (electronic warfare) and AC-27J Stinger II (gunship) variants. Also under development is an MC-27J variant that is designed to provide discrete ISR and fire support effects to the battlespace. Notably, all these capabilities are readily removed, quickly converting the aircraft back into a traditional air mobility asset.

This combination of versatility and performance should prompt a rethink in the command and control (C2) arrangements of RAAF aircraft in the 5th generation battlespace. The agility and

Ground maintenance personnel monitor the engine start of a C-27J Spartan at RAAF Base Richmond.

THE SPARTAN HAS ARRIVED

broad scope of capabilities presented by this aircraft will need to be reflected by an equally responsive C2 framework, within which the aircraft can be quickly and efficiently transitioned between commanders for tasking within the battlespace. In Air Force experience thus far, the C-27J has demonstrated a range of attributes and capabilities that make it uniquely attractive in supporting Army battlespace effects; assigning it to traditional 'hub and spoke' air mobility missions would under-utilise this versatility. Ideally, the C-27J could blend air mobility missions with responsive and direct support to land forces; and possibly combine both into the execution of a single mission.

Although officially designated as a Battlefield Airlifter, the Spartan's versatility extends to peacetime use, particularly in the Humanitarian Assistance/Disaster Relief (HA/DR) and Defence Aid to the Civil Community (DACC) roles. Here again, the C-27J's low aircraft footprint will allow access to austere airstrips close to the point of need reducing or even eliminating the need to 'hub and spoke' and cross-load cargo at larger regional centres as is often necessary with the C-130J and C-17A. The increased capacity for timely direct delivery will greatly increase the ADF's ability to support HA/DR and DACC tasking.

In the aero-medical evacuation role, the C-27J can access emergency airstrips and load up to 21 stretcher patients per lift. Moreover, the Spartan, with its superior reach, could deliver the patients directly to the most appropriate medical facility, reducing the time and trauma involved in transfers at regional airports. The combination of accessibility, lift capacity and reach is far in excess of that offered by rotary wing assets and, with a cargo compartment capable of fitting three full size 463L Pallets and one half ramp pallet, the Spartan represents a significant increase in light tactical transport capability to that offered by the Caribou.

As experience with the C-27J grows in RAAF service, its potential builds. While all RAAF air mobility assets possess multi-role capability, none share the Spartan's ability to combine accessibility, range and versatility; traits that combine to make this an exciting platform with vast potential in ADF service.

Key Points

- Defence declared Initial Operating Capability (IOC) for the C-27J in December 2016.
- The C-27J bridges the capability gap between the ADF's rotary wing assets and medium air mobility aircraft.
- The C-27J's versatility makes it suited for a range of air mobility tasks, including air logistic support to the joint force, HA/DR, DACC tasking, and aeromedical evacuation.

Reprinted courtesy of Air Power Development Centre
Canberra ACT
www.airforce.gov.au/airpower
airpower@defence.gov.au

Falcon 8X

WWW.DASSAULTFALCON.COM | FRANCE: +33 1 47 11 88 68 | USA: +1 201 541 4600

From surveillance to SAR, MEDEVAC to personnel transport, there's a Falcon for every mission. With their unique trijet design and optimized aerodynamics, the Falcon 7X and Falcon 8X provide unsurpassed versatility and flexibility, the ability to access any runway, handle challenging approaches, and combine short and long-range flights in a single mission. Technologies perfected for the military, like Digital Flight Controls and the Advanced Vision System, provide pilots with unparalleled control and situational awareness. Falcon. **The best choice for Australia.**

DASSAULT FALCON

ENGINEERED WITH PASSION

USAF B-52 Aircraft in Vietnam and Busy Boomerang

USAF B-52 bombers first flew in 1952 and entered service with the Strategic Air Command (SAC) in 1955. A total of 742 was built with the 'G' model the most prevalent. The only remaining model in the USAF in 2017 is the 'H' model; a total of 108 of this model were built, but the remaining number in service is unknown. The 'H' model has turbo-fan engines, upgraded fire control system and originally had a remotely controlled Vulcan cannon at the rear, removed from all aircraft in 1991.

B-52s IN VIETNAM

SAC deployed two squadrons of B-52s to Andersen AFB, Guam in February 1965 for possible use over Vietnam. With the escalating situation in Southeast Asia, 28 B-52Fs were fitted with external racks for 24x 750 lb (340 kg) bombs in June 1964 and a further 46 aircraft were modified in March 1965, when the USAF commenced Operation Rolling Thunder.

The first combat mission, Operation Arc Light, was flown by B-52Fs on 18 June 1965, when 30 bombers attacked a communist troop base in the Binh Duong province north of Saigon. While manoeuvring to maintain station during air-to-air refuelling, two B-52s collided, which resulted in the loss of both bombers and eight crewmen

A number of B-52Ds underwent *'Big Belly'* modifications to increase bomb capacity for carpet bombings to a total of 108 bombs, weighing 60,000lb (27,215 kg). The modified B-52Ds entered combat in April 1966 and replaced the B-52Fs, flying from Andersen Air Force Base, Guam. Each bombing mission lasted 10 to 12 hours and included an aerial refuelling by KC-135 tankers. In spring 1967, B-52s began flying from U Tapao Air Base in Thailand so that refuelling was not required.

During Operation Linebacker II (18-29 December 1972), waves of B-52s (mostly D models, but some Gs, which had no jamming equipment) flew in the operation. Over 11 days (24hr pause on Christmas Day) , B-52s flew over 700 sorties into North Vietnam and dropped over 15,000 tons of bombs on 34 targets in the Hanoi and Haiphong areas. The B-52 307th Strategic Wing at U Tapao flew over half of the sorties into North Vietnam and suffered seven losses (and 4 damaged) and went to North Vietnam every day of the Linebacker II Operation. A total of 15 x B-52s were shot down during Linebacker II Operation.

Railroad yards and supply depots were the prime targets, except the most important rail yard in down-town Hanoi; it was not attacked, to avoid civilian casualties. F-4s bombed this railroad with laser-guided bombs, but had little effect as the yard was too large for these weapons to inflict serious damage. Post-strike analysis showed that, while the B-52 strikes crippled the North Vietnamese rail transport system, it had little overall effect as most supplies were moved into North Vietnam by trucks from China.

Between June 1965 and August 1973, the Strategic Air Command scheduled 126,663 Stratofortress combat sorties, of which 126,615 were actually launched. Of the sorties that reached Vietnam, 99% (over 124,500) successfully released their bombs on targets in SE Asia—55% in South Vietnam, 27% in Laos, 12% in Cambodia and 6% in North Vietnam. Altogether, the Air Force lost 31 B-52's—18 from hostile fire (all over North Vietnam) and 13 from other operational causes.[1]

POST VIETNAM SERVICE

A few time-expired E models were retired in 1967 and 1968, but the bulk (82) were retired between May 1969 and March 1970. Most F models were also retired between 1967 and 1973, but 23 survived as trainers until late 1978. The fleet of D models served much longer and stayed largely intact until

B52-D releasing its bomb load in Vietnam; note the high tail. *Photo USAF*

B-52 'high tail' models at AMARG (the 'boneyard'), Davis Monthan AFB, Arizona USA. *Photo: USAF*

[1] The United States Air Force in Southeast Asia 1961-1973. Office of Air Force History, Washington DC. 1984

late 1978, when 37 not already upgraded Ds were retired. The remainder were retired between 1982 and 1983 to the 309th Aerospace Maintenance and Regeneration Group, AMARG. Often called The Boneyard, the facility is a USAF aircraft and missile storage and maintenance facility at Davis-Monthan AFB in Tucson, Arizona.[2] It stores aircraft and missiles from all US Armed Forces and US Government aviation agencies.

The main airframe difference of the various models was the vertical tail—the H & G models had a low vertical tail; the earlier models had a high tail. Other differences were the IR/low light sensors in the later models and turbo-fan engines in the H model. The D model was the last to have a tail gunner; the later versions had remote controlled Vulcan 20mm cannons; later removed.

BUSY BOOMERANG FLIGHTS TO AUSTRALIA

B-52 aircraft have had an association with Australia since the 1980s, when they first flew to Australia to conduct low level training in northern Australia. The terrain in the north is flat and in many areas, featureless, and USAF considered it similar to likely areas of operations in the northern part of the world. Aircraft could fly from Andersen AFB, Guam, fly the low level training routes in Queensland and NT and recover to Darwin. The aircraft could then be refuelled and the crew would stay overnight before returning to Guam.

Before USAF authorised B-52 flights to and over Australia, the low level routes had to be surveyed for obstructions (few), likely noise areas and other nuisance factors. Noise, or 'whinge' areas to avoid figured prominently in USAF planning as they were averse to creating diplomatic 'incidents'. Accordingly, the USAF Air Attaché, Canberra, carried out route surveys in North Queensland, with DOPS-AF, operating from Cairns with the US Embassy King Air aircraft.

As the author had recent 'low jet route' (LJR) experience with F-111s at Amberley, he was nominated by the Chief of Air Force Operations (CAFOPs), DEFAIR, to accompany the survey team as the LJR specialist. The survey was accomplished at 210KIAS at 1000ft AGL, with the author sitting on the dinghy pack between the USAF pilots. Following the King Air survey, the author was also attached overseas to fly on the first B-52 from Andersen AFB, Guam, to Australia; an attachment most welcomed.

Flying from Amberley to Guam, via Port Moresby as a passenger in a Canberra aircraft, the crew was greeted with a typhoon in the area; Agana NAS closed, precision navigation aids 'out' and Andersen weather verging on below landing minima. As the Canberra had only enough fuel for an instrument approach and overshoot, with no fuel to divert, landing was essential. Knowing the predicament, the USAF tower controller at Andersen AFB said, "land on whichever runway you can see", which the Canberra crew did, soon after, through a gap in the low cloud.

After a half day of briefings, the B-52 was airborne at 0700 on 27 February 1980, with the author as the RAAF Liaison/Safety Crewmember. Takeoff was slow to start with, but at 150KIAS, a slight backward pressure on the controls and the B-52 was airborne. Following takeoff and the climb to 35,000ft, the B-52 received 50,000lbs (22,730kg) of fuel from a KC-135, for the long flight to Australia and back to Andersen AFB. Cruising at M0.85 (500KTAS-910Km/h), FL350, and after overflying Papua New-Guinea, the crew descended west of Cairns to 1000ft (300m) AGL, at 250KIAS, for the low level survey, 230KIAS slower than a F-111C.

After completing the route survey, lasting 1.8h, the AC climbed the B-52 to cruising level and set heading for Guam, about 4 hours away. Minimum fuel overhead Andersen AFB on return was 50,000lbs—to allow diversion to Okinawa if the weather closed in. It didn't on this flight. The landing was different; with 10° of drift, the AC 'crabbed' the aircraft into wind, while the landing gear was aligned with the runway. Total flight time was 10.5 hours.

The B-52D normally carried a crew of six: Aircraft Commander (AC), co-pilot, navigator radar, navigator plotter, Electronic Warfare Officer (EWO) and a rear gunner. On the Busy Boomerang flight, there were three extra crew: COL Evans, Commander 43 Strategic Wing, Wing NavO and the author, who occupied the 'IP seat' between the two pilots.

The Busy Boomerang B-52D crew before takeoff, Feb 1980. (Rear L-R) EWO; Nav plotter; Capt Doc Whitten, AcftCdr; Tail Gunner, NCO; Nav Radar; (Front L-R) Co-pilot; SQNLDR Lance Halvorson; COL Will Evans CDR 43 Strategic Wing; Capt Art Smith, DO Nav 43SW. *Photo: Lance Halvorson*

The 'busy' cockpit of the B-52D. *Photo: Lance Halvorson*

B-52s AND AUSTRALIA

In addition to conducting training flights over the featureless terrain, B-52s often transited through Darwin for refuelling and crew rest before continuing to Diego Garcia in the Indian Ocean. Such flights continued to other operational areas before returning to Guam, via Darwin.

[2] When training on the F-4E Phantom at DM AFB in 1970, the RAAF navigators (incl author) had a special tour of the Boneyard, an unforgettable experience.

The view of the right wing; 4 engines- on one wing.
Photo: Lance Halvorson

A USAF B-52H on arrival at Darwin on a Busy Boomer operation, August 2012. *RAAF.*

Over the years the aircraft became a regular sight for the people of Darwin. While B-52s no longer transit through Darwin International Airport and RAAF Darwin regularly, they do conduct combined exercises with the RAAF and USAF. A B-52G aircraft is resident in the Darwin Air Museum.

Two B-52H aircraft flew from Andersen AFB in 2016 to overfly the Vietnam Veterans National Commemoration/50th Anniversary of Long Tan held at the National Memorial in Anzac Parade, Canberra, on 18 August. Both aircraft carried out a low pass before heading back to Guam, 3000n miles distant, 6.5 hrs flying time; total flight time was about 14.5 hrs.

Two USAF B-52H bombers from Andersen AFB, Guam, overfly Anzac Pde during the Vietnam Veterans National Commemoration, 18 August 2016. *Photo: POIS Phil Cullinan*

Lance Halvorson

Membership of the Air Force Association

Members and ex-members of the Royal Australian Air Force, aircrew of Australian and other Designated Services' Navies and Armies and technical personnel specifically engaged in the maintenance of the aircraft of the above Services

Serving and former members of the Australian Air Force Cadets or the Australian Air League and its predecessors who are over the age of eighteen years and have given satisfactory service

Persons who being not less than eighteen years of age, are siblings, sons or daughters of members, or of deceased former members of this Association Spouses of Association members, deceased Association members or of deceased members of the Royal Australian Air Force

Persons who have an involvement or relationship with the uniformed or civilian areas of the Royal Australian Air Force, related industries or activities

Residents in a Retirement Estate or Village owned or conducted by the Association, Division or Branch.

Please contact your State Secretary for further details

NSW
RAAF Association (NSW Division)
Level 20 Defence Plaza,
270 Pitt St SYDNEY, NSW 2000
Tel: 02 9393 3485
admin@raafansw.org.au • www.raafansw.org.au

VIC
RAAF Association (VIC Division)
24 Camberwell Rd, EAST HAWTHORN VIC 3123
Tel: 03 9813 4600
office@raafavic.org.au • www.raafavic.org.au

ACT
RAAF Association (ACT Division)
PO Box 111, Campbell ACT 2612
Tel: 0428 622105
secactraafa@bigpond.com • www.raafaact.org.au

TAS
RAAF Association (TAS Division)
RAAF Memorial Centre,
61 Davey St, HOBART TAS 7000
Tel: 03 6234 3862
secretary@raafatas.org.au • www.raafatas.com

SA
RAAF Association (SA Division)
Torrens Parade Ground
Victoria Drive, ADELAIDE SA 5000
Tel: 08 8227 0980
raafaad@internode.on.net • www.raafasa.org.au

WA
RAAF Association (WA Division)
2 Sleat Rd, APPLECROSS WA 6153
Tel 08 9288 4710
enquiries@raafawa.org.au • www.raafawa.org.au

QLD
RAAF Association (QLD Division)
PO Box 5290, Algester Qld 4115
raafaqldsec1@gmail.com • www.raafaqld.com

BAC SYSTEMS

Support Australian Innovation and Manufacturing

Ask for our latest BAC catalogue

DESIGN AWARD ™

BAC STORAGE MODULES
Designed in Australia
Licence No. 85253
Good Design Australia

Modular Workplace,Drawer Storage Systems and BAC 77 Racking

BAC Systems 193 - 195 Power Street Glendenning NSW 2761
www.bacsystems.com.au + 61 2 9832 2777

Building a future through lifelong learning.

The $200-million, 36-storey W-Hotel currently in construction on Brisbane's 300 George Street has a local architect and project manager's imprint all over it. Dan Everett, a QUT architecture graduate who went on to study a Master in Project Management, was involved for two years to get the project off the ground through development applications, then out of the ground when construction began in 2016.

Even at a young age, Dan had a fascination with property development. The thought of contributing to the look, feel and functionality of our built environment and the way we engage with the world held huge appeal throughout high school. It had always been about more than bricks and mortar though; it was also the challenge to deliver a project on time, on budget and to exacting standards that held appeal. Something that could be designed for today, and still relevant tomorrow.

"I was always going to study architecture and completed a degree and Masters in it through QUT, but what did come as a surprise was how complementary project management could be," said Dan.

"No matter what your skill base is, project management enables you to take it to the next level."

"It enables you to add value throughout an entire project, while giving you a connection and interface with a diverse range of people."

Having worked in industry as a project architect, project manager and superintendent delivering jobs for government, corporate and private developers, a postgraduate qualification in project management gave Dan the confidence he needed to step out on his own. He is now the Director of his own company, EVERETT Property Development Management.

"We're currently doing due diligence and feasibility studies toward site acquisitions on several Brisbane City Council sites including hectare lot subdivisions and townhouse estates."

It's an impressive portfolio for someone who graduated from a Master in project management only one year ago.

So what does he credit his success to?

"Lifelong learning." says Dan

"Anyone can do a course, but unless you are hungry to continue to upskill and deliver in the real word, it won't count for much."

Your time is now

Critical thinking, communication and collaboration skills, and being innovative at problem solving – these are the three key areas you need to succeed now and into the future*.

At QUT, we recognise this and provide different qualifications for career transitioning and capacity building applicable to a wide range of industries.

QUT postgraduate coursework programs focus on vital contemporary issues and feature industry-led projects, creative thinking and leadership skills development to enhance career opportunities.

Project management is one of the most highly sought and respected qualifications in today's business world as organisations require the successful management of projects to meet strategic outcomes. QUT's project management program is a Project Management Institute (PMI) program.

Business process management develops the expertise in the application of process-centric thinking to effectively support businesses, maximise the impact of available resources and enable innovative business strategies. QUT's BPM program is widely acknowledged as having strong links to industry.

Information technology is experiencing strong industry demand in traditional areas such as networks, security and enterprise systems, as well as an increasing need for specialists in the emerging fields of data science and human-computer interaction. QUT's IT programs balance theoretical content, project-based experiences and industry-oriented perspectives.

You will learn from a pool of highly recognised, multidisciplinary academics, international experts and industry leaders. Our best practice focus, real-world context and industry connections will ensure you are ready to take your career to the next stage – wherever that may be.

For more information about our programs, visit **www.qut.edu.au/study/study-areas/study-engineering**

QUT

a university for the real world®

2017 Australian Job Seeker Report, JobGetter, released 26 September 2017

GRAZIOSI AUSTRALIA

INTERNATIONAL+ DOMESTIC FREIGHT FORWARDERS.

BY SEA / AIR / TRUCK

Offering premium logistics services to businesses worldwide.

We pride ourselves on our personal service and expert knowledge of freight forwarding.

Specializing in:
- 20 and 40ft containers
- In gauge
- Out of gauge : over length, width, height
- Over weight

GRAZIOSI AUSTRALIA
Your Freight Partner

9C International Square, Tullamarine 3043
Phone: +61 3 9310 3244
darryl@graziosi-australia.com.au
www.graziosi-australia.com.au

Invictus Games

On October 18 the Australian Invictus Games team was officially welcomed home by Defence Minister, The Hon Marise Payne MP, at Parliament House in Canberra. The event was also attended by The Prime Minister The Hon Malcom Turnbull, Chief of Defence Force Air Chief Marshal Mark Binskin, AC, Vice Chief of Defence Force Ray Griggs, AO, CSC, Chief of Navy Vice Admiral Tim Barrett, AO, CSC, Chief of Army Lieutenant General Angus Campbell, DSC, AM, Chief of Air Force Air Marshal Leo Davies, AO, CSC; who showed their appreciation of what the Australian team achieved during the 2017 Invictus Games in Toronto, Canada.

The Invictus Games is an initiative of HRH Prince Harry and brought together over 550 serving and former military personnel from up to 17 nations, who have been wounded, injured or become ill in service.

The ADF and RSL have been involved with the Invictus Games since its inception, with teams competing in London in 2014 and Orlando last year. Australia will host the fourth Invictus Games in Sydney in October next year.

Australia's involvement in the Invictus Games is part of a broader Adaptive Sports Program sponsored by the ADF and RSL in which current and former serving wounded, injured and ill members participate in a variety of competitions.

The Australian Invictus Games team with Leader of the opposition the Hon Bill Shorten (left of centre), Prime Minister The Hon Malcom Turnbull (right of centre) and Defence Minister, The Hon Marise Payne MP (back row, 4th from right) at the official welcome home ceremony, Parliament house, Canberra.

From back - left, CDF ACM Mark Binskin, with Invictus Games coaches WOFF Tony Benfer and Vernon Pather, with (front row) CN VADM Tim Barrett, CAF AIRMSHL Leo Davies and CA LTGEN Angus Campbell, during the official welcome home ceremony.

CDF ACM Mark Binskin with Australian Invictus Games team manager WGCDR Sonia King and Head coach WOFF Tony Benfer during the official welcome home ceremony.

During the Invictus Games athletes participated in both individual and team sports including swimming, archery, cycling, track and field, wheelchair basketball, wheelchair rugby, wheelchair tennis, powerlifting, indoor rowing and golf.

The next Invictus Games will be held in Sydney Australia in about 12 months' time.

More information about the 2017 Australian team and images are available at: www.defence.gov.au/events/invictusgames.

Battle of Beersheba

CPL Brimlea-Jane Smyth rehearses drill movements in preparation for the commemoration of the centenary of the Battle of Beersheba.

Australian Defence Force personnel from Australia's Federation Guard were busy practicing their drill and making final preparations before commemorating the centenary of the First World War Battle of Beersheba.

Department of Veterans' Affairs commemorative services were held in Beersheba, Israel on 31 October 2017. There was a joint Australian and New Zealand Centenary Service in the morning and an Australia-only service later in the day.

The commemoration remembered and honoured the courage, strength and sacrifice during this significant, all-day battle, which was part of the wider British offensive known as the third Battle of Gaza. During this conflict the famous

mounted charge of the 4th and 12th Light Horse Brigades led to the capture of the town of Beersheba and enabled the British empire forces to break the Ottoman line and advance into Palestine.

A total of 53 personnel travelled to Israel as part of the ADF contingent for this commemoration. This included Australian Army personnel, personnel from Australia's Federation Guard and Australian Army Band members amongst others.

Australia's Federation Guard, after a rehearsal for the commemoration of the centenary of the Battle of Beersheba. Left to right: AB Robert Lewis, PTE Anita Clarke and LAC Benjamin Knight.

INDO Pacific Endeavour

An Australian Defence Force (ADF) Joint Task Group, Indo-Pacific Endeavour 2017, participated in a series of key Military Exercises throughout the Indo-Pacific Region. Running from September to November, Indo Pacific Endeavour focussed on enhancing military cooperation with some of Australia's key regional partners including Indonesia, Japan, Malaysia, Singapore, the Republic of Korea, the Philippines, Brunei, Timor-Leste, Thailand, Cambodia and the Federated States of Micronesia.

President of the Philippines, Rodrigo Roa Duterte (right) speaks with CDF, ACM Mark Binskin (centre) and CAPT Jonathan Earley during a visit to HMAS Adelaide while the ship is in Manila with HMAS Darwin for Indo Pacific Endeavour 2017.

CDF, ACM Mark Binskin and CAPT Jonathan Earley hosted President of the Philippines, Secretary of National Defense of the Philippines, Australian Ambassador Amanda Gorely and members of the Philippine Cabinet Cluster on Security, aboard HMAS Adelaide, during Indo Pacific Endeavour 2017. The guests are pictured on the flight deck of HMAS Adelaide with officers of ship's company.

The deployment, in planning for more than 12 months, is part of ongoing efforts to enhance and develop strong positive relations with regional militaries through both dialogue and practical activities. The Joint Task Group demonstrated the ADF's ability to operate across the full spectrum of military operations, from high-end military capabilities such as anti-submarine warfare to humanitarian assistance and disaster relief.

HMAS Adelaide was accompanied at various stages of the deployment by HMAS Melbourne, HMAS Darwin, HMAS Toowoomba, HMAS Parramatta and HMAS Sirius, making it the biggest coordinated task group deployment in many decades. Indo-Pacific Endeavour also involved personnel from the Australian Army and Royal Australian Air Force and included Defence civilians, ADF helicopters and fixed wing aircraft.

Exercise Talisman Sabre

LAC Adrian Fisher with some of the tools he uses to maintain the Role 2 Health Facility at Rockhampton during Exercise Talisman Saber 2017.

Surgeon General ADF, AVM Tracy Smart, visits RAAF Role 1 Health Facility personnel with WGCDR Gary Sadler at Williamson Airfield during Ex Talisman Saber 17.

The Talisman Saber series of exercises is the principal Australian and United States Military Training activity focused on the planning and conduct of mid-intensity 'high end' war fighting.

Exercise Talisman Saber is the largest combined, joint military exercise undertaken by the Australian Defence Force (ADF) and provides invaluable experience to ADF personnel to improve combat training, readiness and interoperability, exposing participants to a wide spectrum of military capabilities and training experiences.

The biennial exercise was conducted for the seventh time in 2017, involving more than 30,000 US and Australian participants, operating in the maritime, land and air environments.

Remembrance Day

ADF personnel at home and abroad paused on the 99th anniversary of the Armistice in memory of all those who have died in all wars. ADF personnel remembered the sacrifice of more than 102,000 Australians whose names are recorded on Australia's Roll of Honour and acknowledged the ongoing suffering of those who returned. Almost 2,300 ADF personnel are currently deployed on operations around the world. CDF, ACM Mark Binskin attended the Remembrance Day National Ceremony at the Australian War Memorial where Australia's Federation Guard and the Royal Military College Duntroon Band were on parade along with members of the local veterans' community.

CDF, ACM Mark Binskin, AC and Mrs Binskin at the Tomb of the Unknown Soldier

Women In War-Stamp Issue

On Remembrance Day, Australia Post paid tribute to Australian women, past and present, and their contribution during times of war with the release of a new stamp issue.

The launch of the "Women in War" series of stamps was held on 26 September 2017 at the Shrine of Remembrance and featured current serving women from Navy, Army and Air Force. Each service woman has a personal link to the theme of the stamp they are holding, whether World War I, World War II, Vietnam and Korea, Peacekeeping, and Afghanistan and Iraq.

SQNLDR Evelyn Wright holds the Vietnam and Korea themed stamp.

This stamp issue, the fourth in a series commemorating a century since World War I, acknowledges the important roles women have played in war and conflict.

Prior to and including World War I, the involvement of women in conflict zones was almost entirely limited to nursing. In World War II, women served in the nursing corps of Navy, Army and Air Force, with other roles also open to women, including the Women's Land Army and the Women's Auxiliary Australian Air Force. Today all roles in the ADF are open to women.

World War I saw more than 3,000 nurses join the war effort, most serving abroad with the Australian Army Nursing Service while others served with organisations like the Red Cross.

During World War II, 3,477 AANS nurses served, with more women joining the auxiliary services and volunteer organisations.

The Korean War and the Vietnam War saw Australian servicewomen involved in both conflicts. They participated in a number of roles: from members of civilian medical teams,

Red Cross support, and entertainers, to Embassy staff and journalists.

Peacekeeping has involved Australian servicewomen active in peacekeeping forces in many countries including East Timor, Indonesia, Korea, Zimbabwe, Namibia and the Solomon Islands.

Afghanistan and Iraq conflicts involved women serving on active duty in the Middle East Region, including the Gulf War, in critical operations as pilots, medics, combat engineers and other roles.

Operation Vanuatu Assist

RAAF C17 Globemasters delivered humanitarian aid and an MRH90 helicopter to the Island nation of Vanuatu impacted by the recent eruption of Manaro volcano on Ambae Island.

Minehunter HMAS Huon alongside Espiritu Santo and ships crew helped set up tents and unload aid shipments for the population.

HMAS Choules arrived in the capital, Port Vila carrying Australian and Tongan troops who were able to assist approximately 11,600 residents who fled Ambae Island.

LAC Laura Gale and LS Januario Callos during Operation Vanuatu Assist 2017.

SGT Matt Jones (centre) directs the forklift carrying a pallet of Australian Aid supplies in Vanuatu as part of Operation Vanuatu Assist 2017.

ADF Operational Gender Advisor Course

The ADF Operational Gender Advisor (OP GENAD) Course (pilot) was conducted at the Australian Defence Force Academy from June 5-9.

The aim of the course is to graduate ADF personnel with the skills, knowledge, attitudes and behaviours required to effectively perform the duties of an ADF GENAD and/or Gender Focal Point on operations or exercises.

This is the first Operational Gender Advisor course to be run in the Southern Hemisphere outside of NATO.

Participants were made up from all three ADF services, including six US Military personnel.

A SWEDINT/NATO and a UN representative attended as observers.

Guest and panel speakers were made up from industry, defence and civilian organisations.

SQNLDR Karen Brown attended the ADF Operational Gender Advisor Course at ADFA.

Crew Attendant Graduation

New Air Force Crew Attendants take time out for a group photograph on their graduation day in front of a No. 33 Squadron KC-30A aircraft.

Crew Attendant (CREWATT) Gap year course 02/17 graduated on 13 Oct 17. Trainees attained the required competency standards after completing No. 33 Squadrons -(L-R) CREWATT Course graduates in front of a KC-30A.

Air Marshal Symposium

The Air Marshal Symposium was held at RAAF Base Amberley 26 -27 Oct 2017. The symposium is an annual event that provides an opportunity for retired senior officers to remain aware of, and be involved in, current Air Force capability, training initiatives and culture. Chief of Air Force (CAF), Air Marshal Gavin "Leo" Davies, AO, CSC hosted the symposium which showcased both RAAF Base Amberley and new capability platforms, and provided an opportunity to view and interact with some of the latest Defence technology.

Participants for the Air Marshal Symposium at RAAF Base Amberley.

ACW Chelcie Hagley, AIRMSHL Leo Davies and AIRMSHL Geoff Shepherd (Retd) interact with the Virtual Battlespace Simulator at RAAF SFS during their visit to RAAF Base Amberley.

Operation OKRA ADF Parliamentary Program

Participants of the Australian Defence Force Parliamentary Program (ADFPP) had the opportunity to visit the Air Task Group (ATG) at the main air operating base in the Middle East Region. The Senators and Members of Parliament were shown the day-to-day working of the ATG as they conduct operations as part of Operation OKRA.

The purpose of the ADFPP is to experience the challenges of an operational deployment and gain and appreciation of the experience the broader capabilities of the Australian Defence Force and operations.

The ATG is deployed as part of Operation OKRA and is operating at the request of the Iraqi Government with a US-led Global Coalition assembled to degrade and defeat Daesh. The ATG comprises six RAAF F/A-18F Super Hornet fighter aircraft, an E-7A Wedgetail airborne command and control aircraft, and a KC-30A Multi-Role Tanker Transport aircraft. Additionally, the ATG has personnel working in the Combined Air and Space Operations Centre, and embedded with the 'Kingpin' US tactical Command and Control Unit.

Senator Kimberley Kitching observes the assembly of a guided munitions with LAC Jordan Harris during her Headquarters Air Task Group VIP visit to the main air operating base in the Middle East Region.

Task Unit Headquarters Renamed

On the 13 September 2017, the Task Unit Headquarters of the Air Task Group in the Middle East Region dedicated the headquarters compound after the late Air Vice-Marshal Frank McNamara VC, CB, CBE. The compound, now known as the McNamara VC Compound, hosts the working accommodation for the Air Task Unit along with the supporting elements of the Expeditionary Airbase Operations Unit, Theatre Communications Group and Headquarters Joint Task Force 633

Commander Air Task Group, AIRCDRE Terry van Haren, DSM (left), and Chief Joint Operations, VADM David Johnston, AM, unveil the McNamara VC Compound signage during the naming ceremony of the Task Unit headquarters at the main air operating base in the Middle East Region.

FUTURE PROOFING THE VIRTUAL BATTLESPACE

Ten years ago in Nelson Bay, Australia, Bohemia Interactive Simulations (BISim) began focusing primarily on military simulation, and we released VBS2, the second major version of the Virtual Battlespace desktop-trainer. Since then, we've seen worldwide acceptance of game-based technology for cognitive learning, with hundreds of thousands of VBS users in over 50 countries worldwide.

VBS is used to train military forces, including the ADF, in hundreds of use cases, from convoy to UAV training. We've adapted VBS technology for use as an image generator on the U.S. Army's Close Combat Tactical Trainer, delivered cutting-edge desktop training systems for protected route clearance to the Australian Defence Force and integrated VBS with countless military systems. The VBS "virtual sandbox" provides a safe, affordable, and validated environment in which to train almost any imaginable scenario.

Today, game-based technology is now in the mainstream of military simulation. While military simulation has demanding requirements not readily met by commercial, game-based technology, BISim has bridged these gaps by developing solutions that meet exacting requirements, and simultaneously exploiting the latest the game industry can offer in terms of animations, photorealistic rendering, physics and many other features. Importantly, we're also working on "future-proofing" our technology in line with the expectations of our Government customers.

The 'phase 2' we're now seeing is clear demand for "open" technology built upon an architecture that can be readily extended to allow military forces to leverage "best of breed" software and hardware components, opening up more competition for technology refreshes. Accordingly, we've developed a new architecture — Gears — that underpins the majority of our ongoing development efforts. Gears is *not* a new standard, it's simply a way to leverage APIs and build software components just like the broader industry — Google, Twitter, etc. — is developing. Future VBS technology will be a collection of tightly integrated components, and already we're seeing benefits in terms of development speed and flexibility. This component-based architecture will make it much easier to integrate more costly high-fidelity flight simulators into wider simulation federations.

Another 'phase 2' development direction is to harness public data sources and procedural technology, taking terrain generation to a new level. Today, terrain generation is arduous and expensive. Relying on runtime formats means that terrain data is quickly outdated and that correlation is a major headache. Our new planetary rendering engine, VBS Blue, uses a plug-in system to process and render source or interim formats, *fusing* the data at runtime to render a mix of procedural and geo-specific data including high-resolution imagery. Scenes in VBS Blue are as accurate to reality as the source data allows, from ultra-high resolution, geo-referenced imagery to region-typical procedurally generated from the bare minimum of input data.

Future versions of VBS will be open, modular and extendable, capable of simulating massive operations anywhere on the planet, through leveraging game-based technology and cloud scalability. We look forward to proving what's possible with VBS technology and serving the ADF for years to come.

FROM SPACE TO BLADES OF GRASS

VBS Blue

Modular, Whole-Earth Rendering

VBS Blue is an innovative, whole-earth rendering technology from Bohemia Interactive Simulations. VBS Blue combines procedurally generated content with the ability to merge in geo-specific details like satellite textures and buildings. Simulate large joint forces operations while still showing high-quality detail at ground level.

VBS Blue already has been applied to several cutting-edge projects for immersive, VR-based flight simulation. In late 2017, VBS IG customers will be able to harness VBS Blue for image generation.

Founded in Australia, BISim has served the Australian Defence Force for over 12 years.

Contact sales.au@bisimulations.com to learn more.

www.bisimulations.com

Bohemia Interactive SIMULATIONS

DON'T LET IT GET THIS BAD

WHAT PEOPLE AND COMPANIES DO TO GET RID OF BIRD PROBLEMS

GOT A BIRD PROBLEM?

HERE IS WHAT NOT TO DO!

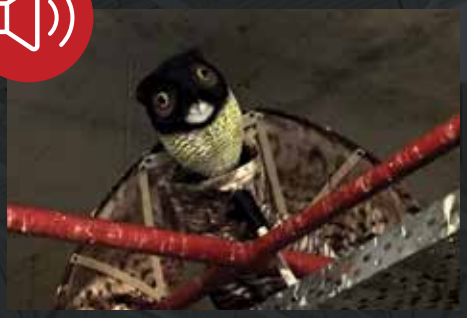
POISON

Lacing food or using products like "Hot Foot" are indiscriminate killers which can lead to hefty fines due to killing protected species.

Bird Proofing Australia

DECOY

If you're reading this, you probably already know that birds are smart. Many a fake owl or falcon can be found covered in bird droppings.



ULTRASONIC

Although ultrasound cannot be heard by humans, at high decibel it can still cause direct damage to human ears. On a side note, the boxes also act as a great perching place for birds.

SPIKES

Bird spikes can prevent larger birds from being able to land on a structure. Unfortunately they are very unsightly. They can also provide yet another nesting place for birds.

SHOOTERS

There are many laws in Australia that protect Australian birds. Some laws specifically prevent wild birds from being harmed or killed (including destroying nests and eggs). This is also a temporary solution as the birds simply return the next week.

WANT A PERMANENT SOLUTION?

CALL ALWYN TO CHAT TODAY - (07) 3062 6828

info@birdproofingaustralia.com.au • https://birdproofingaustralia.com.au/wings/

ScanEagle Completes Operation Evaluation

HMAS Newcastle has conducted the RAN's first simultaneous operations of manned and unmanned aircraft during its current deployment to the Middle East on Operation Manitou.

In September, Newcastle's MH-60R helicopter and ScanEagle Unmanned Aerial System (UAS) were employed on concurrent surface search sorties in the Gulf of Oman in support of Task Force 50, US Navy 5th Fleet.

Commanding Officer, HMAS Newcastle, Commander Mark Sirois said the integration of manned and unmanned aerial operations offered significant flexibility to Commanders at sea.

"The cooperative employment of both aviation platforms allows Newcastle to effectively conduct wide-area search and persistent surveillance by employing the appropriate asset," he said.

"The advent of unmanned aerial systems within the RAN, specifically in Newcastle for OP Manitou, has provided an excellent asset for both the CMF mission and for future use within the RAN."

Newcastle has four ScanEagle air vehicles embarked as part of an Operational Evaluation (OPEVAL) to support the introduction of Maritime Tactical Unmanned Aerial Systems and their teamed employment with manned aircraft, under Project SEA 129.

HMAS Newcastle's Flight Commander, Lieutenant Commander Ian Holmes said the deployment of manned and unmanned systems had seen Newcastle operate at flying stations for extended periods, which was based on comprehensive planning and coordination.

"The successful, concurrent MH-60R - ScanEagle mission was a result of detailed planning and preparation to ensure that the conduct of the flying operations could be supported effectively by Newcastle," Lieutenant Commander Holmes said.

"This required a comprehensive understanding of the capabilities of both aviation platforms."

During the manned-unmanned teaming sortie, ScanEagle was equipped with a 'Video Detection and Ranging' (ViDAR) camera that automatically detects surface contacts, increasing operator situational awareness and search capacity.

Due to the longer endurance of ScanEagle, and a need to ensure safe recovery of the manned aircraft to the single flight deck, the MH-60R was operated after ScanEagle launch and prior to its recovery.

Prior to the simultaneous manned-unmanned operation, the ScanEagle had been used as a platform to conduct surface search and persistent, covert surveillance in support of CTF 150 Maritime Security Operations, including chokepoint transits in the Bab al Mandeb.

As of late September, ScanEagle had flown 140 hours over 29 OPEVAL sorties.

The UAS is fully integrated into Newcastle's combat system, enabling live streaming of ScanEagle imagery to the operations room for analysis and exploitation.

Further info: https://news.defence.gov.au/media/stories/scaneagle-completes-operation-evaluation-middle-east-region

ScanEagle is launched from the flight deck of HMAS Newcastle in the Middle East region.

ADF Troops to be Deployed to Philippines for ISIS Fight

Australian military house-by-house combat tactics developed to rout Islamic State in Iraq will be deployed to the Philippines in recognition of fears Islamic jihadism is moving to entrench in our backyard.

The move is part of a wide strategy that will see Australian troops deployed to land, sea and air for the first time in a co-ordinated leading role in the terrorist fight in South East Asia.

Defence Minister Marise Payne has now confirmed Australian Defence Force mobile training teams, made up of at least 80 soldiers, will be established in the Philippines from this week to counter ISIS tactics to recruit from the region's large Islamic community to push them toward extremism against the West.

"The spread of Daesh (ISIS) inspired terrorism is a direct threat to Australia and its interests and we are committed to working with our partners and allies to ensuring Daesh cannot establish a geographic foothold in the region," she said, speaking in the Philippines at a summit for regional defence ministers and military chiefs.

Training will be provided to the Filipino Army and Marine Corps as well as a range of intelligence sharing initiatives.

As revealed exclusively by News Corp Australia in July, the Philippines had been sounding out the ADF to assist in urban warfare training at the height of conflict in Marawi on the southern island of Mindanao against foreign-led ISIS fighters. The RAAF was already deployed there to assist in surveillance.

Filipino troops conceded while they had had decades of experience in jungle warfare against Islamic extremists and others, its soldiers were not equipped

in training for street-street, house-by-house combat.

The five-month Marawi conflict, declared over only yesterday, cost more than 1100 lives including 165 soldiers and police and 900 jihadists, many of whom were fresh off the battlefields in Syria and Iraq.

ADF personnel had been quietly moving to the Philippines since July in anticipation of an increased presence as have Australian Federal Police agents to assist in investigating ISIS-backed plots and intelligence sharing and to combat what Senator Payne described as "social media narratives", in the cyber propaganda war.

"The ADF will provide mobile training teams that will begin providing urban warfare, counter-terrorism training in the Philippines in the coming days," Senator Payne said.

"It is very practical training by the ADF which will support the Philippines Defence Force to be able to counter what are very brutal tactics that are employed by terrorists."

She added: "These package of activities have been developed in very close co-operation with our friends in the Philippines and we are confident it will provide the sort of support to the Armed Forces of the Philippines who have worked so very very hard with efforts in Marawi that will help build capacity to deal with the threat from terrorist groups."

She appealed to other ASEAN neighbours to help keep ISIS and extremism in check in the region.

www.news.com.au

Secret Files on Jets and Ships Stolen

Secret information about new fighter jets, navy vessels and surveillance aircraft has been stolen from an Australian defence contractor.

The hackers had "full and unfettered access" to the information for four months last year, before the Australian Signals Directorate was tipped about the breach in November.

Christopher Pyne, the defence industry minister, has admitted he has no idea who the hackers were but has stressed the stolen information was commercially sensitive rather than "classified" military information.

"It could be one of a number of different actors," Pyne told the ABC. "It could be a state actor, a non-state actor."

Mitchell Clarke, the Australian Signals Directorate incident response manager, told a conference in Sydney the hackers had targeted a small "mum and dad type business", an aerospace engineering company with about 50 employees, in July last year.

He said the firm was subcontracted four levels down from defence contracts.

"The compromise was extensive and extreme," he told the Australian Information Security Association national conference in audio obtained by a freelance journalist called Stilgherrian.

"It included information on the [F-35] joint strike fighter, C130 [Hercules aircraft], the P-8 Poseidon [surveillance aircraft], joint direct attack munition [JDAM smart bomb kits] and a few naval vessels."

www.theguardian.com

An F-35A Lightning II

Further Commitment to Afghanistan?

Malcolm Turnbull has refused to rule out sending more troops to Afghanistan and emphasised the "very, very strong" relationship with the United States in a sign Australia could contribute to Donald Trump's planned surge.

Responding to Trump's announcement on Tuesday that the US would reorient the mission towards "killing terrorists" rather than nation building, the Australian prime minister promised to "work through" any request for an increased troop commitment.

At a recent doorstop, Turnbull repeated the line of Australia's defence ministers that Australia makes one of the most substantial contributions to the coalition effort in Afghanistan and had increased its presence already.

On the changed nature of the mission, Turnbull said that "what the president is doing is showing a resolve to ensure that the terrorists in Afghanistan are not able to regroup and once again ... threaten us from Afghanistan as they did in the past".

On troop numbers, Turnbull said he was "not ruling anything out ... I am not going to speculate on what the additional resources we would bring to bear would be, but as to timeline I think the coalition commitment to Afghanistan would be very long term, as it has been".

Turnbull said "I'm not ruling anything out" and observed that Trump had not yet set out what additional resources the US will commit.

Asked about the Australian Defence Force's capacity, Turnbull said "it depends how much, and for how long and what other calls on the ADF's resources are present, but again, we will work through [any request], rather than speculate".

"We'll be having close consultation with the US, and the outcome of those may result in additional resources being deployed to Afghanistan but I don't want to speculate on it, we are very very staunch allies ... in the global war to defeat terrorism."

Turnbull has been a staunch supporter of US foreign policy under Trump. In August he committed Australia to be involved in any conflict in the event North Korea attacks the US, earning a sharp rebuke from North Korea that supporting Trump would be "suicidal".

Leaked transcript of a telephone call in January between Turnbull and Trump to discuss the two countries' refugee swap deal revealed that, after thanking Trump for honouring the deal, the Australian prime minister promised to be there "again and again" for him.

Asked about whether it was wise to be "joined at the hip" with the US, Turnbull said: "The US alliance is the bedrock of our national security, we are staunch allies, strong allies, none stauncher or stronger."

Opposition leader, Bill Shorten, signalled that although Labor was not minded to give a blank cheque to Trump it did support Australia's contribution in Afghanistan and would back the government's ultimate decision.

"Australians should know that my track record when it comes to national security and the deployment of ADF has been to work with the government of the day because our ADF expects nothing less from the government and their opposition," he said.

www.theguardian.com

Australia and US Developing Next Generation Jammer

A memorandum of understanding (MoU) between Australia and the US has been signed for the development of the Next Generation Jammer.

Chief of Air Force, Air Marshal Leo Davies confirmed the Royal Australian Air Force (RAAF) and US Navy signed the MoU to jointly develop the AN/ALQ-249 Next Generation Jammer Mid-band (NGJ-MB) capability.

US Navy Program Executive Officer for Tactical Aircraft Programs, Rear Admiral Michael Moran; PMA-234 US Navy Program Manager Captain Michael Orr; and Air Vice-Marshal Cath Roberts attended the MoU signing held on 18 October at US Pacific Fleet Headquarters, Pearl Harbour, Hawaii.

The MoU provides the framework for communication, co-ordination and co-operation between the US Navy and RAAF during the NGJ-MB engineering and manufacturing development phase.

www.defenceconnect.com.au

Gulfstream G550 for the RAAF

The US government has given in-principle approval for Australia to purchase up to five Gulfstream G550 aircraft with modified intelligence, surveillance, reconnaissance and electronic warfare mission systems

The 'spy planes' would boost Australia's self-defence capability and enhance the US's interests in the region, according to the US State Department. "This sale will contribute to the foreign policy and national security of the United States by helping to improve the security of a major contributor to political stability, security and economic development in the western Pacific," the US State Department's Defense Security Co-operation Agency (DSCA) said. "Australia is an important Major non-NATO ally and partner that contributes significantly to peacekeeping and humanitarian operations around the world. It is vital to the US national interest to assist our ally in developing and maintaining a strong and ready self-defence capability." The estimated cost for the aircraft is US1.3 billion.

The DSCA statement said the Australian government requested "the possible sale of up to five Gulfstream G–550 aircraft modified to integrate airborne intelligence, surveillance, reconnaissance and electronic warfare mission systems, global positioning system capability, secure communications, aircraft defensive systems; spares, including whole-life costs of airborne and ground segments; aircraft modification and integration; ground systems for data processing and crew training; ground support equipment; publications and technical data; US government and contractor engineering, technical and logistics support services; flight test and certification; and other related elements of logistical and program support".

Australia would acquire these aircraft in the early 2020s in two tranches to complement its fleet of six E-7A Wedgetail aircraft and its planned purchase of eight Poseidon P-8A surveillance planes. The prime contractor for this acquisition would be L3 Technologies of Greenville, Texas. L3 is a leading provider of a broad range of communication and electronic systems and products used on military, homeland security and commercial platforms. L3 is also a prime contractor in aerospace systems, security and detection systems, and pilot training.

US State DSCA June 2017

G550 Capabilities

Gulfstream aircraft are impressive performers in the business world; their aircraft have been the choice for operators who have required intercontinental ranges with good payloads and IFR reserves. The G550 is not especially small, at about 80 percent of the size of a 737-700, and with a max gross takeoff weight of 91,000 pounds. In addition to ranges in excess of 5800 n miles, the G550 can cruise above 50,000ft at speeds near M0.9. However, the extra weight of military-specific equipment would likely reduce the speed, range and altitude capabilities.

The provision of air-to-air refuelling (AAR) in the RAAF versions is not known; although the G550 has a long loiter time at altitude, mission capability may require AAR. The deployment range and capability seem more than adequate. However, Gulfstream plan an AAR installation in the version that is proposed for the USAF's JSTARS requirements.

The G550 has a much quieter cabin (than mid-size commercial jets), a cabin altitude of 4000ft and rapid replacement (not recycling) of cabin air, with comfort benefits to flight crew. Together with the low cabin pressure, the speed and range could also be used for urgent medevacs—and other fast transport requirements. A Gulfstream G550 is the platform for Israel's and Singapore's airborne early warning aircraft, using conformal arrays mounted on either side of the jet.

Lance Halvorson
Courtesy of Gulfstream Aerospace

A Republic of Singapore Air Force Conformal Airborne Early Warning (CAEW) G-550 on final approach to RAAF Base Darwin, during Exercise Pitch Black 2016. *Photo: RAAF*

From defence to mining with an MBA

Two years ago, Lyndal Bick—then an Australian Army Officer—was contemplating her next career move.

After a long career in the Defence Force, Ms Bick had accumulated a lot of practical experience in logistics management, but felt she was lacking in business experience.

The solution, she decided, was to enrol in a 12-month Master of Business Administration (MBA) at The University of Western Australia (UWA).

"I decided to embark upon an MBA so that I would better understand the business world I wanted to transition into and to help with my employability," Ms Bick says.

Impressively, Ms Bick juggled her full-time MBA studies with a growing family.

"The most challenging aspect was probably the continual workload – especially as I had a baby half way through! The workload was manageable though, as the expectations of lectures and assignments were clearly set from the beginning so there were no surprises," Ms Bick says.

The hard work paid off, and today Ms Bick is Superintendent Transport and Logistics at Rio Tinto. She credits the UWA MBA with building her skillset in finance, accounting, project management, marketing, organisational behaviour and business advisory.

Equally as important as the business concepts, says Ms Bick, were the networks she built across different industries.

"My favourite element of the UWA MBA was the cohort experience. It was great to meet so many different people and work with and learn from them on a daily basis. A year after having competed the MBA, we are all still in touch," Ms Bick says.

UWA MBA Director Professor Mark Griffin agrees that broad networking is a crucial part of the MBA experience.

"While UWA MBA students are often managers or executives, there is no typical MBA student – we have defence personnel, doctors, lawyers, sports people, engineers, consultants, artists, teachers… the list goes on. But what everyone has in common is a drive to achieve at the highest levels in their personal and professional lives," Professor Griffin said.

"We recognise that our students come from a range of backgrounds, and so we offer both a full-time and a part-time MBA. We have classes in evening, online and intensive modes – as well as having international study opportunities.

"The MBA is really about giving students broad understanding and skills for business, so that they can walk into a meeting with the accounting, finance, marketing or human resources teams, and know what questions to ask – and what the answers mean.

"Throughout the academic year, students can take part in professional development workshops on topics such as strategic thinking and public speaking. These workshops are designed to complement the formal units of the program and ensure student students are confident representing themselves when networking and interviewing for jobs and promotions" Professor Griffin said.

Choosing to study a UWA MBA is paying dividends for a number of Defence Force personnel who have gone onto positions in business development, project management, and management consulting.

For more information on the UWA MBA, call (08) 6488 4999, email future-mba-business@uwa.edu.au or visit www.mba.uwa.edu.au

UWA MBA

Six letters of recommendation for your next career move.

Our flexible study options can take your career further.

At the UWA Business School, our MBA Flexible allows you to build your business acumen, advance your career and study while you work. With online study options, intensive teaching blocks, and study abroad programs at leading international business schools. This MBA fits around your life.

We also offer an online Graduate Certificate in Business. This may be taken either as a standalone qualification or as an entry pathway to our MBA, and is available to professionals with or without an undergraduate degree.

Or, choose the MBA Full Time. 12 months of intensive study, you'll take part in a personalised leadership development program, receive one-on-one mentoring from a senior manager or executive, and benefit from the guidance of our MBA Career Services Manager. You'll also build high-level industry networks, and be eligible for a range of generous scholarships.

What's more, an MBA from UWA comes with the weight of a World Top 100 University and a Business School with dual international accreditation.

To find out more, speak to a specialist from our MBA team on +61 8 6488 4999 or visit **mba.uwa.edu.au**

AACSB ACCREDITED

EFMD EQUIS ACCREDITED

THE UNIVERSITY OF WESTERN AUSTRALIA

UNSW Canberra

Australian Government
Department of Defence
Chief Information Officer Group

IEEE (ISC)²

PRESENTED IN PARTNERSHIP

The only Australian Conference focusing directly on the crucial technologies, products, systems and services associated with military communications and information systems.

MilCIS 2017

MILITARY COMMUNICATION AND INFORMATION SYSTEMS CONFERENCE

MilCIS is an annual Conference aimed at attendees from military and government organisations, academia, and defence industry who contribute to key decisions in investments in communications and information systems.

> 14–16 November 2017

> National Convention Centre
Canberra, Australia

www.milcis.com.au

Were you a cadet in the Australian Air League?

The first parade of Australian Air League Cadets in Uniform - 1935

In January 1935, the Australian Air League opened its first Squadron, or "Company" as they were originally known, at Manly NSW with 30 Cadets aged between 14 and 23 years. From these humble beginnings, the Australia Air League has operated for over 80 years promoting an interest in aviation both as a career or as a hobby in the youth of Australia.

As the League approaches its Centenary, we have recently re-activated the Australian Air League History Committee to collect and record the history of the organisation, and we are looking to make contact with former members of the Australian Air League to record their stories.

Originally established in the lead-up to the Air League's Golden Jubilee in 1984, the History Committee collected a significant amount of information including photos, interviews and other items, and published a Souvenir History for the League's 50th Anniversary Review. It is our intention to expand on this work with a number of initiatives that will include collecting stories and memories from current and former members, digitising existing material to make this information available online and establishing an outreach program so that Squadrons can contribute to the project - collecting their own Squadron history and the stories of their former members.

If you or a family member were a former member of the Australian Air League and have memories, photos and other memorabilia you would like to share, please feel free to contact us via email at historian@airleague.com.au

Having formed in the "Golden Years of Aviation" between the wars, the Australian Air League has a rich, proud history. Following the outbreak of war in 1939 membership increased dramatically as young men saw the League as a stepping stone to the RAAF. By 1942, over 26,000 boys had been trained and the League operated 125 branches in three states. Around 5,200 of these young men were reported to have signed up in the armed forces with over 1,500 joining the RAAF during the war.

In 1944 the Air League opened its first Girl's Section, allowing girl to enjoy the same opportunity to learn aviation subjects as the boys and a new Junior age group for 8 to 11 year olds was also introduced.

Today the Australian Air League is a national youth organization for boys and girls from 8 years of age and over. There are currently more than 70 Squadrons active in Queensland, New South Wales, Victoria, the ACT and South Australia, with new Squadrons continuing to open.

It continues to build on the ideals formed by its founders over 80 years ago, to promote an interest in aviation both as a career or as a hobby in the youth of Australia, to provide opportunities to develop good citizenship, teamwork and to develop ingenuity and resourcefulness of members.

To learn more about the Australian Air League visit www.airleague.com.au or call 1800 502 175.

Australian Air League cadets inspect a Tiger Moth at Sydney Airport – 1946

BUILD YOUR DREAM WITH OVER $40,000 IN PREMIUM UPGRADES†

Homes For Sale NOW - Move In or Invest

FULL TURN KEY PACKAGES | CUSTOM CONTRACT HOMES

Desire Homes specialise in Full Turn Key Packages and Custom Contract Homes throughout South East Queensland. Choose from one of our Full Turn Key Packages including quality finishes and appliances with nothing for you to do, but move in. If you have your own block we can work with you to build from custom plans or we can build one of our designs to suit your lifestyle.

DESIRE HOMES QLD
BUILDING YOUR DREAM

desirehomesqld.com.au
0432 250 150

*Images are for illustration purposes only and may vary from the finished product †Premium upgrades already included in turn key package. QBCC Licence No: 15012231

DES6024

Cadet Lift - Hercules lifts more than 80 Cadets

Cadets in front of a C-130J Hercules

Officer Commanding and Air Force Liaison Office staff on the ramp of a C-130J Hercules

More than 80 Australian Air Force, Army and Navy Cadets and staff recently undertook a familiarisation flight onboard a RAAF C-130J Hercules aircraft in south-west Tasmania.

The 40 Air Force, 20 Army and 20 Navy Cadets were strapped in tight and flew over Hobart and down the Tasman Peninsula.

As the C-130J thundered over the ocean, the rear ramp was lowered by RAAF Loadmasters so the excited Cadets could see through the rear of the aircraft and enjoy the panoramic views below them.

"The flight was an extraordinary, once-in-a-lifetime opportunity for the Cadets", said Wing Commander (AAFC) Raylene Garwood, Officer Commanding the Australian Air Force Cadets in Tasmania.

“I know people who have never been onboard a Hercules in their whole career with Air Force, so we’re very grateful to Air Force and our pilot, Flight Lieutenant Christopher Dawson, and his flight team.”

“The experience was really good. I loved it and loved the landing,” said 14-year old Australian Air Force Cadet Josh Aldridge; while Air Force Cadet Bethany Eaton said she really enjoyed learning about the aircraft and its capabilities.

As well as being able to deploy troops and equipment, Hercules aircraft are world-renowned for their ability to deliver humanitarian aid and disaster relief to affected communities worldwide.

The Australian Air Force Cadets is a real game-changer for Australia, as from just age 13, the organisation trains young men and women to develop and exercise autonomy, responsibility, skills and courage, with the ultimate aim being to help ensure Australia’s leadership future is secure, with responsible, focused and qualified leaders running our nation’s businesses, government and community life well into the 21st Century.

Membership is open to males and females aged 13-18 (you can stay until 20) who are Australian residents and have parental permission. Put the Australian Air Force Cadets to the test and find out how you can be helped to reach for the stars. More information at www.airforcecadets.gov.au.

Our thanks to ABC Radio Hobart for permission to publish their coverage of this extraordinary event.

Full story and photographs from ABC Radio Hobart’s Carol Raabus:

http://www.abc.net.au/news/2017-10-09/cadets-given-rare-chance-to-fly-in-c-130j-hercules/9030290?smid=Page:%20ABC%20Hobart-Facebook_Organic&WT.tsrc=Facebook_Organic&sf120281719=1

Listen to ABC Radio Hobart’s 11 minutes of detailed commentary and interviews onboard the C-130J Hercules: https://soundcloud.com/936-abc-hobart/flying-on-a-hercules-c130j

Cadets on board the C-130J

ALLY'S KINDY - At One Mile

We provide engaging rooms for Nursery Care, Toddlers, Kindy and Pre-Prep programs. Our Pre-Prep room is a Queensland Government Approved Kindergarten Program, delivered by a Qualified Teacher for children in the year prior to prep. We also offer before and after school care for school-aged children.

Just to give you a little background on us, we are a family owned centre and have been operating in One Mile for 12 years. We are located at the rear of the RAAF Base on Woodford at Onemile, which is 3 mins from the back gate. We have a number of RAAF Families currently as part of our parent family. We have long term highly qualified staff, who have been with us for many years.

Exploring the Garden

Kids on a Musical Journey

Education

We have our own Kitchen

Ally's kindy at One Mile

07 3282 8888 | 68 Woodfoord St, One Mile
info@allyskidy.com.au | allyskindy.com.au

DAY CARE | KINDERGARTEN | NURSERY | ENROL NOW FOR 2018

Welcome to Ally's Kindy Child Care in Ipswich

We are a family orientated day care centre. Our child care centre is privately owned by Dianne and Des Rosenblatt who opened the centre 12 years ago. We have an experienced and fantastic Director, Donna Hayes who has been with us since the very beginning and we are also very much a part of the surrounding community.

We have highly qualified staff including our Kindergarten Teacher who holds a Bachelor of Education (University 4 year trained).

We believe that, in order for us to care and provide educational experiences of the highest standard, we must work closely with you, the parents.

You can rest easy knowing your children are safe and secure at Ally's Kindy, Our staff will give you peace of mind…

We believe learning should be fun. When you join Ally's Kindy, it is our aim to give them a variety of learning experiences including an introduction to the world of music. Our Music Co-Ordinator, Fleur Noll, is multi-trained in many instruments. She will take the children on a musical journey.

"A Good Beginning Never Ends"

Call us today, we would love to hear from you!

VALE Squadron Leader (AIRTC) Margaret Ann Mills

An Australian Army nursing sister and veteran of the Korean War, Squadron Leader (AIRTC) Margaret Ann Mills (Retd) passed away peacefully with family by her side in Townsville Hospital on 08 October 17, aged 87.

Given her military service, she would no doubt be known to many RAAFA members throughout Australia.

Squadron Leader (AIRTC) Mills was the first female Instructor to enter the Air Training Corps - forerunner of the Australian Air Force Cadets - when she joined what is now No. 1 Wing (North Queensland) in 1980. (Female cadets first joined the AIRTC in 1982.)

She was promoted to Squadron Leader (AIRTC) in March 1989 and held numerous positions at both Squadron and Wing level, including Executive Officer of No. 1 Wing.

After retirement, SQNLDR (AIRTC) Margaret Ann Mills remained a staunch supporter of the Australian Air Force Cadets and maintained close ties with No. 1 Wing by attending official parades and functions and retaining close friendship with many past and present members.

SQNLDR (AIRTC) Margaret Ann Mills
AAFC historical archive

Members of the Australian Air Force Cadets extend sincere sympathy and condolences to her family and friends.

Sources include: 75 Years Aloft: Australian Air Force Cadets (Royal Australian Air Force Air Training Corps), 1941-2016. Matthew Glozier, Canberra: Defence Publishing Service 2016.

Green Eagle Success

Australian Air Force Cadets tackle Puckapunyal in fieldcraft competition

Exercise Green Eagle, the Australian Air Force Cadets annual fieldcraft competition, was successfully conducted between 02-08 Oct 17 at the Puckapunyal Defence Training Area in central Victoria.

Attended by six Cadets of all ranks from each State (Wing) in Australia, the exciting competition served as both the assessment tool for the future Australian Air Force Cadet Adventure Training award, and as the Australian Air Force Cadet (AAFC) inter-Wing competition for excellence in fieldcraft.

Congratulations to No 2 Wing who narrowly took first place with 192 points; with No 4 Wing (190) and No 7 Wing (183) hard on their heels.

Placing results

- 1st with 192 points | No 2 Wing (Southern Queensland)
- 2nd with 190 points | No 4 Wing (Victoria)
- 3rd with 183 points | No 7 Wing (Western Australia)
- 4th with 176 points | No 8 Wing (Northern Territory)
- 5th with 171 points | No 6 Wing (South Australia)
- 6th with 167 points | No 3 Wing (New South Wales)
- 7th with 160 points | No 5 Wing (Tasmania)
- 8th with 159 points | No 1 Wing (North Queensland)

Exercise Green Eagle was a scenario-based event with a humanitarian-assistance theme involving fieldcraft activities in the Victorian bush over four days in October.

For the exercise, groups of Cadets were deployed in a real-time simulation scenario of a humanitarian and disaster relief mission purportedly sanctioned by the United Nations.

As part of pre-exercise training and to maximise safety, Cadets needed to be physically fit to a set standard, as there were considerable periods of walking in varying weather and terrain.

As well, the Cadets had to be already competent in fieldcraft and survival techniques, including compass, map reading, navigation, first aid, field hygiene; familiar with their equipment, and able to draft and execute orders within a set structure.

The AAFC annual national fieldcraft event is called Exercise GREEN EAGLE (EXGE17) with 'Green' representing the field environment and youth, while the 'Eagle' represents our relationship with Air Force.

Air Force Cadets win national fieldcraft competition: AAFC Cadets Southern QLD win the national fieldcraft competition

AUSTRALIAN AIR FORCE CADETS

St Peters Lutheran College Springfield

K – Year 12 | Discover the St Peters Difference

Transport to the door

42 Wellness Way, Springfield Central Qld 4300 | +61 7 3470 3888 | s.enrolments@stpeters.qld.edu.au | www.stpeters.qld.edu.au

St Peters Lutheran College Springfield

St Peters Lutheran College Springfield is a modern co-educational school with a focus on the pastoral, academic, physical and spiritual dimensions and encourages student enrolment applications from a wide range of backgrounds.

St Peters offers our students comprehensive academic, sports and music programs from Prep to Year 12 as well as encouraging their own personal development. The addition of our Kindergarten has enhanced our College offerings. Our unique outdoor education and agricultural program for our Year 9 students at Ironbark provides a memorable and transformative experience for this adolescent cohort.

At the heart of the College are two expectations of all St Peters students:

- to live by our motto of Plus Ultra – ever higher, more beyond, and

- to treat all members of the St Peters community according to our three core values: with care, dignity and respect.

The College is accessible through a wide range of transport options, including close proximity to the train, the St Peters bus service to and from Greenbank and a comprehensive bus service from another provider.

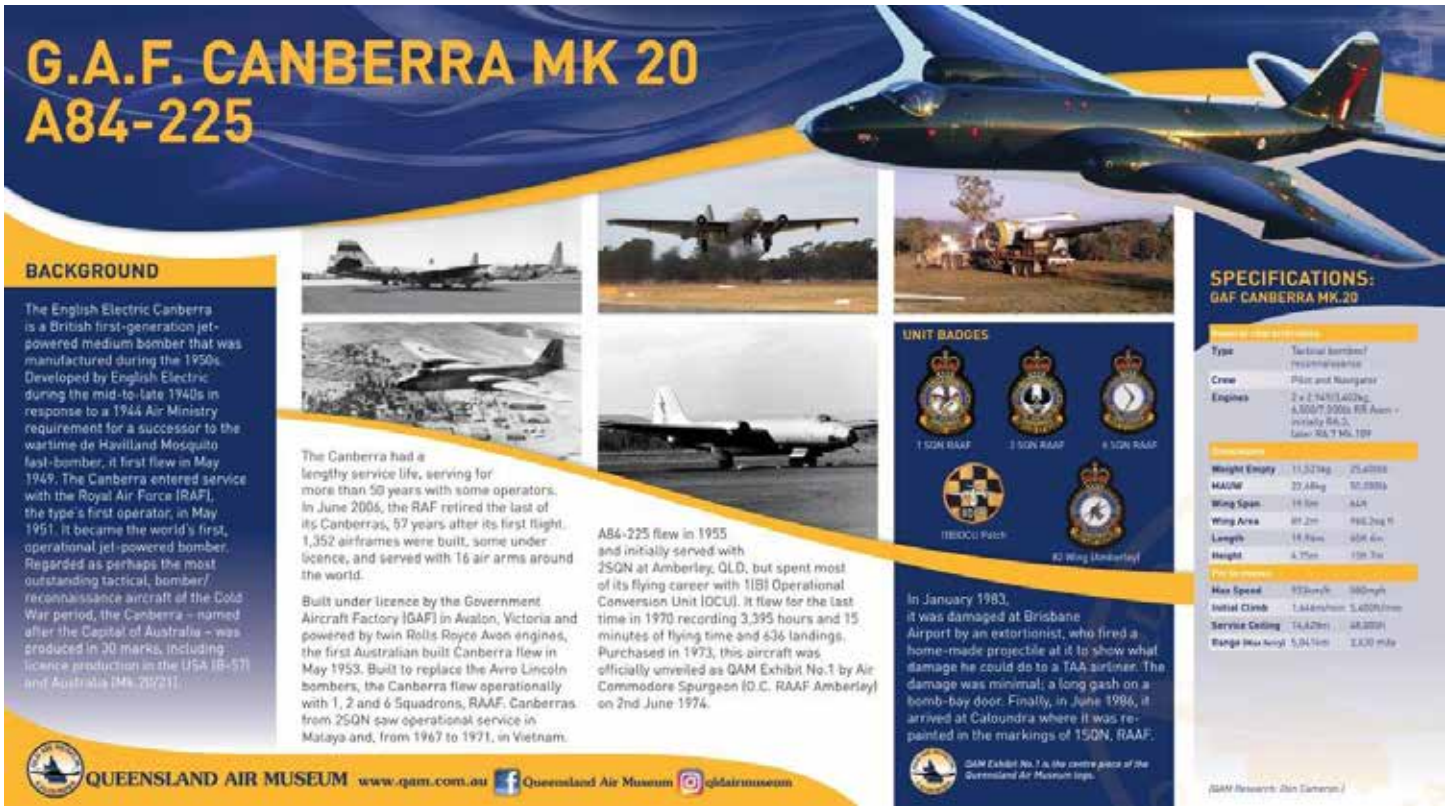
The College is committed to working with our students to realise their full potential.

Contact us to find out more about the St Peters 'difference' by calling our Enrolments Registrar on 3470 3888, emailing us at s.enrolments@stpeters.qld.edu.au or by visiting our website at www.stpeters.qld.edu.au

St Peters Lutheran College Springfield

K – Year 12 | Discover the St Peters Difference

There's always a lot happening at Queensland Air Museum!!



The QAM team have been hard at work, once again, improving Australia's biggest and best display of aviation heritage.

Local member and QAM member, Mark McArdle was there recently to present a new Queensland flag to QAM volunteers, Lynn Scott and Peter Asher.

Dave Geck and his team have worked on the Caribou installing new landing gear. Considerable work and effort has gone into the Caribou in recent months sourcing and installing genuine parts to bring the Vietnam veteran up to final display standard.

And the display team, headed by Colin Campbell are progressing on with the huge job of replacing all the QAM display information boards. This involves fully re-researching all display items' history and presenting this on an attractive display board to enhance the experience of QAM's many visitors each day. The photo shows the board design for the Canberra Bomber, the first aircraft purchased when QAM was born in 1973.

So, how do you paint a 30 tonne aircraft? In this case, the first step was to send a team to Mareeba, break Lockheed Neptune up into bite-size pieces, transport it to Caloundra on 6 trucks, spend a year putting it back together, and then the painting starts! Challenges like this are faced by the QAM team of volunteers each week and the work plan runs several years into the future. And they love a challenge!

QAM has a truly unique display, but its most unique asset are the 100 or more volunteers who work tirelessly on the acquisition, restoration and conservation 'Preserving Australia's Aviation Heritage' and simply presenting the QAM displays to the visiting public each day.

Australia's largest and best display of vintage aircraft all in one fantastic location next to the Caloundra Airport on the beautiful Sunshine Coast.

With more than 75 historic aircraft and many other displays, QAM is the spot to spend several memorable hours or take advantage of a visit during one of our Engine Run Days or the Open Cockpit Weekend (see website www.qam.com.au for details)

QAM is a 100% volunteer organisation and welcomes visitors every day of the year (except Christmas Day).

REPATRIATION MEDICAL AUTHORITY

Mental Health

Mental health issues have featured prominently in the Authority's deliberations during 2016-17. Most recent version of the mental health manual (The Diagnostic and Statistical Manual of Mental Disorders fifth edition) has been incorporated into all of the Authority's mental health SOPs except those concerning bipolar disorder and personality disorder – remaining SOP reviews will be completed shortly.

Mefloquine

Anti-malarial drug mefloquine has been subject of extensive concern for many veterans and ADF members, particularly given widespread use in East Timor and other recent deployments in tropical areas. The drug is now included as a causal factor in many mental health conditions (depressive disorder, anxiety disorder, bipolar disorder, schizophrenia), as well as suicide and attempted suicide, and a range of other SOPs (14 conditions in total).

Suicide

The Authority completed two reviews of SOPs concerning suicide and attempted suicide over the reporting period. In July 2016 extensive changes were made to SOPs for suicide and attempted suicide, with mefloquine use and a range of new causal factors added. These included death of a parent, attempted suicide of a parent, death of a sibling due to suicide, moderate to severe traumatic brain injury and bariatric surgery.

A further focussed review was finalised in February 2017. The Authority re-examined whether timeframes within which exposure to various stressors needed to be experienced were appropriate. The Authority decided to remove (or extend) the timeframes. Changes took effect in March 2017.

In September 2016, Senate referred issues associated with suicide by veterans and ex-service personnel to Foreign Affairs, Defence and Trade References Committee for inquiry. The inquiry's terms of reference were wide ranging, including consideration of the Authority's Statements of Principles. The Authority lodged two submissions to the inquiry, provided evidence at a public hearing in Canberra in February 2017 and provided further information in relation to Questions on Notice arising from that.

Stressors

The Authority carefully considered the nature and importance of Category 2 stressors. While such stressors are often less extreme than life-threatening 1A and 1B stressors associated with military combat, they may be linked to common aspects of ADF service more often than currently recognised. Issues such as problems with long-term/marital relationships, severe financial hardship or loss of employment, or bullying and conflict in the workplace can often be directly or indirectly service-related as a consequence of service life such as posting cycles, deployment or involuntary medical discharge.

Extract-Repatriation Medical Authority: Twenty-third Annual Report 2016/2017

ADVOCACY, ENTITLEMENTS AND SUPPORT SPOT

Introduction

I introduced the Spring edition with comment the pace of change in veterans' affairs is accelerating. I'd like to continue by looking at two areas: younger veterans and Government's response to Senate Foreign Affairs, Defence and Trade Reference Committee's Report on Suicide of Veterans. The views I express in this article are my own and do not necessarily have approval of the National Council.

Younger Veterans

I am sure most readers will have heard a Vietnam-era peer from any of traditional ESOs bemoaning their inability to attract younger veterans. Although based on different contact, I find it hard to reconcile widely held view with my own experience, historically, as a TIP Chair, and ongoing as an advocate and member of the Advocacy Training and Development Program.

Without doubt, an overwhelming majority of younger veterans is joining or creating their own support groups rather than joining a traditional ESO. When asked why, typical response has centred around our generation's 'pokies and booze' attitudes. Although the response is clearly a challengeable generalisation, a measure of their rejection is most younger veterans, even in dire straits, will not approach an advocate if they must enter a club. Regrettably, this results in too many cases, in claims being submitted without knowledge of legislative provisions and legislated requisites to rehabilitation and compensation. Just as damaging, often younger veterans post queries on social media seeking information. In most cases, responses are anecdotal and wrong. This, in turn, stimulates more trenchant discontent along lines discussed in the Spring edition.

There are also signs of positive change. In all states, a small number of younger veterans are being elected to committee positions in traditional ESOs. Reportedly, they have few misconceptions about the challenge they face. The transcripts of evidence at: https://www.finance.nsw.gov.au/inquiry-undercharitable-fundraising-act-1991 give some insight into this. A significant number of younger veterans have established or are managing veterans' centres or organisations that have an active relationship with a traditional ESO or club. Many others are providing companionship and support.

As might be expected, intergenerational differences must be coped with. The Greek philosophers' observations more than two millennia ago show this is not a new phenomenon. On the other hand, I'm reminded of an instance in my own efforts to connect with. Having started work on an advocacy/drop-in centre for younger veterans, I was invited to join them over a coffee on successive Wednesdays. Mutual apprehension was alleviated after a couple of interactions when a go-between communicated the following: "What's it like? Oh, it's just like having coffee with your grandfather."

Not necessarily assuring. But an indication of possibilities! TIP and ATDP have, however, offered opportunities for truly meaningful progress. Apart from development of inter-personal

skills to cope with inter-generational differences, compensation advocacy is grounded in legislation – or as a past PM noted: "black letter L-A-W". Welfare advocacy, on the other hand, offers a far

greater range of opportunities.

As a result of veterans and their spouses' needs, when TIP began teaching welfare in the 1990s, the focus has been on aged care. Specific needs of cohorts of veterans and dependents emerging from post-1990 conflicts had not yet registered. The rising tide of life-long support needs resulting from serious musculo-skeletal and mental health conditions has made a complete rethink critical.

A preliminary workshop in mid-2014 and recent ATDP workshops on younger veterans' welfare needs confirmed two fundamentals: existing aged care focus remains essential, and a wide range of new foci must be added. Socrates may have decried the young for "not respecting their elders", but that is not born out by workshop findings. When identifying the welfare curriculum ADTP must implement if the needs of younger veterans and their dependents are to be met, workshop participants were unanimous: "We need aged care so younger veterans learn how to behave towards their elders". The background to this were deeply disturbing stories of veterans returned from deployments with severe mental health conditions, often opiate addicted for pain control, discharged before claims were determined and MSBS disability pensions processed and, having exhausted parents/family's and friends' understanding, surviving on park benches or under tarpaulins in the bush. Three organisations at the front line helping these veterans are V360 Australia, Overwatch and Veterans Off the Street Australia - none a traditional ESO.

Younger veterans' concern for their "mates" welfare and well-being has been unambiguous throughout workshops and from even the most cursory 'surfing' of Facebook sites they access. The depth of their caring has crystallised as a clear picture of the support they want ATDP to train them to provide. Also clear is, if ATDP does not provide training, they will do it themselves. Already underway in at least two younger veterans' organisations are training in what they call "first responder" competencies. These include suicide first aid and accidental counselling. Workshop participants have made clear concern ATDP substantiate its relevance to younger veterans by incorporating these competencies into the welfare learning pathway.

Other competencies workshop participants identified include MECRB processes, basic skills of living, vicarious trauma, resilience training, fostering self-reliance, support for children in a crisis-ridden family, rehabilitation and recreation skills, and case management. Development of the curriculum continues. I hope you see the expanded welfare course rolled out in 2018. The future Welfare Advocate will have a very different skill set to the traditional Welfare Officer. He/she will "walk beside the DVA client" rather than "point the way".

Suicide of Veterans Report

Minister for Veterans Affairs, Hon Dan Tehan, tabled Government's response to the Senate FADT Committee Report on 24 October 2017. The Minister's Statement exemplifies concern that spurs the Department's Veteran Centric Reform Program. It also confronts honestly the depth of challenge the Department faces in ensuring administration of veterans legislation meets demands posed by veterans of contemporary service, and especially returned veterans.

The Minister's comments on the suicide of Jesse Bird reinforce why all Advocates must be better prepared for their service delivery responsibilities and to integrate their efforts with the Department. The Minister said: "Following Jesse's discharge, he faced the challenge of transition back into civilian life. Due to physical injuries and the deterioration of Jesse's mental health with impact of PTSD during his time in the Army, Jesse found it increasingly difficult to find meaningful work that gave him the sense of purpose he had during his time serving in the ADF. "Departmental processes failed or simply did not exist to offer services to help Jesse. While struggling with all this, Jesse decided to end his life.

'Jesse's case highlights the complexity and breadth of the challenge the Department of Veterans' Affairs faces to support our veterans, particularly those with mental health conditions as a result of their service. These Australians have risked themselves in the service of our country. If these people are not receiving the support they need, then we must continue to drive change. "Following Jesse Bird's death, I asked the Departments of Veterans' Affairs and Defence and the Veterans and Veterans Families Counselling Service to thoroughly examine his case. They have conducted a review which looked at his experience with Defence and Veterans' Affairs. This occurred in consultation with his family.

"T]e report into the management of Jesse Bird's case shows that while some aspects of process and management were within expectations, others were contrary to the Department of Veterans' Affairs policy and practice. The Department of Veterans' Affairs either did not or could not provide the support or proactive engagement Jesse needed. "In particular, the report highlighted the issue of providing timely compensation and financial assistance to support those veterans suffering mental health conditions. The requirement for mental health conditions to be stable before being considered for compensation needs to be addressed. In addition, the provision of financial assistance when veterans are at their most vulnerable is needed. These issues let Jesse down as he was unable to get financial assistance when he needed it."

The Minister's Statement went on to respond to the 24 recommendations of the FADT Report. "The Government has accepted the recommendation the Productivity Commission should review the legislative framework of compensation and rehabilitation and review other arrangements in the Department of Veterans' Affairs. The Treasurer and I will develop the terms of reference for this review, which will be open to submissions from all Australians.

"Government also accepts the Committee's recommendation the Australian National Audit Office conduct a review into the efficiency of veterans' service delivery by DVA and will write to the Auditor-General to request to include this review in the 2017-18 programme of work. "In its report, the Committee identified a number of measures the Departments of Defence and Veterans' Affairs should implement without need for review. They included recommendations:

• the Departments align the provision of mental health care;

• the Career Transition Assistance Scheme include an option for external

work experience for veterans;

• ADF members are provided DVA White Cards on discharge; and

• a two-track program be developed for ADF members leaving Defence.

"Throughout the inquiry, the Committee covered a number of issues relating to the current functions of DVA. To address this, the Committee has provided a number of recommendations.

"Firstly, Committee has recommended a continuation of the Veteran Centric Reform program in DVA, while also providing resources to alleviate claims times and resolve complex cases. This is consistent with Government's commitment in this year's Budget, which provided over $160 million to Veteran Centric Reform.

"The Committee has also recommended Government establish a formal Bureau of Veterans' Advocates with the capacity to commission legal representation and training for veteran advocates. There is an opportunity to improve regulation of veterans' advocacy to increase quality and consistency of services to veterans. Government agrees with the Committee in principle the current advocacy system needs to change."

"We will consider Committee's recommendation for a Bureau of Veterans' Advocates alongside other advocacy models and will consult the veteran community about future directions in veteran advocacy."

"Most importantly, the Committee has identified measures that can help us provide support to those who need it today. The Government knows mental health treatments work best when intervention is early. This is why we have put in place a system that provides free and immediate treatment for all mental health conditions for anyone with one day's full time service in the military. "

"As the Committee noted, 'there was almost universal praise from stakeholders regarding extension of non-liability health care for all mental health conditions.' This reform over the past 18 months has been revolutionary. It has meant treatment for veterans without the need to prove it was linked to service, cutting the administration and processing burden."

"However, the Committee has recommended expansion of a number of services and systems to support this:

• 1.Development of specific suicide prevention programs targeted towards at-risk groups and a pilot of a case management service for at risk veterans;

• 2. Expansion of online engagement with younger veterans; and

• 3. Funding of a trial program to provide assistance animals for veterans with PTSD."

As I noted at the introduction, the pace of change in veterans' affairs is accelerating. Two fundamental areas are younger veterans' welfare needs and Government's response to the FADT Report on Veterans Suicides. RAAFA National Council will join with the other ADSO Members in participating fully and actively in, and monitor implementation of these crucial changes in the delivery of services to veterans and dependents.

Article : R.N. (Dick) Kelloway, National VP Advocacy and Entitlements, Level 4 Compensation and Level 2 Welfare Advocate.

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

$31 MILLION IN ADDITIONAL FUNDING FOR VETERAN MENTAL HEALTH

Government will provide an additional $31 million to support veterans' mental health as part of its response to the Senate Inquiry into veterans' suicide. As the Prime Minister has said, we best honour the diggers of 1917 by ensuring our veterans in 2017 receive the support they need and deserve. When someone stops serving their country it is their country's turn to start serving them. The Turnbull Government has made veterans mental health a priority. An additional $58.6 million in mental health funding was provided in this year's Budget. Today, the Turnbull Government commits an additional $31 million to support veterans as part of its response to the Foreign Affairs, Defence and Trade Reference's committee report The Constant Battle: Suicide by veterans. The Government will provide: $16.1 million over four years for a new Veteran Payment for financial vulnerable veterans claiming mental health conditions;

• $7.1 million over four years to extend support for families of veterans;

• $2.1 million over four years for an annual health assessment for ex-serving ADF members for the first five years post-discharge;

• $4.0 million over two years to pilot a case management service for transitioning or recently discharged ADF members;

• $1.7 million over two years to undertake a scoping study to professionalise veterans' advocacy.

Government has asked the Productivity Commission and the Australian National Audit Office to conduct reviews into the Department of Veterans' Affairs (DVA). These independent reviews will inform further improvements to DVA processes. Other recommendations the Government has agreed to complement work already undertaken by the Government to further support veterans, such as:

• The $166.6 million investment in the veteran centric reform program announced in this year's budget;

• The Prime Minister's Veterans' Employment Program launched in November last year;

• The Government's response to the National Mental Health Commission Review into the Suicide and Self Harm Prevention Services released in June 2017;

The ongoing Australian Institute of Health and Welfare reports into the incidence of suicide among serving and ex-serving ADF personnel.

Government is continuing to focus on improving mental health services provided to our veterans. Mental health treatment works best when a veteran can get help early so Government has made treatment of any mental health condition free for anyone who has served one day in the fulltime ADF. The Government will now provide a DVA White Card to access mental health treatment through this program to all personnel leaving the military. The Government would like to thank members of the committee for their substantial work to complete this report and for their passion for improving mental health outcomes for veterans.

Building a skills-set for the 21st century

According to *The Future of Jobs Report* compiled by the World Economic Forum last year, an estimated 65% of children today will end up in careers that don't yet exist.

We've already seen that shift happening with job titles like 'social media manager' and 'mobile app developer' that no-one had heard of ten years ago, and the use of descriptions such as 'disruptor', and 'changemaker' indicate that, in the workplace of tomorrow, standing out will be more important than fitting in.

"The skills valued most highly by tomorrow's employers will be cross-sector attributes like big picture thinking, creative problem-solving, evidence-based decision-making and entrepreneurship," says Professor Terry O'Neill, Executive Dean of Bond Business School.

While a Master of Thinking Outside the Box hasn't made the tertiary options list (yet!), Bond University is getting ahead of the curve by ensuring all students both undergraduate and postgraduate have the opportunity to build this skills-set for the 21st century.

Earlier this year, the University launched an Australia-first co-curricular Transformer program specifically designed to develop creativity, encourage exploration, enable innovation and enhance the Gold Coast university's trademark entrepreneurial experience.

Offered in three stages on a fee-free basis, the Transformer program gives students from all Faculties an opportunity to develop new systems, solutions and processes in response to an issue of their own choosing.

Unlike traditional business incubators that focus on commercialising a specific enterprise, Transformer encourages students to explore better ways of doing things, generate change and solve problems across a broad spectrum. It could relate to social welfare, environmental issues, economic improvements, technology, health, sport, art, law – any project, big or small.

"Our students are passionate about a wide range of issues and the dedicated co-working Transformer space brings them together with like-minded classmates, researchers and academics from all Faculties to explore innovative ideas and solutions that address an identified area of need," says Transformer coach and Assistant Professor from Bond's Medical program, Dr Christian Moro.

"It also provides access to a structured learning framework of staff and expert coaching sessions every day, interactive sessions for individual training and development, and guidance from industry experts.

"As a coach, one of the highlights for me is the teamwork aspect. When I was at uni, most of my interactions were with students within my degree but here we have groups of students from the Faculty of Society & Design linking up with a PhD researcher from the Faculty of Health Sciences & Medicine and others from Business, Commerce and Law.

"It's been fascinating to watch them instantly forming groups with others from such a wide range of experiences, working together to come up with ideas and formally presenting them to an expert panel."

Find out more about the program and study at Bond University at bond.edu.au/transformer.

AUSTRALIA'S #1 UNIVERSITY FOR STUDENT EXPERIENCE

At Bond University we run three full semesters a year, with intakes in January, May and September. This means many of our master's programs can be completed in just one year.

If you're ready to get your future underway, our next intake is just around the corner.

bond.edu.au

CRICOS Provider Code 00017B

2018 Good Universities Guide

BOND UNIVERSITY

Haileybury's **Acclaimed** Academic Program Arrives in 2018!

HAILEYBURY RENDALL SCHOOL

www.haileyburyrendall.com.au

Haileybury has six campuses:

BERWICK BRIGHTON KEYSBOROUGH MELBOURNE DARWIN BEIJING

Air Force History

13 Oct 57 - Death of Veteran Airman

Sir Thomas Walter White c 1941

On this day, Sir Thomas Walter White, a veteran airman of both World Wars, died in Melbourne. One of the first Australian Flying Corps officers selected to train at Pt Cook, White served with the Mesopotamia Half Flight where he survived several incidents landing behind enemy lines before he was captured by Turks and Arabs on 13 November 1915. He escaped captivity in July 1918 and made his way to London via Istanbul and Odessa, Ukraine. He was awarded the DFC and twice mentioned in dispatches for his Middle East exploits. After pursuing business interests and a political career between the Wars, White transferred to the Citizen Air Force as a temporary Squadron Leader in April 1940. Taking leave from the Federal Parliament, he commanded a training school at Somers then in 1941 went to England where he administered Australian aircrew and acted as liaison officer with the RAF. He still longed to fly, and on several occasions surreptitiously took part in operations as a second pilot. Returning to Melbourne in 1943, White served at the RAAF Staff School before being demobilized as honorary group captain on 9 December 1944 and resuming his parliamentary career.

A complete biography of Sir Thomas Walter White: www.adb.anu.edu.au/biography/white-sir-thomas-walter-12013

13 Oct 65 - 38SQN DETA Commenced Operations in PNG

Caribou on operations in Port Moresby

On this day, No 38 Squadron Detachment A began operations from Port Moresby. Two aircraft -- A4-164 and A4-225 -- had departed RAAF Richmond the previous day. The detachment provided transport support for the PNG Defence Force and tropical and mountainous condition experience for Australian-based crews. All Caribou captains were required to complete at least one two-month deployment to PNG before serving with No 35 Squadron in Vietnam. Until their withdrawal in 1975, the crews of the Detachment flew nearly 27,000 hours.

13 Oct 02 - Relief Effort Mounted after Bali Bombings

Overhead of damage area Bali tourist bars

After terrorists detonated bombs in two tourist bars on the Indonesian island of Bali on 12 October 2002, killing 202 people (88 of them Australians) and injuring another 209, the RAAF was at the forefront of the relief effort mounted by the Australian Defence Force. Permanent Air Force and Specialist Reservists from across the country were activated and C-130 Hercules

Interior of C-130 Hercules configured for aeromedical evacuation

transports were specially configured for aeromedical evacuation (AME) tasks. The aircraft took off from RAAF Base Richmond, NSW, in under six hours — half the time normally required to deploy for AME — and were on the ground at Bali's Deposer Airport during 13 October. A total of five Hercules (three C-130Js and two C-130Hs) were used to fly out 66 casualties, including Balinese and other foreign nationals, for treatment in Australia.

More here: http://www.defence.gov.au/health/infocentre/journals/ADFHJ_sep03/ADFHealth_4_2_50-55.html

AFC Training in England

Grahame-White Type XV Aircraft

The system of training pilots of the Australian squadrons in England during the first eight months of 1917 (No.s 5, 6, 7 and 8 Squadron) is described by Captain E. G. Knox, Recording Officer of No 3 Squadron. In the main, what he says of No 3 Squadron holds good also for the others.

Flying Officers. Selected candidates, after medical tests, were dispatched to either No. 1 School of Military Aeronautics, Reading, or to No. 2 School of Military Aeronautics, Oxford, for a six weeks' course, which included lectures on the theory of flight, aerial navigation, aero-engines, and construction of aero planes. In addition, practical experience was gained in aero-engines and in rigging, as well as in Morse-

code buzzing, elementary artillery observation, bombing, compass, map-reading, &c. At the conclusion of the course the candidates were subjected to a written examination and, if successful, were sent to an elementary training squadron for instruction in aviation.

Two types of machine were then in use in these elementary training squadrons-the Maurice-Farman (Shorthorn or Longhorn), and the Grahame-White. From 1917 onwards pilot-pupils began their training on Avros.

The average pupil after three-hours' dual instruction, split up into breaks of fifteen minutes, was considered ready for a first solo-flight. This successfully accomplished, the pupil was required to complete a total of five hours' solo in the elementary machine, including as many landings as possible, or until the instructor was satisfied that the pupil could land the machine. The solo time on Rumpitees (as the M.F Shorthorns were generally called) was varied from time to time. In 1916. for example, pupils were required to do only two hours' solo before being sent on for higher training. The time was increased to five hours, and later, in 1917, reduced to four hours.

A sum total of twenty-hours' solo (including the time in elementary machines) was necessary before a pupil could graduate as a pilot. But several further tests were introduced. He must perform a cross country flight of at least forty miles and make two landings away from his own aerodrome. He had to climb to a height of 8.000 feet, shut off his engine, and land on his own aerodrome without assistance from the engine. He had to make two landings by night guided by flares. Among special tests were:-

Bomb dropping: to fly three times over a Bachelor mirror, an instrument for judging the exactitude with which bombs could be dropped.

Photography: to photograph from a height of from 1.500 to 5,000 feet six out of eighteen points given by map-reference.

Buzzing: to send and receive eight words a minute on a buzzer.

Artillery Observation: to conduct at least one successful shoot on a picture-target on the ground and one successful shoot from the air, with a puff-target, observations being sent down by wireless.

Formation Flying: to take part in at least one formation flight.

Fighting Practice: to carry out elementary fighting practice in the air.

Machine-gunnery: to satisfy examiners in knowledge of Vickers and Lewis guns, stripping and assembling, and shooting ground range. The camera-gun generally used in practice was of the Lewis type. It was used both on the ground-for firing at machines in the air round the aerodrome-and on machines in fighting practice. They were of such great value that the fighting squadrons in France each had two allotted. Thus in the service squadrons pilots could, when opportunity offered, get further practice.

Having completed these tests and the twenty-hours' solo, the pupil was considered a graduated pilot, and was given permission to wear his "wings."

14 Oct 42 - Norman Brearley Assumed Command of No 4SFTS

BW Portrait Norman Brearley

On this day, acting Group Captain Norman Brearley -- a decorated Australian WW I Royal Flying Corps and RAF veteran -- assumed command of No 4 Service Flying Training School (SFTS) at Geraldon, WA. Following WW I, Brearley pioneered aviation in WA before joining the RAAF on 19 February 1940 as a temporary Flight Lieutenant. Following subsequent command of RAAF Station Tocumwal from March 1944, his RAAF appointment was terminated on 12 June that year. After the war Brearley served as a director of Sydney Atkinson Motors Ltd, Perth, played golf, and travelled overseas. He patented several inventions and

Bust of Norman Brearley

published an autobiography, *Australian Aviator* (1971). Appointed CBE in 1965 and knighted in 1971, he was awarded the Oswald Watt gold medal in 1974. He was founding president of the (Royal) Aero Club of Western Australia and a member (1926-89) of the Rotary Club of Perth. He died on 9 June 1989 at Nedlands, WA; a bust of Sir Norman by Gerard Darwin is displayed at the Perth International Airport.

A biography of Sir Norman is here: http://adb.anu.edu.au/biography/brearley-sir-norman-12250

14 Oct 47 - RAF Investigation Report into Recovery of Downed 462SQN Halifax Crew Submitted

Plaque in memory of Halifax III NA240 Z5-V

On this day, an investigation report into the loss of No 462 Squadron Halifax III NA-240, Z5-V, was submitted by the RAF's No 4 Missing Research and Enquiry Unit. According to the report, the aircraft was shot down and exploded

462SQN Z5-G being serviced at RAF Foulsham c1945

in the air over the village of Zaasch, in Saxony, Germany on the evening of 10 April 1945. Seven members -- including five Australians -- of the crew were killed and buried in a communal grave in the village's cemetery. In 1947 the crash site was in the Russian zone of occupied Germany. The bodies of the five Australians were exhumed on 30 September 1947 and reburied in the Heerstrasse British War Cemetery, Berlin.

A copy of the Report, together with other information on the crash and recovery, is here: http://www.462squadron.com/pages/crash/crash_investigation_report.html#letter_july_1948

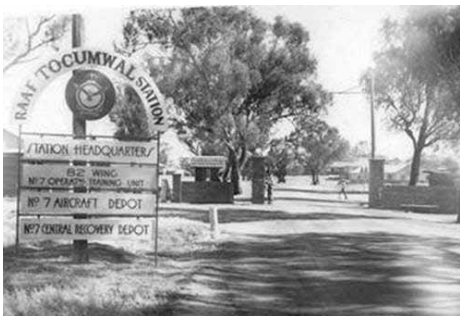
14 Oct 60 - Tocumwal Base Closed

Overhead Tocumwal

On this day, the Air Force flag was lowered for the last time at the RAAF base outside the southern NSW border town of Tocumwal, as it was formally closed by Group Captain George Pither, the Commanding Officer of No 1 Aircraft Depot at Laverton. The 12 men normally stationed there were transferred immediately after the ceremony. About 50 aircraft of various types remained, awaiting disposal by the Department of Supply. When built in 1942, the base (then known as McIntyre Field) was the largest in Australia, covering 20 square kilometres and with 100 kilometres of roads. Originally intended to take heavy bombers of the USAAF, the strategic need for the base had already passed by the time it was completed and it became a Repair and Supply Depot instead. Placed on a care and maintenance basis in 1946, it had operated as Detachment B of No 1 Aircraft Depot since 1950.

More unofficial history of RAAF Tocumwal is here: http://home.st.net.au/~dunn/tocumwal.htm

WAAAF Armourers working on a B-24 Liberator at Tocumwal 1944 *Photo AWM*



RAAF Tocumwal entrance

14 Oct 2014 - 36SQN Delivered First new RAN Combat Helicopter to Nowra

A MH-60R Seahawk being unloaded from a RAAF C-17 at HMAS Albatross

The new MH-60R being transported into a hanger at HMAS Albatross

On this day, No 36 Squadron delivered the first of the RAN's new MH-60R Seahawk naval combat helicopters to *HMAS Albatross*. The next-generation maritime combat helicopter was transported from the US Naval Air Station in Jacksonville, Florida. No 725 Squadron will operate the helicopters which will provide ongoing anti-surface warfare and anti-submarine capability to the fleet. Carrying both Mk54 torpedos and Hellfire air-to-surface missiles, the 'Romeos' will be operate from Navy's *Anzac* Class frigates and the new *Hobart Class* air warfare destroyers.

15 Oct 42 - RAAF Officer Appointed to a Wartime RAF Command

On this day Air Commodore A.T. 'King' Cole became the first RAAF officer to hold a RAF command in WW II, when he was appointed Air Officer Commanding (AOC) Northern Ireland, with acting rank of Air Vice-Marshal. He had previously been attached to the Headquarters of No 11 Group, RAF, in which capacity

Air Commodore Cole

he took part in the failed assault on Dieppe, France, on 19 August. Given the role of co-coordinating air support for the raid from the destroyer HMS *Calpe*, he was seriously wounded by shell fragments in the jaw, neck and back when the ship's bridge was attacked by German fighters. The injuries to his face required plastic surgery, and his AOC appointment to the backwater Irish area was largely to assist his convalescence. He returned to Australia in May 1943 and, retaining his acting rank, he became AOC North-Western Area in July, with his headquarters at Darwin.

More on AIRCDRE Cole here: http://adb.anu.edu.au/biography/cole-adrian-lindley-trevor-9780

15 Oct 53 - RAAF Bombers Contaminated in Atomic Test

Totem ground zero marker

Totem I, the first of two British atmospheric atomic trials conducted during October 1953 at Emu Field, 480 kilometres north-west of Woomera, SA, resulted in contamination of eight of the nine RAAF Lincoln bombers used on air-sampling and cloud-tracking tasks. Exposure to radioactive fallout experienced on this day was far greater than had been predicted, with the result that there were many changes for *Totem 2* conducted on 27 October. Two aircraft from the first test were again used, but this time with crew members required to wear protective gear, radiation film badges and use oxygen; contact with the radioactive cloud was also limited to 10 minutes. Ground personnel faced similarly restrictive precautions. At the end of the *Totem* series, four aircraft were so contaminated that they never flew again but lay abandoned at RAAF Base Amberley for several years before being scrapped and buried.

More on the fallout from Totem I aircraft contamination (pp 417-425) www.industry.gov.au/resource/Documents/radioactive_waste

15 Oct 75 - Former CAS Criticised Federal Government

Sir Colin Thomas Hannah

On 1 January 1970, Air Marshal Sir Colin Hannah was promoted and appointed Chief of the Air Staff (CAS) for what was expected to be a three-year term. A senior commander in the Southwest Pacific during WW II, Sir Colin disguised a cautious approach to decision making behind a brusque, even rude, manner. His growing reputation for poor judgment was reinforced when he abruptly resigned in March 1972 to become governor of Queensland part-way through his tenure, and without any prior consultation with the other members of the Air Board *(see 21 March 72)*. By late 1975, he was involved in controversy and -- following several petty incidents which had attracted adverse publicity -- at a Brisbane Chamber of Commerce luncheon on this day, Hannah criticized the 'fumbling ineptitude' of E. G. Whitlam's Federal Labor government for placing Australia in 'its present economic state'. Convinced that Hannah lacked political impartiality, the Commonwealth government advised the Queen to revoke his dormant commission to serve as administrator in the event of the absence or incapacity of the Governor-General.The Queensland premier, Sir Joh Bjelke-Petersen stated publicly that he wanted Hannah's term extended, but it was allowed to expire on 20 March 1977.

A biography of Sir Colin Hannah: http://adb.anu.edu.au/biography/hannah-sir-colin-thomas-10413

15 Oct 97 - Hercules in Anti-poaching Operation

Panamanian ship 'Alizia Glacial'

On this day, the RAN frigate *Anzac* boarded and arrested the Belize-registered longline fishing vessel Salvora inside Australia's exclusive economic zone around Heard and McDonald Islands, 2000 nautical miles south-west of Fremantle, WA. A second foreign vessel, the Panamanian-flagged *Aliza Glacial*, was similarly arrested two days later. Both vessels were handed over to the RAN tanker *Westralia*, which escorted them to Fremantle where the captains were charged with illegally taking Patagonian Toothfish. These patrols, codenamed Operation Dirk, represented the first armed defensive action undertaken by Australia in the sub-Antarctic since WW II, and were supported by two RAAF C-130 transports with extended range which provided forward surveillance (since poaching vessels had been using radar to avoid interception). While Anzac continued patrolling without making

further sightings, the Belize-flagged *Puerto Madryn* was also spotted from the air in the area but without any action being taken against it.

A 2003 report on illegal fishing in the Antarctic area: http://www.antarctica.gov.au/magazine/2001-2005/issue-5-winter-2003/feature/illegal-fishing-in-the-southern-ocean-the-problem-practices-and-perpetrators

15 Oct 12 - Air Vice-Marshal Margaret Staib Appointed CEO Airservices Australia

AVM Margaret Staib

On this day, AVM Margaret Staib, AM, CSC, took up the appointment of Chief Executive Officer at Airservices Australia after a distinguished career over three decades in the RAAF. AVM Staib was the second RAAF woman to be promoted to two-star rank after AVM Julie Hammer was appointed to the position of Deputy Chief Information Officer on 11 August 2003.

No 450 Squadron

No 450 Squadron -- nicknamed the "Desert Harassers" -- and one of the most famous RAAF squadrons of WW II, disbanded at Lavarino, Italy on 20 Aug 45. It's nickname was derived from the taunts of the German propaganda broadcaster "Lord Haw Haw" (Englishman William Joyce) who, during the squadron's operations in the Western Desert branded it a band of "Australian mercenaries whose harassing tactics were easily beaten off

450 SQN Ground Crew

by the Luftwaffe". No 450 Squadron, formed at Williamtown on 16 February 1941, was the first of the "Article XV" Empire Air Training Scheme (EATS) squadrons. After arriving in the Middle East in May 1941 it was combined with the pilots and Hawker Hurricanes of the RAF's No 260 Squadron to form an operational squadron.

The combined squadron flew predominantly ground-attack missions during the Syrian campaign of June-July 1941. Flying Kittyhawks, the squadron served in the Middle East for the rest of the war taking part in the campaigns in the Western Desert, which spanned Egypt and Libya (February 1942 - February 1943), Tunisia (February - May 1943), Sicily (July - August 1943) and Italy (August 1943 - May 1945).

Although designated a fighter squadron, its principal role was ground-attack in close support of the land forces. The commander of the German Army in Italy would later reflect upon the impact of the Allied fighter-bombers: "the effectiveness of the fighter-bombers lay in that their mere presence alone, over the battlefield, paralysed every movement." No 450 Squadron was preparing to re-equip with North-American P-51 Mustangs but, following the surrender of German forces in Italy on 2 May 1945, it was disbanded on 20 August 1945.

More here: https://www.awm.gov.au/collection/U59435/

No 41 Squadron

No 41 Squadron was formed from 'A' Flight of No 33 Squadron at Townsville on 21 Aug 42. The squadron operated Empire flying boats, carrying freight and passengers along Australia's east coast

1SQN Mariner undergoing maintenance at Madang, New Guinea, 15 Jan 45
Photo: AWM

and to New Guinea. June 1943 saw the first of six ex-Dutch Dornier Do 24 flying boats allotted to No 41 Squadron as replacements for the Empires. Although impressive in appearance, these three-engined aircraft could only carry 908 kilograms of freight and were in very poor mechanical condition. Despite the tireless efforts of squadron ground staff, the serviceability rates for these aircraft remained poor.

By February 1944, Martin Mariner flying boats arrived to supplement the Dorniers. These new aircraft, with their greater payload and performance, quickly became the preferred aircraft, especially on the longer flights to Noumea, Espiritu Santo (Vanuatu) and other island ports of call. Apart from its transport role, the squadron also effected a number of search and rescue missions. By the end of the war, the squadron had rescued over one hundred and fifty personnel from the waters of the Pacific. After briefly operating a daily service from Cairns to New Guinea, No 41 Squadron was disbanded on 27 September 1945.

Source: The Official History
This material is compiled from sources including the Office of Air Force History, the RAAF Museum, the Australian War Memorial, ADF Serials and Peter Dunn. The Office of Air Force History is not responsible for pre-1921 items. Whilst every effort is made to confirm the accuracy of the entries, any discrepancies are solely the responsibility of the originator.

AVANEX® Unique Endophyte Technology grass reduces wildlife hazards at airports

Bill Walmsley, Turf Agronomist, PGG Wrightson Turf.

Bird and wildlife collisions with aircraft cost the aviation industry hundreds of millions of dollars each year, not to mention the risk of loss of life from an aircraft crash. Most airports rely heavily on bird scaring methods but habitat modification provides a more effective reduction in wildlife numbers.

Replacing the airport grass with AVANEX® Unique Endophyte Technology tall fescue or perennial ryegrass provides a habitat modification option for airport grass that can help make airports safer for aviation.

Research carried out in New Zealand has shown that AVANEX® Unique Endophyte Technology grass reduces bird numbers at New Zealand airports. Hazardous birds such as Canada geese are deterred from feeding on the grass foliage. Rabbit feeding is reduced on AVANEX® Unique Endophyte Technology grass and mice also find it unpalatable. Rabbits and mice are preyed on by raptors such as hawks, another hazardous bird at airports. The effect of this deterrence is that these birds and animals prefer to feed elsewhere.

AVANEX® Unique Endophyte Technology grass is a by-product of research carried out by AgResearch looking at developing forage grass that did not cause animal metabolic disorders such as grass staggers or heat stress. It was found that these disorders were caused by a fungal endophyte living within the grass plant itself. Unfortunately the endophyte also protected the grass from insect feeding damage from insects such as argentine stem weevil. AgResearch subsequently characterised hundreds of endophytes and finally found ones that did not cause animal disorders, but also protected the grass from insect feeding. These endophytes are widely available in agriculture.

Some of these endophytes were found to produce much higher levels of toxic alkaloids than others and were selected for use in AVANEX® Unique Endophyte Technology grass. It has recently been realised that plants with an endophyte association are quite widespread, and that it is the endophyte fungus that is providing insect feeding protection, and not the plant itself. The endophyte fungus is able to synthesise a wide range of compounds that plants can't make. It is the production of high levels of certain alkaloids that is the key to AVANEX® Unique Endophyte Technology grass effectiveness.

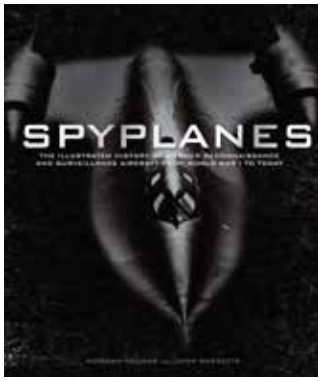
Canada geese are herbivorous birds that consume large amounts of grass foliage. Geese feeding on AVANEX® Unique Endophyte Technology grass experience post ingestion malaise and learn not to feed on the grass, so they move elsewhere.

There are fewer insectivorous birds on AVANEX® Unique Endophyte Technology grass because there are fewer insects. Insects are not killed directly but are disoriented and deterred from feeding on the grass, so numbers decline.

Hamilton Airport is the first airport in New Zealand to be nearly completely converted to AVANEX® Unique Endophyte Technology tall fescue. Christchurch airport is close to two thirds converted. At RNZAF Whenuapai a strip 30 metre wide has been established alongside the runway with good results. Wellington Airport is part way through a conversion process. It is surprising how often birds are seen not venturing on the AVANEX® Unique Endophyte Technology grass. Reduced bird numbers have been reported in scientific publications by researcher Chris Pennell.

Replacing airport grass with AVANEX® Unique Endophyte Technology grass is one way that airports can reduce the attraction of the grass areas to wildlife and make the airport safer for aircraft and people.

The development of bird deterrent grasses was undertaken by AgResearch, PGG Wrightson Seeds, the Foundation for Arable Research (FAR) and Grasslanz. The resultant grass seed is being marketed by PGG Wrightson Turf as AVANEX® Unique Endophyte Technology®.



Spyplanes

The Illustrated History of Manned Reconnaissance and Surveillance Aircraft from World War I to Today

Norman Polmar and John Bessette

Spyplanes is a comprehensive illustrated history of manned spyplanes. Nearly seventy-five aircraft from eight nations are profiled, pictured, and accompanied by technical specifications.

A comprehensive history with descriptions of the world's most significant aircraft employed as eyes in the sky.

For almost as long as there has been sustained heavier-than-air human flight, airplanes have been used to help gather information about our adversaries. Less than a decade after the Wright Brothers flew at Kitty Hawk, Italian pilots were keeping tabs on Turkish foes in North Africa. Today, aircraft with specialized designs and sensory equipment still cruise the skies over foreign lands and seas, trying to spy out secrets.

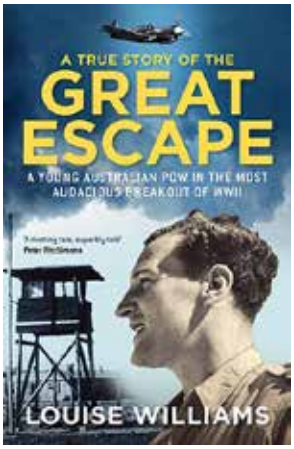
Spyplanes is the comprehensive history of manned spyplanes, beginning with those Italian airplanes puttering above the North African desert and continuing through every major world conflict to culminate with jets cruising at supersonic speeds 85,000 feet above the Earth's surface. Nearly seventy-five aircraft from eight nations are profiled, pictured, and accompanied by a specification box. Included are purpose-built spyplanes, as well as legendary fighters and bombers that have been retrofitted for the purpose over the years. In addition, the authors feature preliminary chapters discussing the history of aerial surveillance and a host of sidebars that explore considerations such as spyplanes in military doctrine, events such as the Cuban missile crisis, the downing of Francis Gary Powers' U-2, the 1992 Open Skies Treaty, and the USAF's current Big Safari program. Spyplanes also expands beyond fixed-wing planes to include notable helicopters that have been outfitted for recon and surveillance.

From prop-driven to jet-powered aircraft, this is the ultimate history and reference source to those eyes in the skies that have added mind-bending technologies, as well as an element of intrigue, to military aviation for more than a century.

Author bio:

Norman Polmar is an author and historian specializing in the naval, aviation, and intelligence fields. He has written or coauthored more than fifty books, including Spyplane: The U-2 History Declassified (2001) and, with John Gresham, DEFCON-2: Standing on the Brink of Nuclear War During the Cuban Missile Crisis (2006; foreword by Tom Clancy). The latter was the basis of the Discovery Channel film DEFCON-2, in which Tom Clancy did the opening and closing scenes. Mr. Polmar also has written about aircraft in other books and was author of nine editions of the reference work Ships and Aircraft of the U.S. Fleet and four editions of Guide to the Soviet Navy. He writes a column on historic naval aircraft for Naval History magazine and is a columnist for the US Naval Institute Proceedings. Lieutenant Colonel John Bessette, US Air Force (Ret), is a veteran Air Force navigator and intelligence officer who flew in various combat aircraft during the Cold War. For three years he flew as navigator in C-97G cargo aircraft configured for spy missions over East Germany and the Baltic region. From May 1968 to August 1969 he was assigned to the 3rd Special Operations Squadron at Bien Hoa Air Base, Vietnam, where he flew more than 1,200 hours as a navigator in AC-47 Spooky gunships. A three-year assignment in the Defense Intelligence Agency (DIA) followed, supporting the Joint Chiefs of Staff's Joint Reconnaissance Center (JRC) with assessments on the military and political risks of reconnaissance missions worldwide and the anticipated intelligence gain from them. He subsequently served in NATO air intelligence positions, retired from the Air Force in 1979, and after a year, rejoined DIA as an intelligence analyst specializing in the Soviet and Warsaw Pact air forces. He retired from DIA in 1996 to begin a third career as a researcher and author.

Category: History | Publisher: Quarto US | Pub Date: January 2017 | age Extent: 240 | Format: Hard Cover | Subject: History



True Story of the Great Escape

A young Australian POW in the most audacious breakout of WWII by Louise Williams AUD $22.99.

The first book to tell the story of an Australian POW in the famous Great Escape from Stalag Luft III in World War II, this is a moving account of the far too short life of a talented young man and a family hit hard by the Depression and war.

Shot down in 1942, young Australian fighter pilot John Williams DFC became a POW in the notorious Stalag Luft III camp in Germany. John had joined the Air Force shortly before the outbreak of war and, in the larrikin tradition, led his squadron into air combat over the deserts of Libya and Egypt dressed in sandals and shorts.

John and his best mate Rusty Kierath were among the 76 POWs who tunnelled their way out of the supposedly escape-proof camp under the noses of their German guards in what later became the Hollywood blockbuster, The Great Escape. Their families never learned what really happened once the pair made it out into the forest.

John's niece Louise Williams has pieced together his life, from his upbringing in a tight-knit family hit hard by the Depression, to his exploits in the air, and the many missing details of the tragic escape. It is a powerful and intimate story of one of the most dramatic episodes of World War II.

Category: Biography & Autobiography | ISBN: 9781760296148 | Publisher: Allen & Unwin | Pub Date: April 2017 | Page Extent: 296

Air Vice-Marshal Brent Espeland AM 1948-2017

Brent Espeland was born in January 1948 in Hindmarsh and lived in West Croydon; he was educated at Woodville High School, graduating as dux in 1965. His passion to fly led him to the Royal Australian Air Force Academy at Point Cook in 1966 and in 1969 he graduated as the Sword of Honour recipient - the highest award for achievement at the Academy.

After the Academy he underwent pilot training on 69 Pilots Course and on graduation was posted to C130A conversion. After his conversion course in June 1971 he married Judy – his childhood sweetheart in the very Cathedral he was farewelled. Judy was always a significant part of his RAAF career which spanned some 36 years and his subsequent career and retirement.

Brent's first flying post at 36 Squadron included operational service flying C130A Hercules in Vietnam - he was the captain of the last Australian C130 out of Saigon in 1975. After C130s he trained as a flying instructor commencing a long involvement with the training world which began by instructing advanced student pilots on the MB326H Macchi jet trainer at 2FTS in RAAF Pearce, WA. In 1977 he was posted to Central Flying School at RAAF East Sale in Victoria where he not only taught flying instructors, but became a member of the Roulettes aerobatic team. He was promoted into the Chief Flying Instructor position and was the Team Leader of the Roulettes in 1980 and 1981.

In 1981-82 Brent was selected to attend the Canadian Forces Command and Staff College in Toronto, Canada. On return to Australia in 1983 he was promoted to Wing Commander and took up the post as Military Secretary and Comptroller to Governor General, Sir Ninian Stephen. His responsibilities included military secretarial duties and the smooth running of the House. Sir Ninian is reported to have said to AIRMSHL Jake Newham (Retd), the outgoing CAS, "Jake, before we begin this conversation, I want to talk to you about this young Espeland. He has done a wonderful job; I haven't had to worry about the running of the House, while he has been here. I just want you to know what a magnificent job he has done".

Following his time at Government House, Brent returned to CFS in 1986 as the Commanding Officer. During his time as CO, he was instrumental in the transition of the Pilatus PC9 turbo-prop trainer into service as a replacement for the Macchi jet trainer – reputed to have been a task akin to fitting a square peg into a round hole. However, Brent thrived on difficult challenges and the result has produced some of the best military pilots in the world over the past quarter of a century.

In 1989 he was selected to attend the USAF Air War College in Montgomery, Alabama. On return in 1990 he was appointed as the Director of the Air Power Studies Centre at RAAF Fairbairn in the ACT and the following year he was promoted to Group Captain and became the Commander of that Base and Commandant of the RAAF Staff College. A posting as the Director of Studies at the Australian College of Defence & Strategic Studies followed and in 1995 he was promoted to Air Commodore and posted to be Air Officer Commanding Training Command at RAAF Laverton, Victoria, responsible for all training functions in the Air Force, initial and ongoing professional military education and training.

He was promoted to AVM in 1998 and was appointed Deputy Chief of Air Force until he was specially seconded to the Department of the Prime Minister and Cabinet with the immense responsibility for the coordination of security and intelligence at the national level for the Sydney 2000 Olympic Games.

Following his retirement from the Air Force in 2001, he joined the Australian Sports Commission in Canberra where he spent 10 years in senior sports administration with a focus on the governance of national sporting organisations, sports science and medicine and the fight against drugs in sport.

Brent retired from the Australian Sports Commission in 2012 and returned to Adelaide where he worked tirelessly in support of many worthwhile causes. He was National President of the Australian Flying Corps and Royal

Australian Air Force Association and both National and South Australian President of the Royal United Services Institute of Australia, a Director of the Sir Richard Williams Foundation, a member of the Department of Veterans' Affairs Ex-Service Organisation Round Table (ESORT), Chairman of The Board of Governors of The Repat Foundation, a board member of The Hospital Research Foundation, a member of the Air Force Heritage Advisory Committee and was especially pleased to serve as a member of the National Council of the Australian Air Force Cadets.

Brent most recently was Chair of the Veterans' Advisory Council in South Australia, a Ministerial appointment approved by Cabinet. In this capacity, he pursued a forward looking agenda that included a focus on better employment opportunities for younger veterans, resulting in the development of an employment framework that will be released later this month. Martin served alongside Brent both in uniform and in other pursuits following their service and remarked that he was proud to have served with someone with the professionalism and integrity of Air Vice Marshal Espeland.

It's amazing how some people can influence your life with the simplest of actions. As leaders, we never know how far our support and encouragement of our staff can go. Personally I received great mentoring from Brent on many occasions but I'd like to pass on just

one final story from Brent's cousin, Dr Mark Bateup who is the Deputy Program Lead, of the High Speed Weapons Program at the Defence Science & Technology Group out at Edinburgh. In Mark's words:

"When I was about 10 years old, Brent was a SQNLDR in the RAAF Roulettes and he brought me on-base and I got to sit in the Aermacchi MB 326 aircraft. That, and many similar incidents, helped steer me towards Aero Engineering and the Defence Science and Technology Organisation. In my early career (during the HyShot days) he was DCAF and explicitly called for me to brief him when he visited DSTO out at Edinburgh. It made the Chief of Weapons Systems Division, sit up and take notice of "hypersonics", because DCAF was seeking briefings from a young scientist. That briefing helped get internal support for DSTO's involvement in HyShot - at the time the Chief Defence Scientist was "hyper-cautious about hypersonics"- which also led to me getting sponsorship for doing a PhD at University of Queensland – prior to that, I did not have official support to do it, even though I had already chosen to enrol … the rest, as they say, is history ! I owe gratitude to my cousin for my participation in the HyShot Program, which formed the major part of my career, and the DST support for my PhD."

Brent's Obituary on the ANZAC Centenary SA website captures the essence of the man, "Brent was a man who believed there were better days ahead. His graciousness, smile, reassuring tone, and sense of humour were all qualities that helped him wear so effortlessly the burdens of expectation throughout his life and career."

Brent's approach to life was never more evident than during the last few months dealing with his illness while continuing to work tirelessly on the things that were important to him. His positive outlook, mental strength, and resilience were a study in courage that was, in short, inspirational. A man of service who persevered because he believed his efforts would deliver a better life for those who followed, Air Vice Marshal Espeland is part of an unbroken chain of those who have served with honour through the life of our nation."

AIRCDRE Christopher (Noddy) Sawade

Fred (Beaufighter) Cassidy OAM 1923 - 2017

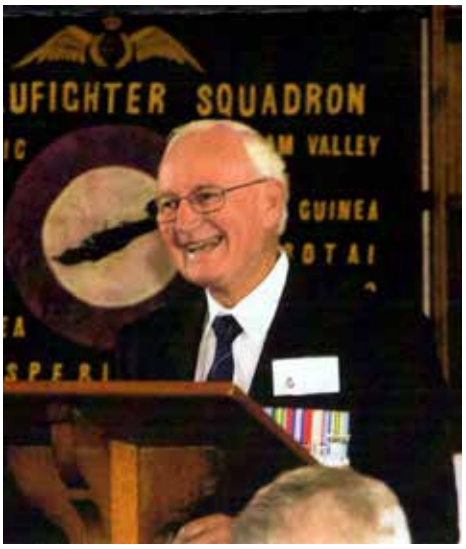
Fred Cassidy was born 3 Jan 1923 in Carlton NSW. Fred passed away on 5 September 2017 after contracting Influenza A, which turned to pneumonia. Fred was known as Mr Beaufighter and was responsible for maintaining the memory of the Battle of the Bismarck Sea of March 1943 and, together with his 30 Squadron Association members, considered that it should never be forgotten.

He was a child of the depression, an experience that would shape him throughout his life. The family moved to Bexley where he would do most of his growing up 'everybody was in the same boat', he said. His dad would disappear periodically up to the gold fields, his mum would take in ironing and sewing and they would catch and sell prawns. And of course, they grew all their own veggies and had chooks.

Working as a lollly boy at the theatre at Rockdale at the Rex theatre (or the Acme), Fred would walk up and down the aisles with a tray calling out "*peanuts, minties, lollies orrrr choc-ice*". He continued to do the same at home for years afterwards, much to the annoyance of his wife, Wendy whom he met when he was 16 at a tennis game in Arncliffe. Wendy was the love of his life and they married when Fred came back from his first tour in the SW Pacific. Their loving partnership continued for another 70 years until Wendy, sadly passed away in 2015.

After leaving school Fred went to work for the Tax Department, when war broke out. Too young to join, he bided his time until he was 18 and on 13 February 1941, enlisted in the Air Force. His father, who joined the Army at about the same time, forbade him to join the same Service and as the Navy held no appeal whatsoever, he chose the Air Force.

He was assigned to be a wireless operator and undertook what was widely agreed as the most difficult course in the RAAF, at the Exhibition Buildings in Melbourne. Being the student that he was, he applied himself, studied very hard and with the help of Bill Carew, topped the course. Fred then went to the Wireless School, Pt Cook, for



further training and in November 1941 went to Cootamundra to undertake the Observers Course. He didn't know it at the time, but he was being trained as aircrew for a new, yet to arrive aircraft, the Beaufighter.

Fred was assigned to 30 SQN in April 1942, just a month after the unit's establishment, with the first order of business being to find a crew mate. Never was so little science given to the formulation of partnerships so important. Legendary Commanding Officer, Black Jack Walker, passed the instruction to go and 'crew up'.

And so it was fate and Norco Butter, which brought Fred together with Moss Morgan to form his second most important partnership. Moss's dad was the manager of the Norco Butter factory and Fred's dad was a carrier, delivering Norco Butter and as they were both Sergeants, it seemed a natural fit. They would go on to complete two tours and flew solidly together from July 1942 to October 1944.

There were three types of aircrew in 30 SQN: those with pre-war experience and in the Permanent Air Force, those with operational experience flying in Europe and the Middle East and those with no experience at all. Fred recalled Black Jack lining them up one day and saying: "*Now I've got three flights*."

In September 1942 the squadron was established at Wards Strip, near Port Moresby and quickly found its role as a ground attack aircraft with a significant maritime capability. It was

very much a case of learning on the job. Their mission was to seek out and destroy enemy shipping, infrastructure and supply lines. The squadron went on to play a significant part in the defence of Australia, operating throughout New Guinea, Kiriwina, Noomfoer and Nederland East Indies.

However, it was the squadron's participation in the Battle of the Bismarck Sea that would define it's fame and an experience that would live with Fred for the rest of his life. The Battle was described by Macarthur as "***one of the most complete and annihilating victories of all time***", and by Churchill as '***A striking testimony to the proper use of air power***'. It was a strategic victory of significance and marked the end of the Japanese threat to Australia. Years later, Fred remembered the intensity and fear engulfed in the noise of the cannons, machine guns fire, the high and low level bombing wrought by over 90 aircraft.

After the war Fred returned to start his life with Wendy and establish his family. He returned to the Tax Department and studied accountancy, later becoming an Inspector Accounting. Later he went into private industry as a marketing director and owned a pub for a while with his brother. But his legacy resides on Lake Burley Griffin in Canberra, where he worked for many years to establish the National Library.

Fred had a love for community and was very active in a range of organisations. But his greatest passion in this sense was for the 30 SQN (Beaufighter) Association, of which he was President for a total of 17 years. He worked tirelessly to ensure the WWII history of this unit was maintained and promoted and in particular, he sought to ensure the significance of the victory in the Battle of the Bismarck Sea achieved its rightful place alongside the Kododa campaign, Milne Bay, the Coral Sea and Guadalcanal in considering the overall Battle for Australia. He was a thorn in the side of many a Director of the Australian War Memorial in his attempts to have a Beaufighter placed on display in the museum. But most of all, he just loved being around his 30 SQN mates and their families. He organised events and social outings and was always there to provide assistance to anyone.

I met Fred for the first time, not long after I had taken over as Commanding Officer of 30 SQN. He said he was calling to introduce himself to the 'new boss' and was keen to impress upon a newbie the significance of the history of our Squadron. Well, he certainly did that.

My enduring memory of him will be at our squadron 75th Anniversary Dinner, earlier this year, at Sale. Fred was in glorious form, regaling everyone. He was the last to leave and even then I had to kick him out. But just before then, there he sat; quietly talking, surrounded by four of my squadron members, still wanting to communicate the history, still needing to ensure the significance of the squadron's role was understood. And they were listening intently and hanging on his every word; and all happened to be female.

That night was said to have put another year on his life...well, not quite old mate.

Fred was part of arguably our greatest generation. A generation that endured the depression, fought and won a war for national survival and then returned to rebuild the country into the successful and prosperous nation it is today. And from within that generation, Fred was one of the best of them.

Finally, I would like to conclude with some of Fred's own words, which I think sums up this truly great Australian.

'The message I would like to give people is believe in yourself, don't try to be anything else but pleasant or decent and do the best you can and roll with the punches. That's the way I've tried to treat life. Just don't try to be anything more than you are, it will come to you, things happen, they happen whether you like it or not, but my message everybody is do your best and don't try to turn the world over for you own purposes. Hard to express but I would just like to think we all could hug each other and get on with things.'

WGCDR MARTY QUIRKE
CO OF 30
(City of Sale)
SQUADRON

I pay $3.00 a week and have funeral cover from APS Benefits Group* for $10,000.

What's more, I can have additional amounts added to this cover so it grows.

Does your funeral cover do this?

*Contact APS Benefits Group on **1300 131 809** or have a look at their website for all T&Cs at **www.apsbenefitsgroup.com.au**

*Disclosure Information: Membership of the APS Benefits Group automatically entitles you to a funeral benefit issued by the APS Benefits Group. You should consider the Combined PDS/FSG (available from the APS Benefits Group or our web site on www.apsbenefitsgroup.com.au) before making a decision to become a member of the APS Benefits Group or buy any products offered by the APS Benefits Group.

aps GROUP benefits

• We are Personal •

• We are Financial •

• Helping Families •

Funeral Benefits
Financial Planning
Tax & Accounting

Property & Personal Loans
Savings & Investments
Insurance

Wills, Estates & Probate
Conveyancing
Legal Services

aps benevolent foundation

Helping Families

APS Benefits Group
440 William Street, West Melbourne VIC 3003
Phone (03) 9322 2000 • 1300 131 809 • Fax (03) 8327 8200
info@apsbenefitsgroup.com.au • www.apsbenefitsgroup.com.au
ABN 64 077 846 809 AFSL No. 244115

Disclosure Information: Membership of the APS Benefits Group automatically entitles you to a funeral benefit issued by the APS Benefits Group. You should consider the Combined Product Disclosure Statement & Financial Services Guide (available from the APS Benefits Group or our web site on www.apsbenefitsgroup.com.au) before making a decision to become a member of the APS Benefits Group or buy any products offered by the APS Benefits Group. Financial services provided by the APS Benefits Group are provided under its AFSL No. 244115. Financial planning services are provided by APS Financial Planning Pty Ltd. APS Financial Planning Pty Ltd and its advisers are authorised representatives of Fortnum Private Wealth Pty Ltd - Financial Planning Services Australia. ABN 54 139 889 535. AFSL 357306. APS Savings Disclaimer: This is not a bank product, it is an unlisted APS Note. No independent assessment has been made about the risk to investors losing any of their principal investment. Applications for APS Notes can only be made on the Investment Application Form which accompanies the prospectus issued by APS Savings Ltd. Please read the prospectus carefully before deciding whether to make an investment. APS Will & Estates: Liability limited by a scheme approved under Professional Standards Legislation.

St Anthony's Catholic College: a Vibrant Learning Community

Situated in the northern beaches area of Townsville, St Anthony's Catholic College is a modern and vibrant learning community. Offering a Kindy to Year 12 Catholic education, St Anthony's is a Franciscan school and is proud of its "Let Your Light Shine" motto. Students are encouraged to develop academic excellence and have many opportunities to shine in the Arts, Sports and Cultural arenas.

St Anthony's Catholic College has many initiatives to support their students in their endeavours, particularly students from Defence families. The Defence Transition Mentor (DTM) program has been operating at the College now for several years and the full range of support services are provided to families, from assistance with moving to a new school to ongoing support for students whose parents may be absent due to deployment, exercise or course.

Other support services include access to the counsellor and College Chaplain and the reassurance that St Anthony's is a *KidsMatter* school. These are all part of the superior Pastoral Care program that operates at the College. In Years 7 to 12, all students have a Head of House who is responsible for their academic and pastoral well-being. The Head of House works with the teacher to ensure all students are adequately supported in their studies and have access to any necessary support services.

If you are embarking on a transfer to the Townsville area, consider St Anthony's Catholic College for your family. We offer a nurturing, faith-centred and holistic education for your children. For a tour of the College or for enrolment enquiries, contact Vicki Jago on (07) 4751 7300.

LET YOUR LIGHT SHINE

ST ANTHONY'S
CATHOLIC COLLEGE
TOWNSVILLE

ENROL NOW FOR 2018

KINDERGARTEN TO YEAR 12

ST ANTHONY'S CATHOLIC COLLEGE OFFERS YOUR CHILD:

- Quality, affordable education, an award winning music program and growing sports programs including the Dragons Rugby League and Dragonflies Netball teams.
- New and refurbished facilities, including 21st century libraries and learning spaces student gym and air-conditioned hall.
- A clean, green environment with spacious grounds including three ovals.
- Caring and qualified staff who implement our SHINE Positive Behaviour Program.
- A College bus service available to students.

Kindergarten to Year 12 | P (07) 4751 7300 | www.sacc.catholic.edu.au |

Reducing Uncertainty in Wildlife Hazard Management

Every day the Australian Department of Defence (DoD) must address uncertainties. Where is the enemy likely to strike next? Which aircraft or vessel will best deliver the outcomes we require in 2035? The key to addressing these uncertainties is to gather information and reduce the unexpected unknowns. Effective decision making requires us to clarify what we know and then calculate the risk (probability x consequence).

Wildlife hazard management at DoD facilities must be approached in the same manner. Reducing uncertainty in wildlife management requires the collection of information using standardised and scientific methods. This information allows us to make informed decisions about actions that will reduce incidents and improve operational capacity.

DoD recognises the importance of managing wildlife hazards and has developed a National Wildlife Hazard Management Strategy. A key element of the Strategy requires bases to develop Wildlife Hazard Management Plans that document mitigation measures including the collection of wildlife hazard data.

DoD has successfully implemented Stage 1 of the National Wildlife Hazard Management Strategy and is currently implementing Stages 2 and 3. Based on the Strategy's timeline, Defence is on track to accomplish a 60 to 70% reduction in damaging strikes by 2020. Bases that have already implemented on-the-ground wildlife management programs are far ahead of that goal.

Whilst the development of the Strategy and the implementation of on-the-ground programs at Australian bases is an important step forward in managing wildlife hazards, we need to look to the next stage of reducing uncertainty. To do this, technologies such as Remotely Piloted Aircraft and Avian Radar will be crucial to expand the scale of data collection.

Inclusion of new technologies into wildlife management programs will be an exciting step forward to reducing wildlife strikes, but it is not that far removed from our existing approach. DoD already has systems in place to reduce uncertainty in other areas. These systems increase the likelihood that we can prevent catastrophes which we also aim to do in wildlife hazard management.

Wildlife hazards have the potential to damage and even destroy aircraft. Pilots can be lost. Reputations can be damaged. Operational capacity can be compromised. We have the obligation to implement systems to reduce uncertainties and to move forward in managing risk.

Avisure
Email: contact@avisure.com
Phone: 1300 112 021