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COVER

No 2 Squadron

Formed at Kantara, Egypt on 20 September 1916, the 'Second Squadron' moved to England in January 1917. The unit began training as a single seat fighting scout unit at Harlaxton, as part of the 24th Training Wing, RFC. After mobilisation in August 1917, the squadron deployed to France in September 1917 with the de Havilland DH-5 fighting Scout.

The nucleus of the squadron came from pilots and mechanics from the pioneer 'First Squadron' in Egypt and only a relatively small percentage of pilots under training came from Central Flying School in Australia. Reinforcements necessary to build the unit up to RFC personnel strength were recruited from AIF volunteers in France, Britain and Egypt. Infantry provided the greatest number of student pilots, followed by engineers. By contrast, fewer recruits came from the Light Horse.

Cover: *Phil Crowther*
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FEATURE

REGULARS

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When it comes to attractions and events in the Murweh Shire, visitors are spoilt for choice. With so much on offer, any time spent in this beautiful region is sure to be enjoyed.

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You will see a number of sites where they lived, slept, worked and bathed, some which even still exist today. The Murweh Shire Council, together with a number of dedicated locals are at present putting together memorabilia and items of the era and will move into the current airport terminal after the new one is complete. The old terminal will then be known as the Airfield and WW2 Museum Limited. The Group are looking for all sorts of information and memorabilia to display and will showcase the origin of the Charleville Airport from it's beginnings to now. The Charleville airport holds a whole lot more history not known to many. The first official Qantas Flight departed Charleville on the 2nd of November 1922, the Macrobertson Air Race competitors landed in Charleville back in 1934, the Wright Brothers, the Smith Brothers, Amy Johnson, Maude Rose "Lores" Bonney and many more have connections that you wouldn't believe. Make it your business to visit Charleville and discover the adventures and history of days gone by.

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Highlights of his career include a posting as Senior Engineering Officer at 25 (City of Perth) Squadron supporting PC9, Macchi and Caribou aircraft, and a posting as Project Manager of the Lead-in Fighter Project that replaced the Macchi jet trainer with the Hawk 127.

Air Vice-Marshal Gordon joined the Joint Strike Fighter Program in March 2016.

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President's Message

Solitary in the Ranks

It's the first of March 1914 and Lieutenant Eric Harrison launches Australian military aviation as he guides his Bristol Boxkite into the early morning air at Point Cook near Melbourne.

In September 1915, the British Government asks the Australian Government to send a complete squadron to bolster the Royal Flying Corps and 1 Squadron Australian Flying Corps is formed at Point Cook in January 1916. The Squadron embarks for Egypt in March and, operating as 67 Squadron Royal Flying Corps, sees its first action on the 12th of June 1916.

Initially operations are mainly reconnaissance missions over the desert but as the year turns into 1917 the Squadron also carries out bombing and strafing, photography, ground support and liaison with some irregular forces. These were the formative days of joint land and air operations and perhaps surprisingly operated along sophisticated doctrinal lines. This was especially the case with Lawrence of Arabia's forces.

Lawrence's involvement in airpower is not the stuff of his depiction in history. The public knows him as an Englishman in flowing white robes and riding a camel, leading sweeping attacks across the desert. Yet Lawrence was always bound up with military aviation. His attraction to airpower first emerged in 1915, when he worked in British army intelligence in Cairo.

Michael Korda reports that the young Lawrence pioneered aerial photography for mapmaking and intelligence. According to Korda, "He devised his own system of laying out aerial photographs in a grid pattern to use them as the basis for a map and taught pilots how to take the pictures he needed." Lawrence served as liaison between Royal Flying Corps photographers and surveying teams. He took part in experiments in early 1915. When his ideas were successfully tested at Gallipoli, aerial surveying soon came into widespread use.

In 1916, Lawrence entered the field as British Army liaison to the army of Sharif Hussein of Mecca. He soon began to make heavy use of aviation. Lawrence focused on ways to incorporate aircraft (and armoured cars) into his tactics. He became an innovator in joint operations, swiftly integrating aircraft into his hit-and run campaigns using horses, camels, and infantry. More ideas, more development was to come but not in a way that is visibly chronicled.

In the film 'Lawrence of Arabia' Lawrence, having left his desert war and gone back to England, is killed in a motorcycle accident. The implication is that T. E. Lawrence died young, soon after the Arab Revolt ended in 1918. Yet the real Thomas Edward Lawrence lived for 17 more years, until 1935. Moreover, the legendary figure known as Lawrence of Arabia passed most of those years as an enlisted man in the Royal Air Force, under assumed names. The world-famous Colonel Lawrence, sick of celebrity, joined the Royal Air Force in 1922 under the alias John Hume Ross and again in 1925 as T. E. Shaw, serving 'solitary in the ranks' (see the book of that name by H. Montgomery Hyde, Atheneum Books, 1978) until a few months before his death in 1935.

Lawrence's work as a low ranking airman was to belie his influence. He socialized and corresponded with an astounding number of notable political and artistic figures, including George Bernard Shaw, Robert Graves, Nancy Astor, Thomas Hardy, Noel Coward, E. M. Forster, Siegfried Sassoon, William Butler Yeats, John Buchan, and of course, Trenchard, Churchill, and Liddell Hart. Acting behind the scenes, he wrote detailed letters to Trenchard, pushing needed reforms. These caused the abandonment of petty requirements such as polished bayonets, spurs, swagger sticks, and puttees. His actions reduced kit inspections to one a month and ended the demand for airmen to button the top two buttons of a coat. These changes delighted airmen.

He was instrumental in persuading Parliament to abolish use of the death penalty for cowardice in battle. He set up the "Seven Pillars Trust," assigning to it the copyright and substantial income from Revolt in the Desert. The trust paid thousands of pounds into funds to educate the children of fallen RAF officers. After his death the trust was renamed the Lawrence of Arabia Educational Fund. It still exists. Lawrence, the world's most experienced practitioner of irregular warfare, wrote extensively to Trenchard with advice.

He used powerful contacts to expose the cause of the crash of an RAF Iris III seaplane, with multiple deaths. The senior officer on board was unqualified to fly the airplane but regulations gave him the right to take the controls, which he did. Lawrence provided facts for the newspapers and testified at an inquiry. As a result, the RAF ruled that a pilot would be in complete command of an aircraft, and no higher-ranking officer could take over. He helped construct what became the RAF's Air Sea Rescue Service. He worked on revolutionary designs for RAF rescue boats which, as Lawrence noted, "have three times the speed of their predecessors, less weight, less cost, more room, more safety, more seaworthiness." They were put to great use in 1940, rescuing pilots downed over the English Channel during the Battle of Britain.

Lawrence never escaped his own glamorous past, but his life in the ranks drew this 1936 tribute from Churchill: "He saw as clearly as anyone the vision of airpower and all that it would mean in traffic and war." He felt that in living the life of a private in the Royal Air Force he would dignify that honourable calling and help to attract all that is keenest in our youthful manhood to the sphere where it is most urgently needed.

At heart Lawrence's story is not an Australian narrative but I have drawn upon it for two vital reasons. First, its early part heralds the arrival of war in the air particularly the period 1915 through to 1917 which saw incredible technological advancement in the field of powered flight and its application to military endeavour, at a rate arguably not to be repeated until towards the end of the 20th Century when the pace of information technology development swept all before it. This was the same period that saw the birth of the Australian

Flying Corps. By the end of 1916 four Australian Flying Corps Squadrons – Nos 1,2,3 and 4 had been formed – and while they have not remained constantly on our order of battle over the intervening 100 years, they are very much out there today.

Second, the latter part of Lawrence's story highlights the imperative of recording and honouring the complete history of Australia's role in the war in the air, especially with regard to the Australian Flying Corps and the 'Odd Bods' (that's another story). In the former case our appreciation goes to Lance Halvorson for his fine work this year as editor of Wings but many sins of omission remain.

With both these considerations in mind, later this year the Royal Australian Air Force will commemorate this centenary with a number of events, while the Air Force Association will conduct a national pilgrimage for the Air Force community to the Australian Flying Corps Memorial at Point Cook on Sunday, the 13th of November.

Unveiled in 1938 by the then Governor-General Lord Gowrie the Memorial has been in disrepair for some time but, following substantial work about seven years ago, is now in good order thanks to its supporters which included descendants of members of the Australian Flying Corps.

At this year's Pilgrimage Lord Gowrie's placement in a cavity at the top of the Memorial of an honour scroll with the names of Corps members who gave their lives in the First World War will be emulated, this time with a non-perishable time capsule containing the names of Australian airmen who perished in both World Wars.

The Chief of Air Force, Air Marshal Leo Davies will undertake this task in responding to the Commemorative Address at the Pilgrimage which will be delivered by Dr Brendan Nelson, Director of the Australian War Memorial.

Brent Espeland

For the Aircraft and Airfield Spotter

Well, the aircraft should not pose a problem. The unit shouldn't either, but where is the location?

Answer is on Page 50

The Second Squadron

No 2 Squadron 'Consilio et Manu' - To Take and to Hold

A new Australian air unit, initially referred to as the 'Third Squadron', was formed in Egypt on 20 September 1916, with the nucleus of pilots and air mechanics from the pioneer No 1 Squadron AFC, now flying as No 67 (Australian), 5th Wing RFC at Kantara. Captain Oswald Watt was appointed the Commanding Officer of the new No 68 (Australian) Squadron RFC. The squadron was not designated as No 2 Squadron AFC until January 1918.

Following the unit's formation at Kantara and its arrival in England in January 1917, it began training as a single seat fighting scout unit at Harlaxton, as part of the 24th Training Wing, RFC. The squadron consisted of three flights: A Flight with six Avro 504; B Flight with two Bristol Scouts and four Sopwith Scouts; C Flight with six DH-5 (Service Flight). After mobilisation in August 1917, all instructional machines were re-allotted to RFC training units. The unit then took delivery of the de Havilland DH-5 fighting Scout for its deployment to France.

The nucleus of the squadron came from No 1 Squadron in Egypt and only a relatively small percentage of pilots under training came from Central Flying School in Australia. Reinforcements necessary to build the unit up to RFC personnel strength were recruited from AIF volunteers in France, Britain and Egypt. Infantry provided the greatest number of student pilots, followed by engineers. By contrast, fewer recruits came from the Light Horse.

Deployment to France

Over the summer (European) of 1917, the CO and many pilots were attached to RFC squadrons in France to gain operational experience. They flew the DH-5 Scout as well as the Camel; one pilot flew a Nieuport, in which he was shot down and captured by the Germans.

Finally, led by the Commanding Officer, Major W.O. (Oswald) Watt, No 68 (Aus) Squadron, RFC, flew 15 x DH-5 Scouts from Harlaxton, Lincolnshire on 21 September 1917, to St Omer, France, arriving at 1700 the same day. The next day, the squadron flew to Warloy, and on the 23 September, flew to their allotted front line aerodrome - Baizieux. The squadron became part of the 13th (Army) Wing, RFC, operating in support of the British 3rd Army.

On Sunday Tuesday October 1, they flew the first operational patrol. More engine problems were encountered than the enemy. For the first two months, the 18 aeroplane Australian DH-5 Squadron was engaged on typical fighting scout work, close offensive patrol. Several engagements were largely indecisive owing to faster enemy machines dictating terms of engagement.

The DH-5 was too slow and troubles with the Le Rhone rotary were commonplace. In addition, its performance over 10,000 feet wasn't as good as Sopwith Scouts. In fact its lack of speed probably caused an early loss when Lieut Morrison, lagging behind due to engine problems, was attacked and shot down by four Albatross scouts.

2SQN DH-5 Scout with Capt Wilson in the cockpit and his aircraft mechanic, near the propeller *Photo: RAAF*

Battle of Cambrai

In contrast to the traditional massive artillery assault preceding an offensive, the British 3rd Army planned an assault on the Germans by employing massed tanks and air power to support an Army offensive in November 1917. The strategy chosen was to reduce the destruction and devastation that usually occurred after an artillery barrage. The 13th Scout Wing were called upon to be aerial cavalry in what was known as the 'Battle of Cambrai'.

Despite very bad weather, No 68 (Australian) Squadron and No 64 Squadron engaged in operations supporting the Army offensive. Carrying out ground attack missions in flights of six DH-5 Scouts, in two 'vic' formations, the squadron bombed and strafed enemy strongholds and troops. Three

A flight of DH-5 fighters returning from close offensive patrol over the front line on the Western Front.
Photo: From a painting by Norman Clifford, RAAF Heritage Collection, RAAF Museum

pilots were lost in two days of fierce operations in mid November 1917. The Germans rushed Richthofen's Circus to the area in an attempt to take back control of the air and the German Army counter- attacked at the end of November. No 68 (Australian) Squadron pilots flew at tree-top heights and strafed and bombed the Germans locations, with great success in stopping the German advance.

The British lines were held. The squadrons continued to fly wave after wave of ground attack missions until 7 December, when the Battle of Cambrai was over. The Battle was the first time that aircraft and tanks were used to support a ground offensive; the combination was an outstanding success for air power. The Germans never forgot this highly successful employment of air power. While the DH-5 Scout was used with great results in ground attack missions in the Battle, it was the end of DH-5 operations in France.

Squadron pilots and ground crew were awarded a number of decorations for their efforts in the Battle of Cambrai, Six Australian pilots were awarded the Military Cross in one day's operation, more than had been awarded in a day by any squadron in the RFC.

The SE-5A (Scout Experimental -5)

The squadron began re-equipping with the SE-5A in December 1917. The aircraft (the Scout Experimental -5) was built by the Royal Aircraft Factory to counter the German Albatross scout that was so effective. The improved version, the 'A' model, had two machine guns, a more powerful engine, a higher speed and greater endurance. It remained with the squadron until the end of the War. The squadron carried out training in the new machine and it took a couple of months before squadron pilots were sufficiently trained to conduct combat missions.

On January 15, 1918, No 68 Squadron AFC, reverted to its original identity as No 2 Squadron AFC, although the War Diary refers to it as 2nd Squadron AFC. The squadron continued with 'General Flying Practice' and following the move to Auchel, carried out 'Line Patrol'. Crashes and forced landings were still frequent as new pilots were trained. On January 24, every SE-5A was in the air either on practice flights or on escort for No 2 Squadron, RFC. However, there were six forced landings out of a total of 18 machines airborne.

The squadron occupied a number of airfields in operations against the German Army as they, the Germans, withdrew. In operations with other units of the RFC and AFC, the squadron engaged in air combat against the new Albatross D.VII German fighter. The squadron also continued to conduct low level bombing and strafing missions. The Allies actions resulted in heavy losses of the enemy ground targets and the RFC operated with increasing air superiority over the German Air Service.

A SE-5A aircraft. *Photo: Sierra Dynamix*

However, the German Spring offensive in March 1918 kept the RFC and AFC squadrons heavily engaged in support of the British Army. The attacks by the squadrons against enemy troops and locations helped prevent a severe defeat for the British Army. Again, air power had proved its value in ground warfare.

By the beginning of May, the German offensive was being contained. The squadron moved its operations to the south and together with two RFC squadrons, adopted the 'Circus' tactics. Also, the squadron carried out offensive patrols and photographic escorts, but there was little enemy air activity. The OC summarised events in the May 1918 Squadron War Diary:

> *The feature of the month's work was the adoption of the "Circus" formations in which this Squadron worked in conjunction with No's 43 and 80 Squadrons, RAF, both of which had Sopwith Camels. The working heights of the three Squadrons being as a rule 16,000 ft, 14,000 ft and 12,000 respectively. The success that attended the "Circus" was not as great in actual results as might have been expected, the principle reason being that we were working over a quiet Front and with one or two exceptions, only small E.A. patrols were encountered. It had, however, the effect of clearing the upper air of E.A. scout formations. While this result is at all times to be desired it has been experienced that on quiet Fronts, greater numbers of E.A. are destroyed by sending out comparatively smaller formation, and thus encouraging the enemy to fight.*
>
> *A.M Jones, Major, Commanding*
> *2nd Squadron, AFC. In the Field.*

Increased German Army activities in the Somme area in June 1918 involved the squadron in increased numbers of operations. The new Fokker D.VII was a formidable opponent and their attacks enabled the Germans to regain a degree of control of the air. By autumn, all German scout squadrons were equipped with the new Fokker. However, the German offensive had been repelled and the RFC and AFC squadrons re-established air superiority. The last big raid that No 2 Squadron was involved in was 9 November 1918. In the 10 months of the war in to November 1918, the squadron flew 8,987 hrs in the SE-5A aircraft in operations.

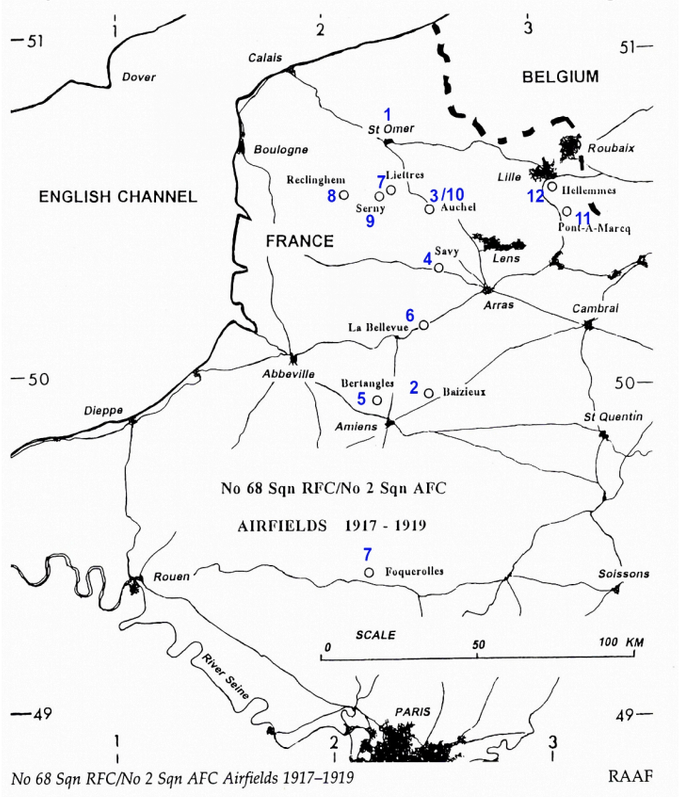
The Armistice

The German capitulation on 11 November 1918 was almost an anti-climax. There was no combat flying on that day. A few test flights were carried out, but the war had reached a 'crashing halt'.

On 12 November, eight squadron pilots patrolled what was known as the 'Balloon Line' in the morning. The rest of the month was practice flying and test flights, plus a lot of formation flying.

SE-5A aircraft at Lille, France, after the Armistice, Jan 1919. *Photo: RAAF*

The squadron moved to Hellemmes (Lille) in January and finally, in falling snow, to Serny in February 1919 where they handed the aircraft and equipment over to the RAF on 18 February 1919. Five pilots were engaged at the Enemy Aircraft Acceptance Park, Rely, when they flew German machines from France to England.



Map of 2SQN airfields, in sequence of operating bases, France, 1917-1919. *Map: RAAF*

Repatriation

The squadron road convoy moved to Havre on 28 February 1919 to await the move to England. Embarking on the 'Duchess of Argill' at midnight, they arrived at Weymouth in the morning of 4 March before entraining for Wilton, followed by a 7 km walk to No 6 Camp, Hurdcott. During their wait at the camp for repatriation to Australia, on the days 30- 31 March, the eve of summer, they experienced the heaviest snow falls for the year.

All AFC personnel finally embarked on the *Kaisar-i-Hind* at Southampton on 6 May 1919 for the voyage to Australia. The ship departed on 7 May and arrived in Fremantle 9 June, and reached its final destination of Sydney on 18 June.

The AFC Experience

No 2 Squadron achieved outstanding results in the Western Front and proved the value of air power.

However, World War I was largely trench warfare and while the RFC and AFC demonstrated capabilities in strike and close air support, it was a trench war. The lessons learnt required the development of strategies and tactics for the future employment of air power. Few of these found their way into manuals of war or air power leading up to World War II.

Between the Wars

In January 1919, the Defence Council recommended the establishment for a joint air service for both the Army and the Navy. The British Government announced in the House of Commons during June 1919:

> *"His Majesty's Government has approved of a proposal of the (British) Air Council that a gift of aeroplanes not exceeding 100 in number should be made to any Dominion requiring machines. The object of this is to assist Dominions wishing to establish Air Forces 'and thereby develop defence of the Empire by air'.*

Eventually the 'Gift' increased to 128 aeroplanes: 35 SE5A, 28 DH9, 30 DH9A and 35 Avro 504K It was a generous gift even if Australia had to accept them 'as is, where is' and get them to Australia. When they did arrive, it was a major headache on where to hangar or store them. Many of them were still stored in wheat sheds in July 1923; with no maintenance, their conditions were deteriorating

Following the establishment of the Australian Air Force on 31 March 1921, No 2 Squadron was established as a single-seat fighter squadron with four SE-5As, to be located at Laverton, Victoria. However severe funding restrictions forced the disbanding of the five squadrons formed only

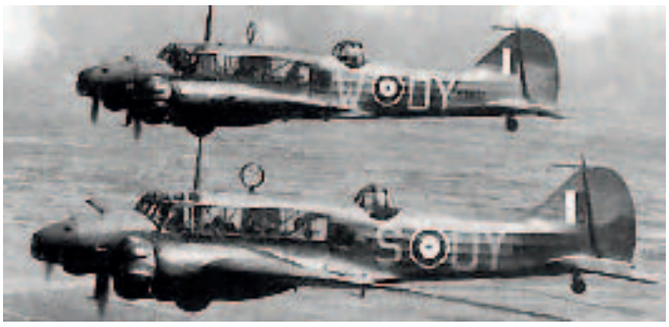
A RAAF Hawker Demon aircraft. *Photo: RAAF*

months before. The squadrons were then grouped at No 1 FTS as six flights. Composite units were formed and while many aviation activities were carried out, it was not until the 1930s that Australian Governments provided the resources for the RAAF to identify the squadrons and roles necessary to develop a modern air force.

No 2 Squadron reformed at Laverton in Victoria on 1 May 1937 as a General Reconnaissance unit with Hawker Demon aircraft. Bristol Bulldogs and Avro Ansons were introduced in 1938, followed by one North American NA-12; a mixed fleet. The squadron, together with other squadrons, was involved in the Air Pageants at Richmond and Laverton in April 1938.

World War II

At the outbreak of the Second World War, the squadron patrolled Australian waters, with Avro Anson aircraft, searching for enemy raiders that could threaten sea convoys. It was to carry out this role for nearly three years, conducting patrols and convoy escorts from Sydney to Albany, WA.



Avro Anson aircraft, patrolling the skies off the NSW Coast. *Photo RAAF*

Re-equipped with Lockheed Hudsons, it moved to Darwin in April 1941. In December that year, a squadron detachment deployed to Timor to cover Australian troops in the area. The unit carried out attacks on air, ground and maritime targets in the areas of Japanese advances and operations. However, enemy air raids and the rapid Japanese advance forced the detachment back to Darwin in February 1942.

The Hudson Bomber prepares for takeoff at the Defence Air Show, Amberley 2008. *Photo: CPL Melina Mancuso RAAF*

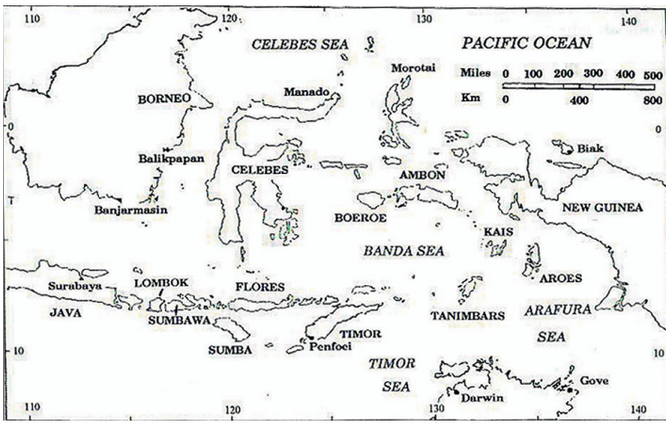
During 1942 and 1943 No 2 Squadron flew bombing, ground attack, anti-shipping, and reconnaissance missions over the Japanese-occupied Netherlands East Indies (NEI). One special operation involved the resupply to 'Sparrow Force' which was resisting, with great courage, the Japanese advance through Timor. As a result of the operations in the NEI, the squadron was awarded the US Presidential Unit Citation in July 1943 for "outstanding performance of duty in action".

Armament crews bombing up a Hudson at Batchelor, NT. *Photo: RAAF*

The Squadron began re-equipping with the Beaufort aircraft in December 1943. The squadron continued attacks on Japanese targets, from Hughes, NT into NEI. In May 1944, the squadron converted to B-25 Mitchell bombers, which remained in service for the rest of the war. They were outstanding ground attack aircraft and after the Hudson and Beaufort, a pure delight to fly.

A RAAF Mitchell near Amberley, July 1945. *Photo RAAF*

Based at Hughes south of Darwin, the squadron carried out its first strike with the new aircraft on 27 August 1944 against Lautem West airfield on Timor Island. The squadron continued with operations against Japanese targets for the next 12 months with constant air strikes in the NEI and New Guinea. In August 1945, the unit deployed to Balikpapan, via Biak and Morotai, only to arrive as the war ended. However, flying operations were still carried out, mostly reconnaissance, food drops to POW camps and repatriation of POWs. Flying operations ceased in November 1945 and the aircraft were ferried back to Australia for disposal. The Squadron disbanded in May 1946.



Map of NEI and New Guinea where 2 SQN conducted operations. *Photo: RAAF*

A RAAF B-25 Mitchell in NW Australian area of operations. *Photo RAAF*

No 2 Squadron's original unit badge was approved in September 1943, and updated in December 1952 with the St Edwards Crown. The Australian bird displayed in the centre of the crest is described as a Piping Shrike, mistakenly called a magpie, when in fact, it is a magpie lark or Murray magpie (*Grallina cyanoleuca*). The motto is Consilio Et Manu – To Advise and To Strike.

Post World War II

No 21 Squadron was renumbered as No 2 Squadron in February 1948 with Lincoln aircraft, as a squadron in 82 Wing at Amberley. Training began with bombing and gunnery

No 82 Wing Lincoln bombers, built by government Aircraft Factory, at Amberley 1948. *Photo RAAF*

sorties at the new Evans Head Range, a range still in use today, but now only with practice bombs.

The squadron carried out long range training exercises and was involved in atmospheric sampling during the British nuclear testing in Australia in the 1950s. However, the end was in sight for long range piston engined aircraft and in December 1953, the squadron received its first Canberra Jet bomber, A84-307, a British built B2 aircraft, later converted to a Mk21 trainer.

The RAAF's first Canberra A84-307, built by English Electric; near Amberley 1957. *Photo: RAAF*

The squadron then converted new crews to the Canberra, until No 2 Squadron's planned move to Malaya was announced, when the role was transferred to No 6 Squadron. With the arrival of the first new Mk 109 engine Canberras in September 1957, all were designated for 2SQN. The squadron started workup for operations in Malaya with the RAF Far East Air Force. No 1 (Bomber) OCU was formed in 1959 to train crews for 82 Wing Canberra crews.

Far East Air Force - Malaya

Following re-equipment with the Canberra, No 2 Squadron deployed to the newly upgraded air base at Butterworth in mainland Malaya, near Penang Island, arriving on 1 July 1958. They remained at RAAF Base Butterworth as part of the Commonwealth Strategic Reserve, Far East Air Force (FEAF) and operated as a unit of 224 Group, Royal Air Force, headquartered at RAF Changi in Singapore.

The Canberras, equipped with the more powerful Mk 109 engines, flew Firedog bombing missions, both with a ground radar unit and visual sighting, against the communist terrorist groups in (then) Malaya. Most of the missions were conducted at medium altitude 15-20,000 feet (4500-6000m) in thick jungle, so bombing effectiveness was difficult to determine.

Eventually, the terrorist groups retreated to Thai/Malay border and engaged in harassment and occasional raids in border areas, but posed no direct threat to bases, main towns or the people. Following cessation of the emergency in July 1960, crews practised mostly low level bombing, as conventional wisdom demanded very low level attacks to avoid SAMs and achieve surprise.

Target acquisition was dependent on accurate low level navigation, which was difficult with the maps in use, and a

Bombs being loaded on Canberra for Firedog mission, Butterworth, Malaya 1958. *Photo: Brian McSkimming*

careful study of target area photographs. However, because most flying was restricted to published low level routes, many crews knew where the targets were located by past experience and repetition. The introduction of 1:500,000 Tactical Pilotage Chart (TPC) improved low level navigation accuracy but other than air defence exercises (ADEXs), there were few suitable 'targets' available for training.

The primary sighting method was a World War II-vintage vector bombsight in the aircraft's nose which provided a gyro stabilised visual aiming reticle. The T4 analogue bombsight computer received automatic altitude inputs from the altimeter system and groundspeed from the Green Satin doppler system; target elevation and bomb ballistics were set manually. Together with drift from the doppler, the computer positioned the illuminated aiming reticle in the sight head to indicate weapon/s impact point.

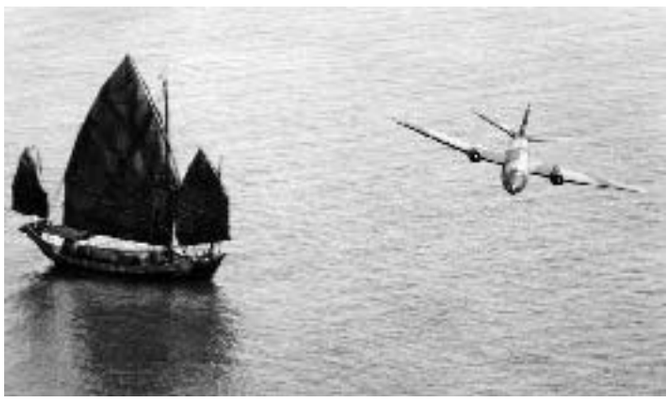
The squadron achieved consistently a low to medium bombing accuracy of about 50 metres Circular Error Probable (CEP); the radius which contains 50% of a significant, representative sample of bomb impacts; it also indicates there is a 0.5 probability of the bomb impacting within 50 metres of the target.

The squadron maintained an operational state of readiness and operated with allied air forces in Singapore, India, and Philippines. Various deployments were conducted for SEATO and other air defence exercises: Exercises "Air Boon Choo" to Ubon, Thailand, "Shiksha" with the Indian Air Force at Agra and "Joss Sticks" to Clark AFB in Philippines and Kadena AFB, Okinawa are examples. Lone Ranger flights to RAF Kai Tak, Hong Kong, were particularly attractive as were the flights to Australia and on to Ohakea Base, New Zealand. 2SQN operated with Royal Navy Venoms, RAF Hunters and B2 Canberras (45SQN) and RNZAF B12 Canberras (14SQN).

2SQN flight line, Butterworth, Malaysia. Oct 1965. *Photo: RAAF*

Life in Butterworth and Penang was exotic after Australia, especially those fortunate to live on Penang Island. The mixture of colonial and Asian architecture, the tropical climate, the Asian food and the duty free shopping, made a posting to Butterworth a great experience. Together with the very comfortable housing allowances and the provision of 'house help', Squadron members enjoyed their posting. The autthor spent a two year tour at Butterworth and enjoyed the experience.

No 2 Squadron members at the 50th Anniversary Dinner, RAAF Hostel, Penang, 1966. *Photo: Lance Halvorson*



A 2SQN Canberra returning from a bombing sortie at Song Song Range, Butterworth. *Photo: RAAF*

Indonesian Confrontation

Following the creation of Malaysia in 1962, when Malaya, Singapore and territories in Borneo merged into a new federation, Indonesia engaged in *Konfrontasi Indonesia* against the new state. Incursions by Indonesian forces occurred from late 1962 to reach a peak in 1965. During the heightened alert and expecting an Indonesian attack on Malaysia, 2SQN Canberras were 'bombed up' with 6

2SQN Canberras with FEAF aircraft overfly Tengah Air Base, Singapore. Sep 1965. *Photo: Lance Halvorson*

x1000lb bombs on a number of occasions.

Aircraft and crews were at various stages of readiness for attacks on the Indonesian Air Base at Medan, Sumatra. Low level bombing tactics were to be employed with multi-aircraft co-ordinated strikes with two or three aimpoints/targets, with 30 seconds separation between each aircraft over the target. Fortunately, Confrontation ceased with the overthrow of Indonesian President Sukarno in 1965.

During 1966 and early 1967, TACAN navigation system and UHF radios were fitted to the Canberras. While not a modification, the paint scheme was changed in 1963 to a darker matt camouflage, including the under surfaces. The roundels on the mainplanes were reduced to 84cm (33") and the tail numbers were painted black. Before the aircraft deployed to Vietnam in April 1967, the roundels on the mainplanes were removed and the fuselage roundels were reduced to 46cm (18").

South Vietnam

No 2 Squadron deployed from Butterworth, Malaysia to Phan Rang air base, 35 kilometres south of Cam Ranh Bay, a large USAF base in the far east of South Vietnam, on 19 April 1967. The unit became part of the 35th Tactical Fighter Wing which operated the F100 Super Sabre and B57B aircraft on rotation from the 8th and 13th Squadrons from Clark Air Base in the Philippines.

After conducting familiarization flights within two days of arrival, squadron crews flew eight operational sorties on 23

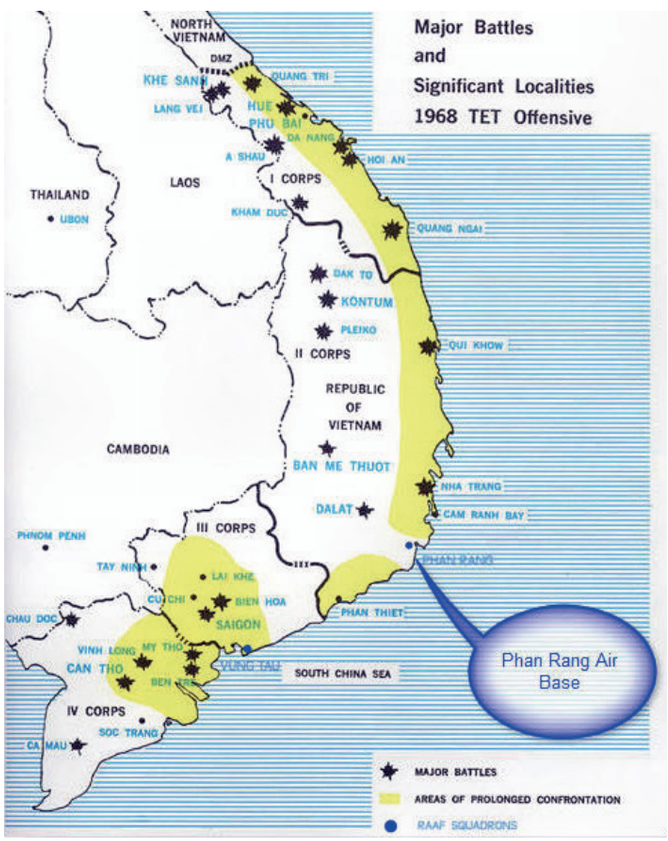
Canberra crews after their deployment from Butterworth, April 1967 *Photo: RAAF*

April. 2 SQN 'Magpies' were tasked by HQ 7th Air Force in Saigon, for eight sorties per day for seven days a week, in all areas of South Vietnam, from 23 April 1967 until the last mission on 31 May1971. In four years, the Squadron flew 11,994 sorties.

The Canberra wasn't the ideal aircraft for 'strike' operations in Vietnam, but for a number of reasons, it was the obvious choice for deployment. The main threats in South Vietnam were assessed as low to medium. The air threat from enemy aircraft was non-existent, although the deployment of surface-to-air missiles (SAMs) near the DMZ, automatic anti-aircraft artillery (AAA), mostly in the northern Corps regions, was a potential threat. Certainly, all the crews thought so.

The lack of fitment of radar warning receivers (RWRs) was a major operational disadvantage. Although the short period from the decision to send the Canberras to Vietnam and the deployment precluded their fitment, little was done in the four years No 2 Squadron was in Vietnam. All combat aircraft operating in medium to high threat 'electronic' environments, where SAMs and AAA are probable, should be fitted with electronic support and counter measures – ESM, ECM or RWRs.

Ground fire in the target areas and on takeoff and landing were lesser threats, although crews often experienced them. Further hazards were bomb fragments at low level, malfunctioning bombs, 'near misses' with other aircraft (both Australian and US) and the artillery firing zones. Two 2SQN aircraft were lost in 1970 and 1971; the cause of the first loss, A84-231, although found 39 years after it disappeared,



Map of South Vietnam and location of RAAF squadrons. *Map: USAF in South East Asia 1961-1973, Office of Air Force History USAF 1984*

is inconclusive, and the 2nd was hit by a SA-2 missile. That the squadron did not lose more aircraft is a tribute to the air and ground crews involved, plus a large amount of luck.

Initial Operations

Initially, the Canberras were employed on Combat Sky Spot missions where the aircraft was tracked by ground based MSQ77 radar and the pilot given heading and speed directions to the release point. The Canberra was generally stable at the release altitudes of 15-25000 feet (4500-7600m), although its lack of mapping or weather radar often placed the aircraft in medium to severe turbulence in thunder clouds during the monsoon season, resulting in a number of aborted bombing runs, some seconds before release. To highlight the lack of 'electronic eyes', thunderstorms with significant lightning activity often illuminated the surrounding cumulo nimbus (Cb) clouds and identified other preferred attack directions.

Low Level Operations

The first low-level daylight 'Boomer' missions for 2 SQN started in September 1967, with forward air controllers marking the targets with smoke. Flying at about 3000 feet (915 metres) AGL to avoid ground fire, the crews achieved accuracies of about 45 metres. The minimum safe release height for the earlier British-designed ex-WW2 war stock bombs of 500lb (227Kg) and the 1000lb (455Kg) high explosive bombs was about 1400 feet (440 metres). The squadron released 10,000 bombs in the first six months.

The Communist Tet Offensive of 1968 increased the range and intensity of the Squadron's operations. On January 30, four Canberras, operating in pairs, bombed enemy bunkers around the besieged U.S. Marine base at Khe Sanh while other crews were directed against enemy targets at Quang Tri. On February 1, the Canberras were in action over three of South Vietnam's four military regions. The next day, four aircraft flew support missions for the Australian Task Force in the Long Binh and Bien Hoa area.

Bomb crew prepare bombs for the night's missions, Phan Rang, South Vietnam May 1967. *Photo: Lance Halvorson*

Although it had only eight aircraft and flew only 4 to 6 percent of the sorties flown by the 35th Tactical Fighter Wing during 1968, No 2 Squadron was credited with 16 percent of all bomb damage inflicted by the Wing's aircraft.

A 2SQN Canberra ready for a night sortie, Phan Rang May 1967. *Photo: Chris Lake*

In the spring of 1970, the Canberras of No. 2 Squadron expanded their role further when they began to fly interdiction sorties against enemy supply routes through the A Shau Valley, just south of the Demilitarized Zone (DMZ). The autumn monsoon season, with its low clouds, mist and rain, compelled the Canberras to revert to radar-guided combat skyspot missions. Such a mission was being carried out over the Da Nang area on November 3, 1970, by Canberra A48-231, call sign Magpie 91, flown by Flying Officer Michael Herbert and navigator Pilot Officer Robert Carver. After releasing their bombs at an altitude of 22,000 feet, Herbert reported "six away, breaking left" and it is assumed he turned onto a heading of 120 degrees, for home. After his post release radio call with Milky, the Skyspot radar site near Danang, nothing more was heard from Magpie 91. Despite an intensive search, the wreckage, and the remains of the crew, were not found until April 2009.

With the launching of Operation Lam Son 719 on January 29, 1971, No 2 Squadron was called upon once more to provide

A84-231, lost in Quang Nam Province, 3 November 1970, with the crew Mike Herbert and Bob Carver. The aircraft was found in April 2009. *Photo: RAAF*

close support, this time for ARVN troops invading Laos in an effort to sever the branches of the Ho Chi Minh Trail running through that neighboring country. Although the Canberras performed their duties well in spite of the mountainous terrain, the NVA had better anti-aircraft weaponry than before, making aerial operations more hazardous. On March 14, Wing Commander John Downing, then CO of the squadron, was flying his 100th bombing mission just south of the DMZ when his aircraft, A84-228, was hit by a SA-2 missile.

Canberra 228 on a mission in the Mekong Delta region, South Vietnam, 1969 *Photo Bob Howe*

John had time to transmit a "Mayday" distress call before Al Pinches, his navigator, ejected, followed soon after by John. The crew ejected at medium altitude and while the pilot's parachute opened as 'planned', at 12,000 feet, the navigator's parachute didn't; after a 'lengthy' delay, it finally opened. Both sustained injuries on reaching the ground and after spending an anxious night in the jungle avoiding capture by the NVA, made contact with the rescue helicopter on their survival radios. 27 hours after ejecting, they were winched to safety.

With the withdrawal of allied forces well underway, the Government decided to withdraw No 2 Squadron in May 1971. However, they no longer operated in the area near the DMZ, where they were at risk from surface-to-air missiles. The restriction did not signify any letup in the pace of operations. On April 7, FLTLT Stan Fenton and navigator, FLGOFF Peter Murphy, carried out a highly effective attack on NVA and VC forces that were attacking the U.S. Army's firebase No 6 near the Laotian and Cambodian borders. Although enemy bunkers were only 200 yards from friendly troops, the Canberra's bombs fell squarely on target, and the pressure on the defenders was immediately eased. After a total of five bombing runs by the Canberras, the Communists withdrew, leaving behind 60 bodies. Remarkably, and in no small measure thanks to the Magpies' precision bombing, the American defenders suffered no fatalities.

CO 2SQN, WGCDR John Downing (centre), studies a map with PLTOFFs John Wood (left) and Robert Carver, Phan Rang October 1970. *Photo: RAAF*

Reflections on Operations in Vietnam

Although designed as a high altitude jet bomber, the Canberra became an effective low altitude tactical strike aircraft and bomber. Its development and in-service employment up to Vietnam was quite different. As a high altitude jet bomber designed in the 1940s, its performance at high altitude, stability, speed and range made it superior to many of the likely threats posed by all weather fighters at the time. However, many believe, it was just a high altitude jet propelled version of the Mosquito of World War 2 fame – a view with considerable justification.

The aircraft basic design had severe shortcomings for use in modern air warfare – it was limited to 450KIAS at low level, the maximum speed for opening the bomb doors was 350KIAS; it had no powered rudder and the controls were very heavy when manoeuvring at low level. It was very hard to fly at low level in turbulence. The navigator was at a severe disadvantage as he had to leave the security of the ejection seat and lie in the nose of the aircraft to sight and release the bombs. Even so, the Mk1C ejection seat placed severe limitations on crew survivability at low level; its minimum altitude for ejection was 2000ft and 250KIAS. Its lack of a radar warning receiver (RWR) decreased its survivability in a SAM or AAA air war; the cabin air system (heating and cooling) was inadequate for operations in sub-tropical and tropical areas at both high and low level. However, it achieved excellent results in Vietnam. The aircrew were well trained, keen and enthusiastic and did an outstanding job.

On 31 May 1971, the squadron's last day of operations, nine sorties were flown, with the CO, WGCDR Tom Thorpe participating in one. The honor of dropping the RAAF's last bomb on Vietnamese soil went to FLGOFF Dave Smith and FLGOFF Pete Murphy. Four days later, the Canberras took off from Phan Rang and set heading for Darwin. In just over four years of operations, No 2 Squadron had carried out 11,994 sorties and released 76389 bombs. The squadron's performance was recognized by both of its principal allies when the entire unit was awarded the Republic of Vietnam Cross of Gallantry with Palm and the US Air Force Outstanding Unit Award with Combat V Device.

Back in Australia

On return to Australia in 1971, 2SQN continued to operate the Canberra in the aerial photographic survey and target towing roles until the aircraft were withdrawn from service in March 1982. Where required, bombing equipment was removed and four Mk 20s were modified for photographic survey operations, with two modified later as fatigued aircraft were withdrawn from service.

Canberra fitted with RC-10 survey camera, Amberley 1971. *Photo: RAAF*

The target towing role involved regular deployments to RAAF Butterworth for air defence training of Mirage fighter squadrons. Canberras conducted a total of 24 'Tugbut' deployments, each of about 6 weeks duration, usually involving one to two aircraft on each deployment, before operations ceased in 1982. In addition, Canberras were tasked as bombers in ADEXs with the Integrated Air Defence System (IADS) in the late 1970s and early 1980s.

Canberra on low photo pass at Biak. *Photo: RAAF*

Former COs of 2SQN at Amberley Sep 1976, commemorating the 60th Anniversary. *Photo RAAF*

The aerial photographic survey operations in Australia, SE Asia and SW Pacific achieved considerable mapping quality photography. The Canberra was ideal for the photographic tasks as it was relatively stable, could transit quickly, acquire imagery at high altitude and could divert to other areas for alternate or additional tasks. The squadron conducted the following photographic survey operations:

Skai Piksa in Papua New Guinea (PNG) – from March to Dec 1973 and again in 1975;
Gading4 operating from Tengah air base in Singapore and mapping Kalimantan, Sumatra and Irian Jaya – 1974;
Gading 5 operating from Kemajoram air base in Jakarta – 1976;
Christmas Island, Cocos/Keeling group – 1976
Cenderawasih (Bird of Paradise) from Mokmer airfield, (Biak), Gove and Darwin – 1976, 1977; 1978, 1979 1980 and 1981 (continual cloud cover prevented completion of the survey).

Retirement of the Canberra

In the late 1970s, stress corrosion fatigue in the wing attachment forgings was becoming a problem and frequent wing changes were necessary to maintain adequate aircraft numbers on the flight line. Together with other economies in the RAAF, the high cost of maintenance forced a review of the Canberra life of type. Finally, the Canberras were retired from RAAF service in July 1982.

Canberra 236 in flypast in Perth, 1980. *Photo: RAAF*

Those who served in Canberra squadrons and support units have many memories, mostly fond, and are proud to have been associated with the "Queen of the Skies" during its time in the RAAF. However, it was a timely retirement.

Plaque Dedication and Reunion

In August 2007, a commemorative plaque was installed in the Remembrance Garden of the Australian War Memorial to commemorate the long and illustrious operational history of No 2 Squadron. The Dedication Ceremony and the Association reunion dinner that night were held in Canberra to coincide with the 40th anniversary of Vietnam Veterans Day held next day, a national event held in Canberra each year.

Air Commodore John Whitehead DSO (Retd), a former Commanding Officer of 2 Squadron in Vietnam, gave the commemorative address. His closing words were:

"The Squadron's successes would not have been possible

No 2 Squadron Commemorative plaque at the Australian War Memorial, 2007. *Photo: AWM*

without the dedicated contribution of its members at all levels, or without their ideals of courage, endurance, teamwork, and mateship.

Through this plaque we commemorate those members of No 2 Squadron who died in the service of our Nation, and the many others who sacrificed much in support of freedom and peace.

We celebrate the Squadron's past and continuing achievements.
We salute and honour the courage and sacrifice of its members.
The service of No 2 Squadron is not to be forgotten.
Let it be an inspiration to those who serve today, and to those who follow."

Reformation of the Squadron

No 2 Squadron was reformed in 2000 and established to operate the Wedgetail Airborne Early Warning & Control aircraft. Based on the Boeing 737-700 aircraft, the Wedgetail provides advanced airborne air space control and management for the RAAF into 2010 and beyond.

AEW&C aircraft provide a capability to 'see' beyond the radar horizon (18-20 Km at sea level) by positioning the aircraft at about 35,000 feet (10,000m) so that the radar can detect activities in the airspace and on land, out to about 400 kms. The airborne radar can cover a large area of low, medium and high level airspace; an AEW&C aircraft cruising at an altitude of 35,000 feet (10,700m) can maintain surveillance over an area of 400,000 square kilometres continuously while airborne. Over a 10-hour mission (eg Darwin to Perth and return), the AEW&C aircraft can cover over 4 million square kilometres. In addition to its area coverage capabilities and the advanced technologies employed, the aircraft can transit to an operational area quickly and can change station in reaction to changed situations.

Design and development of the Wedgetail Aircraft

The Wedgetail AEW&C aircraft is based on the Boeing 737-700IGW airframe and is designed to meet Australia's requirement for an aircraft to meet the RAAF requirement in Project Wedgetail. The aircraft uses the Northrop Grumman Electronic Systems Multi-role Electronically Scanned Array (MESA) radar. The radar is mounted on a dorsal fin on top of the fuselage, dubbed the "top hat", and is designed for minimal aerodynamic effect. Other modifications include ventral fins to counterbalance the radar and antennas mounted on the nose, wingtips and tail. The Australian aircraft operates ten consoles in the main cabin with space for two more.

In 1997, Boeing Integrated Defense Systems was awarded a contract to supply four AEW&C aircraft with options on a further three aircraft; two of these options have been exercised. Aircraft deliveries were to begin in 2006, but significant program delays occurred, mainly due to problems integrating radar with other major sensors and systems. BAE Systems provides electronic warfare self protection systems, EWSP (ECM, chaff and flare dispensers) and the electronic support measures, ESM (radar warning systems) and ground support systems.

The first two Wedgetail aircraft were assembled by Boeing and underwent testing in USA before delivery to the RAAF. The final four aircraft were assembled by Boeing Australia at RAAF Base Amberley, QLD. The two aircraft were delivered to No 2 Squadron RAAF Base Williamtown in November 2009, initially Boeing owned and operated. The RAAF formally accepted the aircraft into RAAF service on 5 May 2010. Three additional aircraft were delivered in 2010/11.

Wedgetail E-7A aircraft near Williamtown *Photo: Boeing*

The first Wedgetail aircraft in Australia.
Photo: LAC Euan Grant 81WG RAAF

Final acceptance was December 2010, with some additional effort, until mid 2011, to achieve about 98 per cent compliance of about 10,000 requirements. During the workup to

full operational capability, the squadron operated with the RAN and the FFGs and other elements of the ADF. Software upgrades and ESM workup with USN during RIMPAC exercises assisted in the operational assessment of the aircraft and its battle space management systems.

Crew of the E-7A at Canberra for Anzac Day 2015.
Photo: Lance Halvorson

Operation OKRA

The KC-30A and E-7A operating in Iraq are serving with the Air Task Group (ATG), the RAAF's air combat group operating within a US-led international coalition assembled to disrupt and degrade Daesh operations. The ATG comprises six RAAF F/A-18 Hornets, an E-7A Wedgetail Airborne Early Warning and Control aircraft and a KC-30A Multi-Role Tanker Transport aircraft.

October 23rd 2015 was a historic day for the RAAF following the first combat refuelling by a RAAF KC-30A Multirole Tanker Transport aircraft using its new air refueling boom system (ARBS). The flying boom system allows for faster transfer of fuel than the hose-and-drogue system and will allow the RAAF to air-to-air refuel aircraft such as the C-17A Globemaster III, the E-7A Wedgetail AEW&C aircraft and the F-35 Lightning Joint Strike Fighter.

The Australian Air Task Group E-7A Wedgetail command and control aircraft of No 2 Squadron has achieved a record 100% mission success rate in Coalition operations against Daesh in the Middle East. The record is attributed to Rotation 5 of aircrew and maintenance personnel that operated the aircraft over the last four months.

Commander of the Air Task Group, Air Commodore Antony Martin, said that the men and women of the E-7A detachment should all be immensely proud of their efforts. "They've all set the bar exceptionally high, especially achieving 100% mission completion – a fantastic effort," he said. "Such success speaks volumes about what the whole team has achieved in the past few months. The take-away for Rotation 5 is that their role and that of the E-7A Wedgetail in facilitating combat airpower capability in the Middle East is first class."

Rotation 5 Detachment Commander, Squadron Leader David, explained that the record was the first time that an

A RAAF E-7A Wedgetail carries out the first operational air-to-air refueling from a RAAF KC-30A Multi-Role Tanker Transport aircraft in Iraq. *Photo: CPL Ben Dempster*

E-7A Rotation in the Middle East had successfully conducted every single mission they were assigned over the period of their deployment - in this case all 36 missions.

Personnel from Rotation Six of the Air Task Group (ATG) E-7A Wedgetail detachment, Task Element 630.1.2, have completed their operational deployment to the Middle East region in 2016. The section received a Commander Air Task Group commendation for, but not limited to, demonstrating excellent teamwork and being adaptable in a dynamic operational environment, ensuring the E-7A was safe to fly all of the missions it was tasked to do.

2SQN personnel and the Wedgetail from Rotation Six.
Photo: RAAF

Lance Halvorson

Acknowledgments

- *History of the AFC in the Great War 1914-18* by Norman Clifford - unpublished
- Office of Air Force History - Air Force Imagery
- *Going Solo* by Alan Stephens - AGPS 1995
- *Highest Traditions* by John Bennett - AGPS 1995
- Wedgetail Project Office

aps Tax, Accounting & Business Services Pty Ltd

TAX CHECKLIST

Level 1, 16-20 Howard Street, North Melbourne Victoria 3051 | Phone: (03) 9322 2026 | Fax: (03) 8327 8240 | Email: info@apstax.com.au

IF YOU KEEP YOUR TEMPLATE INFORMATION FOR EACH FOLLOWING YEAR YOU WILL ONLY NEED TO CHANGE THE $ AMOUNT IN MANY CASES. COMPLETE THE DETAILS BELOW AND EMAIL / FAX / POST THEM INTO US.

Taxation Year Ended (dd/mm/yyyy)	
Are you an APS Benefits Member?	◯ Yes ◯ No
Preferred Method of Contact (Email/Phone/Post)	◯ Email ◯ Phone ◯ Post
Preferred Contact Days (eg Mon - Fri)	
Preferred Contact Times (eg 9am - 7pm)	

YOUR DETAILS

Tax File Number	
Full Name	
Date of Birth (dd/mm/yyyy)	
Home address	
Email address	
Preferred Phone Number	
Occupation or position title or 'retired'	

SPOUSE / PARTNER DETAILS

Tax File Number	
Full Name	
Date of Birth (dd/mm/yyyy)	
Home address	
Email address	
Preferred Phone Number	
Occupation or position title or 'retired'	
Spouse/Partner taxable income	
Number of Dependant Children (and ages)	

THE TAX OFFICE NO LONGER ISSUE REFUND CHEQUES. PLEASE PROVIDE US WITH THE FOLLOWING DETAILS TO RECEIVE YOUR TAX REFUND.

Account Name (needs to be precise e.g. Ronald A Smith)	
BSB (6 digits, no space or dash)	
Account Number (up to 9 digits)	

PLEASE ATTACH THE FOLLOWING DOCUMENTS THAT APPLY TO YOUR CIRCUMSTANCES:

INCOME

					Complete if known
1. PAYG payment summary(s).	○	Yes	○	No	$
2. Allowances, benefits, earnings, tips and directors fees.	Yes ○		○	No	$
3. Lump sum and termination payments. All documentation should be provided including Statement of Termination Payment from employer or fund/ADF.	○	Yes	○	No	$
4. Annuity or Superannuation Pension.	○	Yes	○	No	$
5. Primary producers, artists, composers, inventors, performers, production associates, sports persons and writers should detail separately income earned from such activities.	○	Yes	○	No	$
6. Government Centrelink payments including pensions, unemployment, parenting allowance and sickness benefits.	○	Yes	○	No	$
7. Details of any assets SOLD such as shares or real estate including date of purchase, purchase price, date of sale and sale price.	○	Yes	○	No	$
8. Income from Trusts or Partnerships.	○	Yes	○	No	$
9. Rental income including date of purchase, purchase price, date first rented and number of weeks rented this financial year.	○	Yes	○	No	$
10. Interest received.	○	Yes	○	No	$
11. Dividend payment slips for dividend income received.	Yes ○		○	No	$
12. Foreign source (employment and pension) income and details of any foreign tax credit attached to that income.	○	Yes	○	No	$

EXPENSES

1. Rental property expenses including interest paid on mortgage and any borrowing costs incurred.	○	Yes	○	No	$
2. Union fees and subscriptions.	○	Yes	○	No	$
3. Protective clothing and footwear.	○	Yes	○	No	$
4. Uniform costs and dry cleaning.	○	Yes	○	No	$
5. Home office. How many hours a week do you work from home?	○	Yes	○	No	Hrs
6. Telephone expenditure related to work.	○	Yes	○	No	$
7. Internet costs related to work.	○	Yes	○	No	$
8. Other expenditure related to your employment (remember substantiation requirements).	○	Yes	○	No	$
9. Assets purchased for work purposes. Amount and date of purchase	○	Yes	○	No	$
10. Conferences and seminars.	○	Yes	○	No	$
11. Self-education costs.	○	Yes	○	No	$
12. Glasses, sunhats and sunscreen where you are required to work outdoors.	○	Yes	○	No	$
13. Income protection Insurance.	○	Yes	○	No	$
14. Donations over $2.	○	Yes	○	No	$
15. Annuities - undeducted purchase price.	○	Yes	○	No	$
16. Non-employer sponsored superannuation contributions (self-employed persons only).	○	Yes	○	No	$
17. Tax agent fees and other accounting and tax audit fees.	○	Yes	○	No	$
18. Motor vehicle expenses - actual expenses (if log book kept), or kms travelled.	○	Yes	○	No	$ Kms
19. Bank charges that relate to income earned.	○	Yes	○	No	$

REBATES

1. Net medical expenses relating to disability aids, attendant or aged care if they exceed $2,128 or $5,233 depending on your income. *Conditions apply.	○	Yes	○	No	$
2. Super contributions for your spouse / partner.	○	Yes	○	No	$
3. Private health insurance statement.	○	Yes	○	No	$
4. Do you live in a remote or isolated area of Australia? If so you may be entitled to a Zone Rebate.	○	Yes	○	No	$
5. Super co-contribution if you earn less than $50,454.	○	Yes	○	No	$

OTHER

1. Please advise us of any HECS/HELP balances.	
2. Any other miscellanous information that you think is relevant.	

IF YOU HAVE ANY QUERIES, PLEASE CONTACT US ON 1300 131 809, OR INCLUDE THEM IN YOUR EMAIL AND WE WILL ANSWER THEM WHEN WE ARE PREPARING YOUR RETURN.

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Reprint courtesy of *Air Force Magazine*

THE Air Force is getting ready to launch a sweeping analysis of how it conducts electronic warfare, hoping to develop a more integrated and innovative approach to this critical aspect of modern combat around 2018.

That analysis can't come soon enough. Experts charge that the multitude of elements in USAF's electronic warfare portfolio haven't been knitted together in a coherent way; the service is tripping over definitions, can't find a workable distinction between electronic and cyber war, and has taken an ad hoc approach to electronic battle.

The service also lacks an electronic warfare "czar" with visibility into all aspects of its EW efforts—a focal point that experts think is urgently needed.

Retired Gen. Larry D. Welch, USAF Chief of Staff from 1986 to 1990, offered a blunt appraisal of the Air Force's EW enterprise at AFA's Air Warfare Symposium in Orlando, Fla., in February.

"One of the problems with electronic warfare is, we don't know who owns it," Welch said in a panel discussion on future capabilities.

"We don't know where it fits," he said. "It's not cyber, so what is it?"

The Air Force long regarded cyber as endemic to all its missions, and for that reason long postponed recognizing it as a domain separate from air and space and worthy of its own enterprise. After long debate, 24th Air Force, the service's own cyber command, was created in 2010.

"Some people advocate … [that EW] should be considered a separate domain. I don't know that that's the answer," Welch said. "But I do know that the Air Force has been particularly remiss in not doing a lot with electronic warfare compared to … our two principal, probable adversaries," a clear reference to China and Russia.

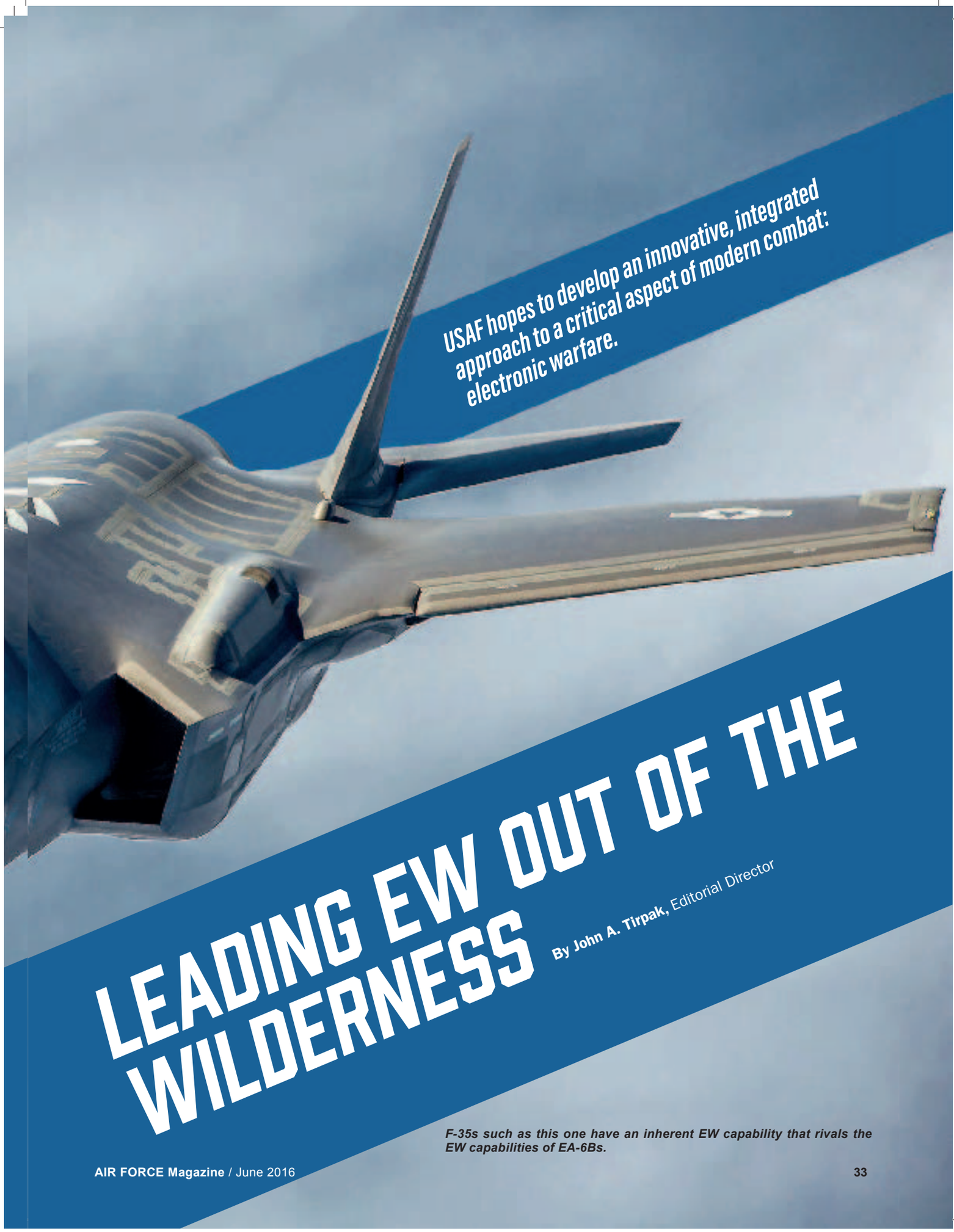
"Quite frankly," Welch said, USAF has not done nearly as much EW planning "as the Navy has done. So it just needs to have a home somewhere in the Air Force where it … gets the attention it needs."

Reacting to those comments, Gen. Mark A. Welsh III, the current Chief, said electronic warfare has "changed shape over time. And if you ask people in any of the services what that means, you'd get a number of different answers." The Air Force needs to define "clearly what electronic warfare is today and in the future, and then what capabilities are we missing." Some of these may be met by elements "already built into systems that are moving forward," he said.

He continued, "This is one of the areas that we identified a year ago as something for a potential [Enterprise] Capability Collaboration Team in the Air Force"—a cross-domain analysis—as EW "affects a whole bunch of different mission areas … in different ways." But Welsh also said that "using a single broad term to refer to all of it actually confuses things more than it helps. ... We're trying to clearly define the mission area, the requirements within it, and who should have the lead for each of those things."

The Air Force's self-set 12 core functions range from nuclear operations to global attack to mobility and special operations, but don't include EW, though EW is considered a key factor in each.

USAF photo by MSgt. John R. Nimmo Sr.



USAF hopes to develop an innovative, integrated approach to a critical aspect of modern combat: electronic warfare.

LEADING EW OUT OF THE WILDERNESS

By John A. Tirpak, Editorial Director

F-35s such as this one have an inherent EW capability that rivals the EW capabilities of EA-6Bs.

Lt. Gen. James M. "Mike" Holmes, USAF's top strategic planner, told *Air Force Magazine* that an EW deep dive is coming soon, but couldn't get underway until the recent Air Superiority 2030 study was completed. Once the overarching construct was figured out, Holmes said, the pieces—EW being a big one—can be fleshed out in specific detail.

"We are working on it," Holmes said of an EW roadmap. He said there's "a strong feeling that EW will be on the next list" of topics addressed by a Strategic Portfolio Review and an Enterprise Capability Collaboration Team, which will look at ways to address new operational problems in approaches that cut across domains and commands.

"We know that we have to take a soup-to-nuts look at EW across our enterprise," Holmes said.

Asked when it would start, Holmes said Welsh directed that "before we pick the next areas we're going to look at, he wants me to bring in industry and academia and some other people and look at opportunities and think through what our next one should be." Holmes added, "Right now, EW is at the top of the list … we haven't made a final decision." If another topic takes priority, "we're not going to wait, we'll continue to do some work" on it.

The Air Force's EW portfolio has a lot of parts. Its flagship platform is the EC-130H Compass Call, a Hercules transport brimming with racks of electronics gear and bulging with pods and blisters that can detect, locate, and jam transmissions and radars. (The EC-130J Commando Solo, though it has a nearly identical nomenclature, has a completely different mission, as a flying broadcast studio for psychological operations.)

Beyond the EC-130H, the Air Force's fourth generation fighters carry self-protection radar warning and jamming pods, electronic countermeasures pods, and onboard EW systems. The Miniature Air Launched Decoy (MALD) missile and its MALD-J jamming variant would be fired in volleys during an air campaign to mask the true location of striking jets. The Air Superiority 2030 plan also suggested that cheap stand-in jamming drones might be built in large numbers to fool enemy air defenses.

STEALTH VS. EW?

The RC-135 electronic spyplane can also be used to characterize, locate, and jam transmissions.

The F-22 and F-35 fighters, as well as a small number of F-15s, possess active electronically scanned array (AESA) radars. These can perform not only search-and-track functions for air combat, but communication, jamming, and deception, too. The F-35 and F-22 also have conformal antennas in their skins which can serve EW functions, but the Air Force won't discuss them.

The F-22, F-35, and B-2 all employ stealth, which relies on aircraft shaping, radar frequency-hopping, some active systems, and a number of tactics and techniques to attenuate their radar signature.

Some have argued that the Air Force put too much reliance on stealth and, in so doing, failed to adequately invest in electronic warfare. Retired Lt. Gen. Robert J. "Bob" Elder Jr., former commander of 8th Air Force, said in an interview that "some people have told me we don't need electronic warfare anymore because we have stealth. Well, stealth *is* electronic warfare. What they meant was, they thought we didn't need active electronic attack."

Until the late 1990s, the Air Force employed large numbers of EW aircraft. The EB-66 Destroyer was a Vietnam-era electronic countermeasures jet that escorted strike aircraft. Also during Vietnam, the F-105G Wild Weasel provoked enemy radars into revealing their positions, which they then attacked with Shrike and Standard Anti-Radiation Missiles. During the 1991 Gulf War, USAF employed F-4Gs in the Wild Weasel role, using the more advanced High-speed Anti-Radiation Missile (HARM) to destroy enemy emitters. The EF-111 Raven, the Air Force's version of a "stand-in" or escort jammer, was also a prominent player in the Gulf War, blanketing the sky with electrons that made the enemy's radar screens light up with thousands of false targets that hid striking USAF jets.

These aircraft collectively performed the suppression of enemy air defenses, or SEAD mission. It is often counted as the kinetic form of electronic warfare.

When the Air Force downsized in the 1990s, the F-4Gs were retired, passing their mission on to F-16Cs equipped with targeting systems for the HARM. The EF-111 retired without a direct successor in hand. The Navy, whose four-seat EA-6B Prowler escort jets carried the same electronics, picked up the jamming

An EA-18G Growler launches from the deck of USS* George Washington. *Some USAF crew members fly with Growler units as exchange officers.

USN photo by Mass Comm. Spc. 3rd Class Bryan Mai

USAF photo by TSgt. Nicholas Rau

SSgt. Gabriel Felix runs through a check of the computer system on an EC-130H at Bagram Airfield, Afghanistan, in February. Compass Call aircraft go through baseline upgrades every 18 to 48 months.

escort mission for both services, and until recently, Air Force electronic warfare officers flew on the Prowlers to improve service integration. Though the Marine Corps still has some Prowlers, the Navy has moved on to the EA-18G Growler, an EW variant of the two-seat F/A-18F Super Hornet. Under an agreement between the services last September, a few Air Force crews will continue to fly with Growler units as exchange officers.

The downsizing over the years, coupled with the growth of stealth, saw USAF neck down to the Compass Call as its main EW platform.

Col. George M. Reynolds, commander of the 55th Wing, which counts the EC-130H and RC-135 fleets in its portfolio, explained that the EC-130 offers several main capabilities. Those are "countercommunications, counterradar, counterdata, and counternavigation," he said in an interview.

"We do a full range of military operations, from supporting small teams on the ground all the way up to the high-end conflicts," he explained. The EC-130 can perform standoff communications or radar jamming of enemy air or surface craft. It can listen for enemy communications, warn troops on the ground that an enemy is nearby, or disrupt the enemy's attack at selective moments by jamming, Reynolds said. The aircraft has a lot of power for emissions, due to its four engines, he noted.

BIG SAFARI

The 55th's aircraft are operating in a constantly shifting electronic environment, as communications evolve from land lines to cellular and satellite modes, and radios morph into software programs on other devices. Many nations that never built land lines are skipping directly to modern wireless systems, Reynolds said, and these are expanding "in an exponential manner." This drives constant fleet updates.

"The capabilities on the aircraft actually get updated very rapidly. … In the case of the EC-130, we go through baseline upgrades … every 18 to 48 months," Reynolds said. The older aircraft are now largely up to speed with digital avionics, doing away with the old "round dial" cockpit displays, he said. Those upgrades have provided "significant" new capabilities.

In between the major refits, there are "Quick Reaction Capabilities," which are interim installs of new mission gear. It's all done under an Air Force program/office called Big Safari, which does quick acquisition and maintenance of aircraft in key missions.

"One of our combatant commanders may want us to look at a communication system that we had never seen used by a military," Reynolds explained. "And that could be a terrorist organization, a country … that's using something they bought from [another] country we never anticipated." Big Safari has to "provide that capability on the aircraft because nobody five years ago had thought about that capability being used."

Likewise, the specialists that use the equipment need constant, on-the-fly training. If they suggested it, though, they have a pretty good sense of how it's supposed to work.

The pace of programmed depot maintenance is also faster for the 55th Wing

Unarmed EB-66 EW aircraft escorted strike aircraft during the Vietnam War, detecting and jamming enemy air defense radars.

USAF photo

USAF photo by MSgt. Lance Cheung

An EC-130H Compass Call on the flight line at Bagram. The EC-130 is the Air Force's flagship EW aircraft, brimming with electronic equipment, pods, and blisters to detect, locate, and jam enemy communications and radar.

airplanes than for most others. After a total stripdown of the aircraft to inspect, repair, and reinforce anything necessary, "it's really not even the same airplane" anymore, Reynolds said.

In the case of the EC-130s, the key life-limiting item was the center wingbox, which holds the wings and central fuselage together. Those have been replaced, and that mod "extends the life of the platform by decades," he said.

Reynolds said that to meet demand for machines and crews alike, the wing rethought all its upgrade schedules and training programs to increase aircraft availability, with the same number of aircraft. Such is the demand that sometimes aircraft are hot-turned, where one crew gets off and another gets on.

To get even further value out of the aircraft, Reynolds said that participation in a Red Flag or similar exercise is an opportunity to experiment with new tactics, techniques, and procedures and "support test and evaluation while we're there." The wing is increasing its participation in Virtual Flag and simulations, and doing more "reachback" by making use of stateside analysts and operators as backup for deployed people and assets.

All of which made it puzzling that the Air Force proposed retiring seven of the 15 EC-130 Compass Call aircraft in its Fiscal 2016 budget request. The decision to retire those airplanes "was one not made lightly," the Air Force told Congress at the time, "but was driven by financial constraints and the needs of the Air Force to modernize in other areas."

The reason was certainly not lack of need. Reynolds said that, since 9/11, the EC-130 has been "continuously deployed to the Middle East" among 13 locations worldwide.

Operating tempo has been unrelentingly high during those years. "We've been doing this for so long, that's kind of become the standard," he said. For some specialties associated with the mission, such as linguists, the optempo has been even higher, as it has been for maintainers, who are in short supply.

Congress declined USAF's request to reduce the EC-130 fleet.

Service sources said the Air Force was willing to absorb some loss of EC-130s because its new F-35s have an inherent EW capability that will match or exceed what the EC-130s offer. Lockheed Martin, maker of the F-35, frequently points out that the Marine Corps plans to use a standard F-35, without any external jamming pods, as its EA-6B replacement.

THE BLACK WORLD

The Navy, however, has focused on the EA-18G Growler as its principal EW platform. In mid-April, it awarded Raytheon a $1 billion contract to complete development of the Next Generation Jammer pod, which will replace the ALQ-99 pods that were largely a legacy of the Prowler.

Elder said a lot of EW projects "are in the black world" which means that US advances in EW may not be obvious. He said USAF's air operations centers do a good job of coordinating the disparate EW efforts and are moving toward achieving even better synergies between them.

"Where they are now is just in the basics, but they're getting better and better," he said, speculating that this may be one of the reasons "why the Air Force hasn't seen a need to go for a [new] dedicated" EW platform.

The Air Force asked industry last fall to pitch ideas for militarizing business jets to take on electronics-heavy missions the service didn't identify. Industry experts speculated that such aircraft might be intended for EW.

Elder suggested that the US hurts its own efforts by distinguishing signals intelligence missions from electronic warfare, largely because of laws affecting how the military can conduct reconnaissance. "That distinction complicates our approach," he said.

The Defense Science Board, in a report released late last year, offered what it called a "sobering" assessment of electronic warfare capabilities across the military services. Though the US "relies on information superiority," this is "jeopardized by serious deficiencies" in EW. The DSB urged the Pentagon to spend more on EW, devote more manpower and other resources to it, shift "more to offense," and create "governance" for the EW enterprise appropriate to 21st century warfare.

The DSB estimated it would cost "$2.3 billion per year for at least five years" to implement its recommendations regarding electronic warfare.

Deputy Defense Secretary Robert O. Work, responding to the DSB, launched the EW Executive Committee, which he touted as a cross-service look at integrating electronic warfare—not just at the tactical or operational level, but across entire theaters. The so-called "ExCom"

Raytheon photo

Miniature Air Launched Decoy (MALD) units mounted on a B-52. They can be fired in volleys during combat to mask the real location of striking aircraft.

is co-chaired by Pentagon acquisition chief Frank Kendall and Joint Chiefs vice chairman Air Force Gen. Paul J. Selva.

Work explained that EW—like space, cyber, and nuclear weapons—is a "cross-cutting" area where "we don't have a kind of 'head'" and consequently "got in trouble." There was no way for Work to know "whether, as a Department of Defense, as a joint force, [if] we have enough electronic warfare effectors in our joint battle networks."

The ExCom has given him more insight into the EW portfolio, he said, but "we have a lot of work to do in both cyber and EW. Our adversaries have really … poured a lot of money into it because they know the power of our battle networks" and want to counter them.

Work said he created a "Cyber Investment Board" as a result of analysis done on that domain, "and … my intent" is to do something similar with EW. More should be done in both areas, he said, but "what we give up to get it is always the question."

In a paper called "Winning the Airwaves," published last fall by the Center for Strategic and Budgetary Assessments, authors Bryan Clark and Mark A. Gunzinger suggested the Pentagon consolidate the terminology for electronic warfare, electronic attack, cyber, and electronic support under the blanket domain name "electromagnetic spectrum." The Defense Department, they said, should also take advantage of new technologies that will "dramatically change" EMS to leapfrog the nation's adversaries in this domain.

Much as smartphones and the internet are changing "how the world shares, shops, learns, and works," new sensors and networking technologies will give some militaries "significant new advantages over competitors that fail to keep pace," the authors warned, charging that " 'failed to keep pace' is an appropriate description" of the Pentagon's investments in EMS for a generation.

COUNTERDETECTION

This "pause," Clark and Gunzinger charged, gave Russia, China, and other rivals a chance to target "vulnerabilities" in US communications and sensor networks. The "once significant" American military advantage in the EMS domain "is eroding and may in fact no longer exist," they wrote.

To fix the situation, the authors recommended the US obtain a "leap ahead" in EMS capability. This could come through "low-power countermeasures" to defeat enemy sensors and low probability of intercept/low probability of detection sensors and communications to reduce the likelihood that US forces will be "counterdetected."

The authors pushed a shift toward passive or "multistatic" methods: using "ambient electromagnetic energy"—such as comms traffic, TV and radio emissions, and even sunlight—to spot enemy forces without emitting and using new emissions controls and "low-power countermeasures" to stay quiet in enemy airspace.

Such a transition demands ever-more sophisticated (and hack-resistant) networking of systems; the ability to agilely "maneuver" in the EMS with regard to power, frequency, space, and time; investing in "multifunctional" systems like AESAs that can perform a variety of all-in-one tasks; investing in smaller, cheaper systems that can be widely deployed among US forces; and investing in systems that can rapidly and automatically "characterize the EMS," finding "previously unknown emitters" and exploiting opportunities.

Asked who is the quarterback for the EW enterprise in combat, Elder said, "There are a number of different programs looking … now" to designate just such a player—and they're secret—but "there's a need to be able to coordinate these things" such that whenever the leader "drops out, someone else can pop in and take over."

David Hime, president of the Association of Old Crows, an EW organization, said though the terms "convergence" and "integration" have become common themes in debates over EW strategy, "it seems we still keep having this debate. … Some people argue" that EW, Sigint, electronic attack, and cyber "are the same thing," but what should guide the discussion from now on is, "the effect you're trying to have in the battlespace."

Hime and Elder agree that a central office for EW acquisition would create a useful, clear focal point.

There should be "a clear go-to person that has [a] broader portfolio than just the requirements," bringing in training and operations as well, Elder said.

Whether that EW overseer should be at the deputy chief of staff level—much as the Air Force created a deputy chief of staff for ISR in 2006—might be an "interesting discussion," he said. ✪

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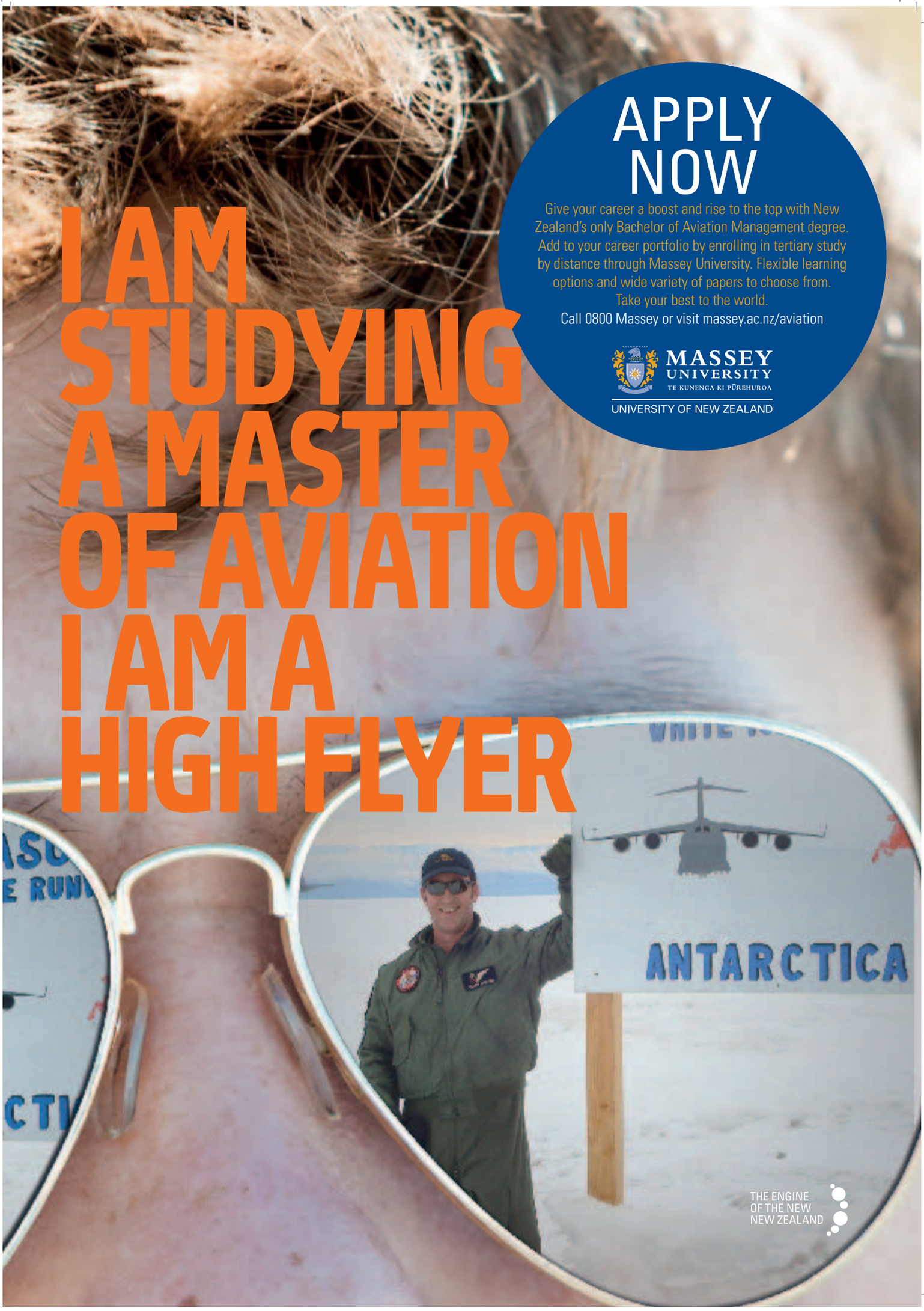
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RAAF Pilot Training Project - AIR 5428

Air 5428, the RAAF Pilot Training Project, is planned to deliver a turnkey solution to the ADF. Previously, pilot training projects were introduced on a specific aircraft type where training was adopted accordingly.

Laing O'Rourke has been confirmed as the Managing Contractor for the planning phase of the Australian Defence Forces Air 5428 Pilot Training System Facilities project. Under this contract, Laing O'Rourke will initially be responsible for the design of key infrastructure at the RAAF Base at East Sale in Victoria, and RAAF Bases Pearce and Gin Gin in WA, as well as related minor works in South Australia and New South Wale

The Pilatus PC-21 is the world's most advanced pilot training aircraft. As part of the Air 5428 Pilot Training System project, the PC-21 will replace Air Force's current PC-9/A and CT-4B aircraft, and will be based at RAAF Base East Sale in Victoria and RAAF Base Pearce in Western Australia.

Royal Australian Air Force's Base Pearce is 35kms north of Perth. It is primarily home to No 2 Flying Training School and No 79 Squadron. The Republic of Singapore's No 130 Squadron is also based at Pearce.

- No 2 Flying Training School
- PC-9/A trainer aircraft
- No 79 Squadron
- Hawk 127 fighter trainer aircraft
- No 453 Squadron Pearce Flight air traffic control
- No 25 (City of Perth) Squadron airbase operations
- No 3 Security Forces Squadron Detachment Pearce
- No 1 Expeditionary Health Squadron Detachment Pearce
- Republic of Singapore Air Force (No 130 Squadron) trainer aircraft

The PC-21 is equipped with a pressurised cockpit, air conditioning, an anti-G system and on-board oxygen generation. A digital power management system and automatic yaw compensation makes the PC-21 easy to fly in the circuit, while still providing the performance required for advanced training.

The capabilities of the PC-21 make it ideally suited to a very wide training envelope. It can be used from day one in the training system, eliminating the need for an elementary flying training fleet, but also bridges the performance gap between traditional turboprop trainers and lead-in fighters. The PC-21 is capable of sustained low-level speeds in excess of 320 knots and hydraulically assisted ailerons and roll spoilers can produce fighter-like rates of roll in excess of 200 degrees per second.

Although the Pilatus PC-21 is a key element of the AIR 5428 project, it is only one part of the story. The new Pilot Training System, with an advanced aircraft, state of the art simulation, and an electronic learning environment, will be able to train more people faster and to a higher standard.

The new system will ensure undergraduate pilots develop the necessary knowledge and skills prior to progressing onto advanced military aircraft such as the F-35A Lightning II Joint Strike Fighter, Armed Reconnaissance Helicopter, and MRH-90 helicopter.

RAAF Base Pearce and RAAF Base Gin Gin Project Scopes

The works proposed for RAAF Base Pearce include:

- flight line shelter refurbishment;
- alterations to aprons and taxiway to service PC-21 aircraft;
- new maintenance facilities for five aircraft, flight line office, Aeronautical Life Support Equipment and aircraft storage;
- No: 2 Flight Training School classrooms, simulator facilities, working accommodation and briefing rooms;
- new aircraft wash facility;
- trunk infrastructure upgrades works to service the proposed new facilities;
- associated demolitions, landscaping and car parking; and
- works required for decanting existing functions if they are currently operating in any facilities considered for adaptive reuse.

The proposed works for the RAAF Base Gin Gin includes:

- flight line shelter refurbishment;
- alterations to aprons to service PC-21 aircraft;
- No: 2 Flight Training School working accommodation and operations, flight line office and Aeronautical Life Support Equipment, storage and car parking.
- trunk infrastructure upgrades works to service the proposed new facilities;
- associated demolitions, landscaping and car parking;

The first two PC-21 aircraft will arrive in Australia in mid 2017.

A PC-21 aircraft. *Photo: Pilatus*

Manufacturer	Pilatus
Role	Pilot training
Crew	Instructor and student
Engine	Pratt and Whitney PT6A-68B turboprop (1600 shaft horsepower)
Airframe	Length: 11.2 m, height: 3.8 m
Wingspan	9.1 m
Weight	2280 kg basic, 4250 kg maximum
Range	1,333 km
Ceiling	25,000 feet
Max Speed	685 km/h (370 knots)


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A special invitation is extended to VIPs, Ex Service Organisations, Veterans and their families to join with Squadron and RAAF Base Williamtown personnel, staff and their families to celebrate this significant milestone in Air Force history. Details regarding base access, parking and official program information will be provided closer to the event date.
The Centenary 'Parade and Family Day' is an event that will not be open to the general public and is by invitation only.
• Email contact: WLM.Centenary@defence.gov.au
AIR FORCE

RAAF Base East Sale

The main works proposed at RAAF Base East Sale include:

- new flight line shelters for PC-21 aircraft;
- new aprons and taxiway to service PC-21 aircraft;
- new aircraft storage hangar;
- new maintenance facilities for five aircraft, flight line office, aviation life support
- equipment;
- refurbished paint shop to meet compliance and PC-21 aircraft requirements;
- new classrooms, working accommodation and briefing rooms for BFTS, CFS and PSA;
- new FTD facilities;
- TASPO facilities, working accommodation and briefing rooms;
- Living-in accommodation for 105 students;
- new aircraft wash facility;
- new engine run-up facility;
- minor extension to the existing medical facility;
- trunk infrastructure works to service the proposed new facilities;
- associated demolitions, landscaping and car parking; and
- works required for decanting existing functions if they are currently operating in any facilities considered for adaptive reuse.

RAAF Base Edinburgh

The scope of works at RAAF Base Edinburgh includes internal works to adaptively re-use the existing flight line maintenance facility and working accommodation to support Air Warfare Centre operations. These works are required to provide a fit-for-purpose environment to conduct maintenance and operational activities for the PC-21.

Pilot Training Project Office Web site

Air Force Dog Training

Air Force on-the-job-training is tough work for young blokes.
Photo: RAAF

RIMPAC Exercise 2016

Three AP-3C Orion participated RIMPAC Exercise 2016 for the last time. Air Force Orions have been a mainstay of the exercise for 25 years, but will make way for the P-8A Poseidon in future. The Detachment Commander, SQNLDR Saber, said 11SQN first joined the exercise in 1971 and the Air Force had deployed aircraft to every RIMPAC since. F-111C aircraft had also participated in RIMPAC Exercises since 1976.

The involvement of No 11 Squadron, from RAAF Base Edinburgh, in the latest exercise in June - August 2016 provided crews with joint anti-submarine and anti-surface warfare training and warfighting qualifications. During RIMPAC 2016, an RAAF Orion was scheduled to fire a Harpoon anti-ship missile, in a coordinated firing with a US Navy P-8A Poseidon during the exercise. The three Orions in Kaneohe Bay are supported by three crews and 65 maintenance and support staff.

An AP-3C Orion is marshalled into position on arrival at MCAS Kaneohe, Hawaii for RIMPAC 2016.
Photo: LS Lee-Anne Mack

Detachment commander for the deployment SQNLDR Adam Saber said the exercise would allow aircraft crews to consolidate their skills. “We have been building up our training at the squadron in the lead-up to the exercise to ensure we seamlessly integrate into the environment,” he said. “The serials we are flying will allow us to test and refine our skills and perform in a real-time warfighting scenario.” SQNLDR Saber said, “RIMPAC 16 is the last time that the Orion aircraft from the RAAF will deploy for the exercise as they are soon to be retired from service. The Orion is still a great aircraft able to conduct a wide range of missions.

RAAF and USB AP-3C aircraft at Kaneohe, Hawaii.
Photo: LS Lee-Anne Mack

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PROUDLY

First CO of F-35 Squadron

Australia's CO of the first F-35A No 3 Squadron, Wing Commander Darren Clare, has had his first opportunity to see the F-35 up close at the Royal International Air Tattoo in the United Kingdom. Wing Commander Clare is currently undergoing the RAF Advanced Command and Staff Course, and will commence his appointment as Commanding Officer of No 3 Squadron in 2017.

"I am incredibly proud and humbled to be selected to lead 3SQN when it receives our first F-35A into Australian service. It's a big responsibility, but one that I'm excited to have. The F-35A will provide Australia with some amazing opportunities to build a fifth-generation Air Force," WGCDR Clare said.

CAF AIRMSHL Leo Davies said WGCDR Clare would have a significant role. "The aircraft will bring a new capability to the Royal Australian Air Force, and Darren will have a lot of responsibility to develop the tactics, techniques and procedures for the F-35A to the Australian context, and ensure the F-35A is integrated into our fleet through Plan Jericho,"

Australia's first F-35A arrives at RAAF Base Williamtown, NSW in 2018. No. 3 Squadron will be the first RAAF squadron to convert from the F/A-18A Hornet onto the F-35A

WGCDR Darren Clare (left) and Chief of Air Force, Air Marshal Leo Davies, AO, CSC with the F-35A during the Royal International Air Tattoo at RAF Fairford.
Photo: CPL Brenton Kwaterski RAAF

Australia's first F-35, Luke AFB Arizona. *Photo: RAAF*

Variations of the Lockheed F-35 Lightning, which debuted on UK soil, were showcased during the tattoo at RAF Fairford. Known as the Lightning II, the F-35 has three main models: the F-35A conventional landing and take-off, the F-35B short take-off and landing, and the F-35C carrier-based, catapult-assisted take-off variant.

The US Air Force flew a pair of F-35A variants from the 56th Fighter Wing, Luke, Arizona, and the US Marine Corps flew two F-35Bs from the US Marine Corp VMFAT-501, Beaufort, South Carolina.

F-35B and USN F-35C aircraft (at far end), on tarmac, USN Patuxent River . *Photo: Lockheed Martin*

The show provided the first opportunity for the RAF to demonstrate the F-35B short take-off and landing capability to military defence chiefs and observers. These included senior members of the RAAF, who were among a sell-out crowd over three days of 153,000.

First RAAF P-8 Poseidon

The first P-8A aircraft for the Royal Australian Air Force leaves Renton Field for Boeing Field in nearby Seattle, marking its transfer from Commercial Airplanes to Boeing Defense, Space & Security for final completion.

The first P-8 Poseidon for the RAAF
Photo: Matthew B. Thompson

TRANSLATING TECHNOLOGY AND INNOVATION INTO CAPABILITY

- SOME LESSONS FROM BETWEEN THE WARS

All the ascendancy of the Hurricanes and the Spitfires would have been fruitless but for this system which had been devised and built before the war. It had been shaped and refined in constant action, and all was now fused together into a most elaborate instrument of war, the like of which existed nowhere in the world.

Winston Churchill referring to
Dowding's air defence system

While the experience of warfare reflects the many attempts to gain that decisive advantage over the adversary through better technology, it also shows that the introduction of new technology will not necessarily produce the desired advantage. For example, while the tank first appeared on the battlefield as early as 1916 in World War I, it was not until it was integrated into new and innovative operational concepts and tactics that it really became a decisive element in manoeuvre warfare during World War II. The development of air power between the two world wars provides outstanding case studies of nations both successfully and unsuccessfully learning from operational experience and transforming the technology offered by aircraft into military capability.

As part of a balanced tactical air force, the Ju 87 Stuka was a good ground attack aircraft.

With some exceptions, World War I is largely remembered for its devastating quagmire of trench warfare. While air power in World War I provided a glimpse of what it could provide, it did not fundamentally change the dominating trench warfare. However, there was sufficient evidence to demonstrate that reconnaissance and surveillance, control of the air, strike and close air support were going to be critical capabilities in future wars. Strategists in several nations identified lessons from which they could develop new concepts and capabilities that would avoid the stalemate that was World War I. Remarkably, some of these major lessons were either forgotten or discarded in the lead-up to World War II.

The notion of strategic strike promised the capacity to strike deep into the adversary's territory, while bypassing static defences and avoiding the risk of degenerating into trench warfare. Although Britain and the USA actively pursued a strategic bombing capability between the wars, their attempts were hampered by factors such as poor appreciation of the actual accuracy and capacity of aircraft at the time. While Britain had bomber aircraft with the range to reach German targets, they lacked sufficient defences to fight off German fighters and carried only a small bomb load. Unable to achieve control of the air over enemy territory during daylight raids, the RAF bombers suffered heavy losses on initial raids, forcing the RAF to adopt night bombing strategies. However, the bomber crews initially lacked the navigation equipment and training to find and bomb their targets at night.

Meanwhile, the US Army Air Service did exhibit some ability to analyse aircraft and tactics through establishments like the Air Corps Tactical School, which was established in 1920 and was largely responsible for developing the Army Air Force's doctrine of daylight precision bombing. However, such analysis was undermined by the desire to sell air power and the concept of independent strike forces. This resulted in blinkered thinking that too easily dismissed other key lessons such as the need for control of the air when conducting strategic bombing missions. The first USAAF bombing

missions conducted over Europe, without control of the air, resulted in devastating losses and the postponement of the daylight bombing campaign. It was not until 1944 that daylight bombing missions over Germany were resumed when long-range fighters, such as the P-51 Mustang, became available to escort the bombers and protect them from German fighters. In reality, both the Americans and the British failed to fully capitalise on the promise of strategic bombing by failing to understand and effectively integrate technology, strategy, and tactics.

Interestingly, the same issues tended to overshadow the British and American development of the effective employment of air power in ground support between the wars. Despite World War I highlighting that air power had an important role in supporting ground operations, both Britain and the USA entered the war with limited ground support capability. Although both services had light and medium bombers at the start of the war, there was no doctrine for air/land cooperation and the squadrons' headquarters lacked the staffing, communications lines and organisation structure to coordinate close air support.

In contrast, Germany recognised the value of air power to ground operations and successfully integrated air power into its continental manoeuvre warfare strategy. The Luftwaffe was developed as an operational air force that could not only operate closely with ground forces at the tactical level but could also successfully conduct interdiction behind the front line after having achieved control of the air over the battlefield. While the Junkers 87 *Stuka* dive bomber may be perceived as the front line of the Luftwaffe's ground support capability, it was actually their integration of medium-level, twin-engined bombers and modern fighters into a more balanced operational force closely aligned with robust tactics and doctrine that ensured German air power delivered the effects their mechanised warfare strategy required.

Although Britain had problems in translating air power technology into effective strategic bombing and close air support capability between the wars, it did successfully integrate fighter aircraft and radar into an effective military capability by creating the air defence system. Many nations, including Germany and the United States, had been developing radar but it was Britain, largely through the drive of Air Chief Marshal Hugh Dowding, that successfully integrated radar with fighter aircraft, observers, and command and communication systems into an operational, integrated air defence system (the Dowding System). While the popular histories of the Battle of Britain tend to highlight the achievements of the fighter pilots, the Dowding System was a force multiplier that was decisive in the RAF defeat of the Luftwaffe. In this respect, the radar and the Dowding System provide the pre-eminent example of the successful translation of technology into military capability between the wars.

In 1940, the RAF air defence system involved more than just radars.

The development of air power between the wars highlights the maxim that technology alone may not deliver the war-winning edge. The countries that did successfully develop their air capabilities—Germany with its tactical air support and Britain with its integrated air defence system—did so over a period of years, testing and developing their equipment, tactics and doctrine until they formed an effective capability. This process will be essential for the Air Force to develop its new capabilities and become a 5th-generation air force. The Air Warfare Centre will be at the hub of Air Force's efforts to ensure the lesson of 'thorough operational analysis and the application of lessons learned' is not lost.

Key Points

- *While aircraft promised much for warfare between the wars, various factors restricted the extent to which nations developed decisive capabilities by the start of World War II.*
- *The RAF demonstrated how the new technology of radar when combined with fighter aircraft, observers, and command and communication systems could be successfully translated into decisive capability.*
- *Experience has shown that new technology does not necessarily equate to new capability.*

Lismore Regional Airport cements aviation future with new land release

Lismore Regional Airport is currently expanding and improving its facilities as it strives to become the busiest and most diverse general aviation centre in the region.

The airport is currently undergoing a $1.8 million upgrade that includes a new runway and runway lighting, new light aircraft taxiways and concrete helipad, better tourist information facilities and visitor amenities, more aircraft parking, new signage, road improvements, and better security and street-lighting.

The upgrade was funded by the NSW Government's Restart program and will coincide with Lismore City Council's land release of new general aviation blocks to meet the growing demand throughout the state for land and hangar space.

Council's Airport Manager Kevin Trustum explained that around 40 blocks will be released in stages over the next few years, and Council is seeking Expressions of Interest from aviation enthusiasts, general aviation business operators and adventure flight specialists.

"We have already had a significant number of EOIs and we welcome more – we want to make this the biggest regional aviation centre between Brisbane and Sydney," Kevin explained.

"With only one passenger service airline flying from Lismore Regional Airport and limited daily flights to and from the city, we can offer general aviation and adventure businesses easy access to the runway and first-class facilities.

"We are seeing the start of something big here in Lismore and we encourage people to take advantage of the land release before it's too late."

Lismore City Council's strategic plan for the airport includes five focus areas, one of which is the establishment of a centre for medical aero services in conjunction with the $280 million Stage 3A expansion of Lismore Base Hospital.

The Northern Region Life Saver Rescue Helicopter service recently announced it will be moving its base to the Lismore Regional Airport, providing the all-important catalyst for a regional centre of aero-medical excellence.

The general aviation area has also become integral to the work of local educational institutions. The North Coast Institute of TAFE currently utilises the airport terminal for baggage handling and flight attendant training while the Australian Defence Force and Northern Rivers Aero Club both provide pilot training.

"All of this combines to show us that we are perfectly placed to become the regional general aviation hub," Kevin said.

"As passenger services have moved to the Gold Coast and

Ballina/Byron Gateway Airport, Lismore has become the natural home for general aviation. The reality is, in NSW there is a lack of storage and aircraft capacity, and the new land release will allow us to fill that gap."

Kevin explained that Lismore continues to grow as a regional centre, and is currently experiencing a surge in development. As well as the $280 million redevelopment of the regional hospital, Lismore will see the following development in the next 12 months:

- New $30 million superstore complex next to Lismore Regional Airport
- New Quest apartment block in the inner city
- New $5 million art gallery in the heart of the CBD
- $3 million upgrade of Oakes Oval to attract national sporting fixtures
- New residential land releases – more than 2000 blocks

"Lismore is known as the heart of the Northern Rivers – we not only offer a fantastic lifestyle for families, but we have all the services you would expect from a much larger city," Kevin explained.

"We have huge tourism potential in Lismore. We have a growing reputation as a regional sporting centre, our new $5 million art gallery will open next year and we are in the midst of developing the city as an aero adventure tourism destination. All of this makes Lismore a very attractive investment," Kevin said.

"Lismore is definitely open for business and we invite general aviation businesses and individuals to come and be part of that success."

The Lismore Regional Airport terminal building is located just over 3km to the south-west of the Lismore CBD. The airport is serviced by daily REX flights to and from Sydney and has a substantial onsite general aviation base, with a large maintenance facility.

To discuss business opportunities or a possible Expression of Interest, phone Airport Manager Kevin Trustum on 1300 87 83 87 or email wasteadmin@lismore.nsw.gov.au.

OPEN FOR NEW BUSINESS

Lismore Aviation Centre has Freehold blocks coming online later this year.

Expressions of Interest wanted from general aviation businesses and adventure flight operators.

Lismore is the heart of the Northern Rivers and growing.

IN THE NEXT 12 MONTHS

Regional hospital upgrade
New Rescue Helicopter Base at Lismore Aviation Centre
New superstore complex
New Quest apartment block in CBD
New $5 million art gallery
World-class sporting facilities and events
New residential land releases — more than 2000 blocks

LISMORE AVIATION CENTRE

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To discuss business opportunities phone Airport Manager Kevin Trustum on 1300 87 83 87.


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Lt Comr Adrianne Fleming Honoured with OAM

Lt Comr Adriane Fleming, Group Executive Commissioner of the Australian Air League Victoria Group, recently awarded the Medal of the Order of Australia

Lt Comr Adrianne Fleming, Group Executive Commissioner of Victoria Group was award the Medal (OAM) of the Order of Australia in the General Division in the Queen's Birthday 2016 Honours List for service to the aviation industry.

This award acknowledges the positive influence Adrianne has had in aviation, not only within the Australian Air League, but throughout the many other organisations she has been involved with over more than two decades. Her advancement of women in aviation and ambassadorial role in aviation training with overseas students are two, of many areas, where her influence is something to be proud of.

These organisations include;

- Australian Women Pilots' Association (State President 1996-1998; 2005 and National Vice President 2000-2003)
- Moorabbin Airport Chamber of Commerce (2011 – 2014)
- The Honourable Company of Air Pilots since 2008
- Haileybury School Aviation Camps (Volunteer 2005-2009)
- The Professional Aviation Board of Certification (Advisor since 2015)
- Aero Pro Medical Foundation (Aviation Advisor 2013 - 2014)
- Power Neighbourhood House (Committee Member 2011-2014)
- Empowering Monash Woman (Steering Committee Member 2011-2013)
- Ashwood Chadstone Together Network (Member since 2012)
- Adrianne is also the Chief Flying Instructor, Operations Manager and CASA Authorised Test Officer at TriStar Aviation at Moorabbin Airport.

The League has personally benefited from her influence and involvement since the early 1990's initially through TriStar Aviation, and more lately with her management of the Victoria Group and involvement at a National level as a member of our Council. We thank Adrianne for this dedication and the influence she has played in the Air League – long may it continue.

We are positive that the many organisations Adrianne has been involved with over the years have benefited from her dedication and quiet influence and they are the better for having had Adrianne Fleming OAM as a part of their team.

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

RAAF Roulettes visit the Air League in Queensland

During May the cadets of the Australian Air League Squadrons at Bundaberg and Hervey Bay had a special treat with a visit by the RAAF formation aerobatics team, the Roulettes. While they weren't able to put on displays due to problems with their aircraft, the cadets enjoyed talking with the pilots and gained valuable knowledge on what is required to become a pilot in the RAAF.

The cadets had a great time trying on the flight gear and flying the F/A-18A Hornet in the simulator, getting the chance to "fly" over Hervey Bay and Fraser Island, as well as performing aerobatics like loops and rolls. They also had the opportunity to talk with pilots and other RAAF staff and gained valuable knowledge on what is required for a career in the RAAF.

During the visit the cadets had the opportunity to try on the G-Suit and survival gear. *Photo: AAL*

The cadets also had the opportunity to fly the F/A-18 simulator in mock combat *Photo: AAL*

Cadet Rhys Sharp was one of the cadets who attended the visit, "During the visit by the RAAF Roulettes I learnt a lot about equipment the pilot uses during their flight such as the G-Suit and Survival Gear. I also learned about key fighter tactics within their portable fighter simulators. I have been considering a career in the RAAF for some time and being able to speak to the Pilots and Crew has increased my awareness of what I need to do to make this happen.""

Cadet Samantha Goodwin adds, "When we visited the RAAF Roulettes at the airport we also got to see two Army helicopters and talk to the pilots. We were introduced to the RAAF crew and instructed on what we would be doing in the flight simulator, how to fly and what the controls were. We also got to try on the G-Suits, which feel like cowboy chaps and are tight when blown up. In the flight simulator we got to take turns being Air Traffic Controllers as well as Pilots. The Flight Instructor taught us to lock onto a target and fire a missile at the other pilot. I took a direct hit! On the day I learned a lot about the RAAF Roulettes and the RAAF in general."

After the visit Sqn Lt Di Ballard summed up the day, "The RAAF Roulette visit was a great eye opener for the cadets and officers that attended. All of the questions were answered thoroughly, thoughtfully and on a level that each cadet could understand, which was outstanding as we have a broad age span with cadets from 9 years to 16 years. Their knowledge was impressive and no question went unanswered." A big thank you to the RAAF Roulettes arranging a fantastic day!

Investing in Defence aviation safety

Defence is taking a step into the future with the adoption of new airworthiness regulation, based on an emerging European convention. The Defence Aviation Safety Regulation (DASR) aligns Australia with around 30 other nations, bringing together the technical and operational aspects to provide an integrated approach to Defence aviation safety. Force Element Group (FEG) Commanders – in their appointment as a Military Air Operator – are responsible to ensure that aircraft continue to remain airworthy and that aircraft are operated safely to approved standards, by competent and approved aircrew. There are numerous benefits in migrating to the contemporary regulations: improved interoperability, global supply and sustainment, access to world best practice in safety assurance, and significantly reduced costs.

AIRCDRE Noel Schmidt is acknowledged by many as the 'father' of the current regulatory system, which has served us well since the 1990's. Not surprisingly, he is one of the strongest advocates for migrating to the new DASR. "We have made many advances since our first Airworthiness Board in May 1991", he states. "Back in the early days, very few of us really understood the full range of issues that comprise 'airworthiness'. Australia led the thinking on this among many of our military partners. Since developing our first technical regulations in the mid-1990s, we have pursued many incremental improvements which also expanded to cover operations in the early 2000s. Looking back, it is great to see an entire new generation of highly expert engineers and operators who now simply accept our airworthiness system as being a safe and smart way to operate. However, with the significant developments in recent years of a comprehensive European regulatory set, now covering both civil and military aviation, which is being increasingly adopted by many of our international partners, it is time for us to evolve our system in pursuit of excellence in safe military aviation."

The new DASR embraces Plan Jericho's vision of an agile and adaptive fifth generation capability, offering high levels of interoperability with allied air forces, and a commitment to new ideas and constantly improving safety levels.

Website: www.defence.gov.au/DASP/IMARC
Email: DGTA-ADF.IMARC@defence.gov.au

Defending Australia and its National Interests
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A Gathering of Eagles

Invitation

The Royal Australian Air Force Association, Tasmania Division, extends to all Royal Australian Air Force members, past and present and their guests an invitation to attend A Gathering of Eagles to be held in Hobart on Saturday 17th and Sunday 18th of September 2016 to commemorate the deeds and sacrifices of the Royal Australian Air Force, the Royal Air Force and Allied Air Forces in all conflicts past and present.

Activities

Welcome Happy Hour
Friday 16th September – RAAF Memorial Centre, 61 Davey Street, Hobart at 1700-2130 hrs. Drinks and Snacks. Dress – Casual.

Remembrance Service
Saturday 17th September at St David's Cathedral at 1500 hrs. Dress: RAAF 1A Uniform or Lounge Suit with full size medals .

Dining in Night
Saturday 17th September at Tattersall's Park Elwick Function Centre 1900 hrs for 1930 hrs.

Cost $95.00 each all inclusive. Dress: RAAF Winter Mess Dress, Dinner Suit or Lounge Suit (with miniatures).

Guest Speaker: (TBC)

Cenotaph Service and Wreath Laying
Sunday 18th September at the Hobart Domain Cenotaph at 1045 hrs. Full size medals

Commemorative Address: TBA.

Barbeque Luncheon
Sunday 18th September at the RAAF Memorial Centre, 61 Davey Street, Hobart at 1215 hrs. (No Charge.)

RAAF Support
The Australian Flying Corps and Royal Australian Air Force Association is most grateful to the Chief of Air Force, for the provision of RAAF support to these commemorative activities.

The RAAF Association also acknowledges the valuable contribution given by the Commanding Officer and Members of No 29 (City of Hobart) Squadron.

Accommodation
Special rates have been offered by the following – please request the "Battle of Britain" rate when booking:

The Old Woolstore Apartment Hotel:
Phone: 03 6235 5355
Email: reservations@oldwoolstore.com.au

Hotel Grand Chancellor:
Phone: 03 6235 4535
Email: groupreservations@hgchobart.com.au

Hadley's Orient Hotel:
Phone: 03 6237 2999
Email: reservations@hadleyshotel.com.au

Salamanca Inn:
Phone: 03 6223 3300
Email: info@salamancainn.com.au

Contact Details

If you are interested in obtaining further details about these events, contact the State Secretary, RAAF Association, Tasmanian Division at:

Address: 61 Davey Street, Hobart, 7001
Phone: 03 6234 3862 (Wed 10am to 3pm)
Message Bank active during non attendance times
Email: raafatas@netspace.net.au

Function Co-Ord: AVM P.J. Scully AO 0402 274 163

Assist CO-ORD: WGCDR Jen Robertson 0427 005 076

Bookings, accompanied by the amount of the subscription, are essential. Members may make a direct credit to the Association Account – RAAF Association Tasmania Division WESTPAC Bank BSB 037001 Account 100766 or by cheque payable to the 'RAAF Association' and sent to the Association address.

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Australia Post is issuing four pre-stamped envelopes to commemorate the Centenary of the formation of No's 1, 2, 3 & 4 Squadrons RAAF.

The envelopes will be issued on 3 November 2016 at a cost of $1.20, but can be ordered online as per the codes below.

Mail Order phone is Freecall 1800 331 794

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Check www.raafa.org.au for details of squadron history.

First VCDF

AIRMSHL Ray Funnell AO CAF

On 6 June 1986, Air Vice-Marshal Ray Funnell -- then serving as Assistant Chief of the Defence Force (Policy) at HQADF - was promoted Air Marshal and appointed as Vice-Chief of the Defence Force (VCDF). This newly-created post made Funnell effectively the chief of staff of HQADF, with responsibility for directing both the operations and policy divisions. His specific responsibilities included ADF long-term planning -- the most important being planning for the defence of Australia -- and coordination of ADF force development planning procedure.

AIRMSHL Funnell's appointment became the second occasion on which the RAAF had two three-star officers serving at the same time (the first being 1961—65), when -- in addition to the Chief of the Air Staff -- Air Marshal Sir Frederick Scherger was Chairman of the Chiefs of Staff Committee (before he was promoted Air Chief Marshal). AIRMSHL Funnell served a year as VCDF before he was appointed CAS in July 1987.

Schofields and No 86 Transport Wing

After the newly-formed No 86 Wing Headquarters took over RAAF Station Schofields, outside Sydney on 18 July 1946, it assumed responsibility for running the longest regular air transport service in the world using twin-engine aircraft. Since late 1945, RAAF Dakotas flew frequently to Japan from bases at Morotai and Darwin, carrying mail, supplies and personnel for the Australian component of the Allied occupation forces.

Schofields/Nirimba Airfield, 2008. *Photo: Angelflight*

Following the concentration of RAAF transport units at Schofields, aircraft from No 36 and 38 Squadrons undertook scheduled courier flights three times a week entailing a 21,000-kilometre round trip. Each aircraft flew first to Laverton in Victoria, then via Adelaide to Darwin, before heading for Japan with stops at Morotai, the Philippines and Okinawa enroute.

In December 1947, the Japan route was taken over by Qantas Airways, and the last RAAF courier returned to base on 13 January 1948.

Schofields Airfield 1945. *Photo: RAAF*

13 May 1947 Sydney Morning Herald article on 86WG is here: http://news.google.com/newspapers?nid=1301&dat=19470513&id=htcQAAAAIBAJ&sjid=5JMDAAAAIBAJ&pg=4487,1523070

CAC Sabre Aircraft

On 13 July 1954, the first Commonwealth Aircraft Corporation (CAC) CA-27 Sabre, A94-901, first flew. Since 1949 the RAAF had been planning a replacement jet fighter for the locally-built CAC Mustang and De Havilland Vampire and, in May 1951, plans were finalised for CAC to build a locally-redesigned version of the North American F-86F Sabre swept-wing fighter.

The first CAC Sabre for the RAAF. *Photo RAAF*

The RAAF decision to install the 7,500 lb thrust Rolls-Royce Avon RA.7 turbojet in place of the 6,100 lb thrust General

Electric J-47 engine required major modifications to the airframe: a larger nose-intake and positioning the Avon further aft than the J-47. Other improvements called for increased fuel capacity, a revised cockpit layout, and replacement of the six 0.50" machine guns with two 30mm Aden cannons.

The final aircraft design, called the Avon-Sabre, became the best of the numerous Sabre variants built throughout the world. The first version was formally handed over the RAAF at Laverton on 30 August 1954.

RAAF Marine Section - Neutral Bay

On 31 May 1963, 'Detachment B' of No 2 Aircraft Depot at RAAF Base Richmond, NSW — known as the Marine Section at Neutral Bay, Sydney — was closed down and disbanded. For the 10 years of its existence, the Section had performed tasks such as search and rescue, torpedo and sonobuoy recovery, radar tests, towing, and survival exercises for civil and RAAF aircrews.

When the SAR function was taken over by UH-1B Iroquois helicopters, the Section's boatshed, slipways, crash boats and associated equipment were no longer needed. The main building -- formerly known as 'Halvorsen's Boat Shed' -- and two adjoining historic properties ('Craignathan' and 'The Hastings') that had been taken over in September 1953 for offices and accommodation, were handed over to the Department of Excise and Customs. Two 63-feet yellow and black air-sea rescue launches (02-104 and 02-108) were left on slips on the site pending sale by the Commonwealth Disposals Commission.

RAAF crash launches moored at the RAAF Marine Section, Neutral Bay; HMAS PLATYPUS submarine base, opposite. 1960

Air View being launched in her new livery

Membership of the RAAF 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

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24 Camberwell Rd, EAST HAWTHORN VIC 3123
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raafavic@raafavic.org.au • www.raafavic.org.au

ACT
RAAF Association (ACT Division)
PO Box 770 DICKSON ACT 2602
Tel 0428 622 105
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
raafatas@netspace.net.au • www.raafatas.com

SA
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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)
Bull Creek Drive, BULL CREEK WA 6149
Tel 08 9311 4445
administrator@raafawa.org.au • www.raafawa.org.au

QLD
RAAF Association (QLD Division)
19 Silkwood Rd, Morayfield QLD 4506
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Bomber Command Commemorative Day - Australian War Memorial

The 2016 Bomber Command Commemorative Day ceremony was celebrated across Australia on Sunday 5 June 2016 with the main Ninth Annual Commemoration ceremony at the Australian War Memorial. Wreaths were also laid at other Australian capital cities.

Due to the extensive rain and wind in Canberra, this year's ceremony was moved from the Bomber Command Memorial in the AWM Sculpture Garden to the cloisters in the Roll of Honour area of the Australian War Memorial.

The Ninth Annual Bomber Command Ceremony, AWM Canberra. 5 Jun 2016. *Photo: AWM Flikr*

The Commemorative Address was given by AVM Warren McDonald AM CSC, representing Chief of Defence Force and Chief of Air Force RAAF. An entertaining 'Reflections' speech was given by WWII BC Veteran James Clayton, a Wireless Operator/Air Gunner with 218 Squadron RAAF, who recounted many of his experiences, some funny, some incredibly scary enthralling the attendees with his "May the Force be with you" wish to all the BC Veterans

Keith Campbell OAM, President of BCCD Foundation, welcoming attendees. *Photo: AWM Flikr*

460 SQN RAAF personnel provided the Honour Guard for the ceremony. Due to the weather and the ceremony held 'indoors' in the AWM, only a selection of personnel stood guard beneath the banner with the remainder seated individually among attendees.

The current and two previous CO's of the current 460 SQN (WGCDRs Nathan Klohs, Rob Elliott and Pete Wooding) honoured our WWII Veterans with their presence at the ceremony.

Following the ceremony, attendees adjourned to the QT Hotel for the Bomber Command Commemorative Day lunch. The Deputy Chief of Air Force, AVM Warren McDonald AM CSC, gave the address, paying homage to the WWII Bomber Command and RAAF Veterans, whose legacy is the current RAAF and its ongoing successes. He said that without the courage, dedication and achievements of WWII RAAF Veterans, the modern day RAAF would not be as it is today.

460 SQN V&F Group's Betty Seery, Rosemary Horton, Ken McKeown, Edward & Maureen English and Richard Munro attended the lunch.

The Bomber Command Commemoration Ceremony and lunch were well supported by the RAAF Association. The National President, AVM Brent Espeland, attended both activities, together with the National Treasurer, Robbie Robertson, Vice President and Editor Wings, Lance Halvorson, the past National Secretary, Ron Usher; all attended with their wives. AVM Kym Osley, the guest speaker at the previous night's 'Meet and Greet' at the AWM also attended with his wife Debbie.

A RAF Lancaster bomber Mk1, near RAF Waddington

Lancaster bomber aircrew, RAF Waddington.
Photos: International Bomber Command Centre, Lincoln

For the Aircraft and Airfield Spotter

The answer is "Labuan - where 2SQN aircraft refuelled for their return to Butterworth, after bombing sorties at Balambangan Is, Borneo, 5 July 1966.
Photo: Lance Halvorson"

Media Release

THE HON DAN TEHAN MP
MINISTER FOR VETERANS' AFFAIRS
MINISTER FOR DEFENCE PERSONNEL
MINISTER ASSISTING THE PRIME MINISTER FOR CYBER SECURITY
MINISTER ASSISTING THE PRIME MINISTER FOR THE CENTENARY OF ANZAC

11 August 2016

Government supports veterans and ADF personnel

The Turnbull Government will increase support for veterans and ADF members, including an employment initiative to support people moving from military service to civilian life.

We recognise that the transition from the services into civilian life can be challenging for some members, and we are committed to providing the required support to re-enter the workforce. The Prime Minister will host the first Prime Minister's Veterans' Employment Initiative in November – bringing together business leaders and veterans to find ways to better use the valuable skills and leadership of former service personnel into our modern economy.

We will ensure ADF members and veterans who face mental health challenges, either during service or once they have left the ADF, can access the mental health services they require.

Today we announce a review of suicide and self-harm prevention services available to veterans and ADF members. The National Mental Health Commission in conjunction with clinical experts and a reference group comprised of current and former members of Defence, will analyse the effectiveness of existing suicide and self-harm prevention services.

One suicide is one too many, and as a society we must address mental health issues together to find solutions. The Government has already announced an additional $192 million to tackle the mental health challenges across our community.

In preparing the Government's response to the Senate Inquiry into the Mental Health of Australian Defence Force Members and Veterans, it became clear that this was a complex issue that required a forensic examination of how we tackle suicide and self-harm.

The review of services for veterans and Defence personnel announced today will build on this work by providing an independent analysis of the services provided.

The Government is announcing that in North Queensland - home to a large veteran community - the first Suicide Prevention Trial Site will be established. This will occur through the North Queensland Primary Health Network. As part of its work, the trial will focus on veterans' mental health.

This will be one of 12 innovative, front-line trials in our fight against suicide which will improve understanding of the challenges and work to develop best-practice services which we can be applied nationwide.

All of these sites will incorporate a focus on veterans and Defence personnel. The review will provide an interim report in December and a full report in February next year.

It will consider:

- The range of services available to current and former serving members and their families

- The effectiveness of these services in supporting members and their families while they serve, as they transition from Defence to civilian life, and later in their civilian life

- Any duplication or gaps in current services and how they might be addressed

- Any barriers to current and former serving members accessing services, taking into account cultural relevance, availability of providers, employment, functional capacity and degree of ill health

- The extent to which former serving members utilise services provided by other parts of government, ex-service organisations, the private sector or non-government organisations

- Whether there is balance in the way in which the military experience is understood by and communicated to the Australian community, recognising the impacts that it can have on the mental health of those who have served but also the positive benefits that are derived from the military experience

- The reporting of and incidence of suicide amongst serving and former serving ADF members compared to the broader Australian community.

This review in conjunction with our $6 million investment in the Phoenix Australia Centenary Institute will improve our understanding of mental health challenges and lead to better treatment for our veterans and the wider community. Our investments complement the $46.4 million for veterans and Defence personnel to access free mental health treatment announced in this year's budget.

The Government's response to the Senate Inquiry on the Mental Health of ADF Members and Veterans will be tabled when Parliament resumes. The Government is funding the national rollout of an alternative dispute resolution and case management system that significantly cuts the time taken to process claims.

The Government has a responsibility to the men and women who defend our liberties. The Government is committed to action on veteran and ADF suicide and is working with the wider veteran community to achieve this.

Media enquiries:

Prime Minister's office – Mark Simkin 0447 109 062
Minister Tehan's office – Byron Vale 0428 262 894
Minister Ley's office – Stephen Block 0428 213 264

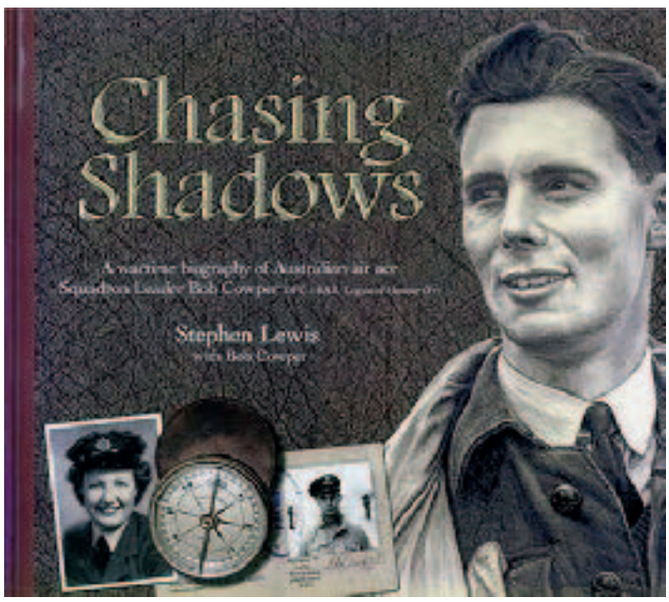
Squadron Leader Robert B. Cowper DFC & Bar OAM Legion of Honour - 24 June 1922- 19 June 2016

Squadron Leader Bob Cowper, who died 19 June 2016, aged nearly 94, is thought to have been the last surviving Australian fighter “ace” of the Second World War; flying night fighters, he was credited with destroying at least six enemy aircraft. His funeral was held at the Morphettville Race Course SA on Friday 1 July 2016.

He was born on 24 June 1922 in Broken Hill NSW, moving as a child to Kangaroo Flat, near Gawler SA , where his father worked at Roseworthy Agricultural College. He spent five years at Queen’s College in North Adelaide and a short period as an engineering draughtsman before joining the RAAF in 1940 on his 18th birthday. After initial training at Pearce and Cunderdin in WA, he completed his pilot training at Yorkton in Canada. In August 1941 he was posted to 10 OTU at East Fortune in Scotland where he trained on night fighters. On completion of this training in November 1941, he was posted to No 153 Squadron RAF at Ballyhalbert, Northern Ireland, where he initially flew the Boulton Paul Defiant night fighter.

While still at Ballyhalbert Bob Cowper converted to Beaufighters and Flight Sergeant Bill Watson, a Scot, joined him as radio operator. After almost a year flying patrols over the Irish Sea, Cowper and Watson were posted to the Middle East. They ferried a new Beaufighter RAF Station Lyneham and proceeded via Portreath in Cornwall, then Gibraltar. However, on the leg to Malta, they became lost due to the darkness and heavy cloud cover. Running out of fuel, Cowper crash landed behind enemy lines in the desert at night. Arab

Bob Cowper *Photo: Barry Spicer*



nomads sheltered them until they were picked up by a British armoured patrol and taken to Tripoli. Their adventures entitled them to join the “Late Arrival’s Club".

They eventually joined No 89 Squadron based in Malta and flew interdiction raids over northern Sicily and attacked trains with guns and bombs. In March 1943, they transferred to No 108 Squadron and a month later had their first combat in the region. They were engaged in a long duel with a German night fighter off the west coast of Sicily. Cowper’s fire damaged the Messerschmitt 210 and it disappeared into cloud. The invasion of Sicily, Operation Husky, was mounted on the night of July 9/10 and two nights later the crew engaged a Junkers 88 that was attacking Allied shipping.

During this period, PLTOFF Farquharson flew with Bob as Watson was ill. On the night of 11/12 July, they attacked a Ju 88 at 10,000 feet that was part of a German bomber stream attacking allied shipping. The Ju 88 exploded in a fireball that badly damaged their Beaufighter. The perspex was blown out of the front, all engine control was lost and Cowper had pieces of molten aluminium lodged in his legs.

Farquharson called that he was bailing out, then the aircraft dropped a wing and entered a spin so tight that the ‘g’ force made it very difficult for Cowper to do the same. He lost consciousness but 'came to' and found himself falling through the air, pulled his ripcord and very soon after hit the sea with the aircraft simultaneously crashing nearby. He discarded his parachute, inflated his Mae West and dinghy and climbed into the dinghy. He waited until dawn to fire his distress flare. Fortunately a hospital ship, HMS Aba, was steaming in his direction and an hour or two after dawn was close enough to see his flare.

Bob with his great grandchildren, twins Lily and James

Cowper was picked up with a deeply cut and broken nose, bruised forehead and a minor shrapnel wound to his thigh. Farquharson was never found and may have gone in with the aircraft. HMS Aba steamed to Tripoli where Bob hitched a ride back to Malta on a Dakota, five days after he bailed out. On 19th – a week after the incident – he was flying again despite the pain of wearing an oxygen mask over his broken nose.

Two nights later, back with Watson, they destroyed another Ju-88 off Augusta on the Sicilian east coast. Flying through the resultant debris, molten metal formed on the windscreen, reducing forward vision so badly that they were unable to get into firing position on another Ju 88, and so an opportunity was lost. Both Bill Watson and Bob Cowper received their gallantry awards at an Investiture at Buckingham Palace on 2 Feb 1943 . By mid-August 1943, his tour was over and he was posted to 63 OTU at Honiley in Warwickshire as an instructor.

Bob's experiences entitled him to join the Caterpillar Club and the Goldfish Club giving him the rare distinction of membership of the trio of survival clubs.

During his time at Ballyhalbert, he met an Australian WAAF aircraft plotter, Kay McCall, and they were married at Garelochhead near Lach Lomond in Scotland on 9 December 1943. After a period as a night-fighter instructor, he joined No 456 Squadron in March 1944 when Watson, who had also been on a rest tour, rejoined him. In March 1945 the squadron re-equipped with a more powerful Mosquito and from an airfield in Essex provided support for bombing raids over southern German.

On the night of 9/10 June, while patrolling off Cherbourg, Cowper and Watson attacked and crippled a Heinkel 177, which crash landed on the Cherbourg peninsula. During the same night they destroyed a Dornier 217. On the night of the 14/15 June they hit a Ju 88 in the port engine and the crew bailed out with the engine on fire. The aircraft spun into the sea. Again, on the night of 4/5 July they hit and destroyed another Heinkel 177, which was bombing allied shipping .

No 456 Squadron also provided night intercepts of V-1 flying bombs that the Germans were launching in increasing numbers against southern England. By the end of August the Squadron was credited with destroying 24 V-1s. Cowper and Watson claimed one but it was not confirmed because an antiaircraft battery also claimed it. 456 Squadron was then relocated to Church Fenton in North Yorkshire. By the end of the war, Cowper was the acting squadron commander of No 456, the only Australian night fighter squadron.

After the war, he and his young family returned to Australia where he worked for Dunlop before owning a service station. He later became a farmer and racehorse owner. He worked tirelessly to achieve recognition of No 456 Squadron's war record and was instrumental in having the squadron's logo adopted as the official badge. In September 2008 the badge was laid in a slate tile in the floor of the RAF's church of St Clement Danes in the Strand.

In 2004 he was appointed to the Légion d'Honneur for services during the Liberation of France and in 2010 received the Medal of the Order of Australia. A biography on his exploits during the war, "Chasing Shadows" , was launched by Her Excellency Marjory Jackson-Nelson, in 2007. Bob Cowper's wife died in 2014 and two of their four daughters survive him.

With acknowledgement to: Mike Milln, South Australian Aviation Museum Inc and Telegraph, UK

In the contemporary era, the prominence of information-centred capabilities and activities in the conduct of military operations – from peacekeeping to warfighting roles – is unprecedented. The well-established discipline of Electronic Warfare (EW) is now in a state of rapid change, reflected in the emergence of innovative concepts such as Cognitive EW, Intelligence Mission Data, and others. The transformation of EW is complemented by the advent of Cyber Operations as a new mission area; which presents opportunities and challenges for integrating activities in the cyber environment with actions undertaken in the electromagnetic spectrum. The online social media environment has provided new opportunities for the conduct of perception-centred activities such as Psychological Operations and Deception, and presents new challenges for maintaining Operational Security. Collectively, the challenges and opportunities posed by the integration of EW, Cyber Operations and other information-centred capabilities and activities has led to the emergence of new operational concepts such as Information Operations (IO) and Hybrid Warfare.

The increased prominence of information-centred activities in the conduct of contemporary military operations is evident across the globe. But it is perhaps within the Asia-Pacific region that this phenomena is most notable. The Asia-Pacific region represents the most vibrant portion of the globe for economic and technological development; and regional states have leveraged these developments to enhance and modernise their armed forces and overall national security capabilities. So it is to be expected that Asia-Pacific states will increasingly acquire and exploit advanced information-centred capabilities to pursue their national interests. As is noted in the Australian 2016 Defence White Paper, collectively these trends mean that the strategic security environment of the Asia-Pacific region is now in an unprecedented era of challenges and opportunities for its constituent states.

The intersection and implications of the issues outlined above are the subject of the Australian Chapter of the Association of Old Crows (AOC) 2016 Conference. The theme for the Conference is the 'pivot' to the Asia-Pacific region, and the implications of emerging EW, cyber and IO capabilities for conflict in the region. The Conference will be held in Adelaide from 4 to 6 October 2016. The Conference proper will take place at the Adelaide Convention Centre from 5 to 6 October, including a gala dinner on the night of 5 October. The Conference proper will be preceded by a classified day, to be held offsite from the Adelaide Convention Centre on 4 October. The Conference will feature leading Australian and international speakers discussing the above topics. The Conference will also feature a major exhibition, which will showcase cutting edge technical solutions in the EW, cyber and IO domains. In particular, the Australian Chapter of AOC gratefully acknowledges the support of our Platinum Sponsor, Raytheon.

All details regarding the 2016 Conference are available from: www.oldcrows.org.au

Planning a move to civi-street?

STEPHANIE MCNEILL

Jo Payne has a unique perspective on the transition process: she's been an Air Force member, her husband separated from the ADF last year, and she works in ADF transitions.

Jo points out that families are a key part of transition and that partners in particular can be of real help to members as they work their way back into the civilian world.

"Transition affects the whole family," explained Jo.

"The member has been part of the ADF for such a long time and to some extent they're stepping into the unknown.

"We encourage partners to come along to our ADF Transition Seminars because they've been part of the member's career, so it's great to continue the support through the transition process."

Jo advises that ADF members should contact their nearest ADF Transition Centre as soon as they start thinking about separating.

"This will maximise your time to plan and it gives you more time to use any benefits."

At a transition centre, staff conduct interviews with military personnel to provide practical guidance and information to help them plan their separation and complete administrative obligations.

"Partners are a great asset during these transition interviews as they can provide real-world advice, particularly in the medical and financial areas," said Jo.

"An interview is much easier when the partner is there to expand on the advice we're giving the member."

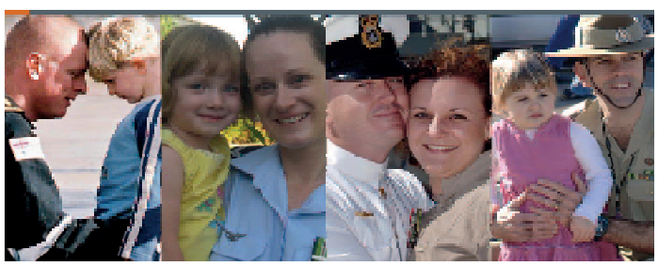
Jo has another practical tip for members and partners.

"Download the ADF Transition Handbook before your first appointment and have a look. That way you get an overview of what you need to do.

"An officer said the other day that it was easier to join the ADF than it is to get out, and we're here to support and guide you through what can seem a daunting process."

Defence is committed to providing ADF personnel with comprehensive and effective support services, not only throughout their military service, but also during their transition from the ADF.

Visit www.defence.gov.au/dco to download the ADF Transition Handbook, check out the Transition Seminar calendar, and get detailed information on the transition process.



Girls' Grammar Scholarships

There is no greater gift than the gift of education.

Our scholarships open up a world of opportunities for our students. Applications are now being accepted for 2017 scholarships.

Laura Carniel is a Year 9 student at Ipswich Girls' Grammar School and is a grateful scholarship recipient.

"I was awarded the Lylie Argus scholarship in 2015. Coming to Ipswich Girls' Grammar has given me access to a wider range of not only academic opportunities, but sport, arts and service opportunities as well.

"I have always wanted to be a Grammar girl; my mum is an Old Girl of the School. I've also just been told that I am a Middle School Captain in 2016, which I am very excited about.

"The Lylie Argus scholarship has made a huge difference to my schooling life."

Ipswich Girls' Grammar School offers a range of scholarships to talented young women. If your daughter excels in academia, the Arts, sport, music or is a school captain, then we would encourage her to apply for our 2017 scholarship program.

Ipswich Girls' Grammar offers the best of both country and city living, being located just 20 minutes from Brisbane. Come along and see the School for yourself at Open Day on 5 March. For more information visit www.girlsgrammar.com.au.

Change to Relocation Model

Defence and Toll have developed, and will implement a new model for the sourcing of removals and associated dates for Uplift of a member's furniture and effects.

The new model is called the Whole of Relocation Cost model (WORC)

The WORC model is based on the premise that substantial savings in relocation costs can be achieved under the following circumstances:

- Taking advantage of cost differences in services arising from the day the service is supplied (e.g. generally midweek hotel rates are less than a Friday);
- Sourcing quotes for services within a date range as opposed to a specific date (e.g. a relocation price for an uplift for each individual day in the date range of Monday to Friday);
- Considering all relocation costs across each day of the requested uplift week when making the procurement decision (e.g. removal, accommodation, flights and allowances); and
- Choosing the day of the week which provides the most cost effective combination of costs, unless operational considerations or extenuating personal circumstances dictate otherwise.

The WORC model was successfully trialed in South Queensland from 30 July 2013 -30 Oct 2013.

Defence Relocations and Housing Managers are there to assist you during your relocation

By Ken Parks, Acting Assistant Director Operations, Directorate of Relocations and Housing

Defence Support and Reform Group (DSRG) has a dedicated Defence Relocations and Housing Manager based in each region. At the local level the Defence Relocations and Housing Manager (DRHM) is the primary Defence representative with Defence Housing Australia (DHA) and Toll Transitions. DRHMs are employed to assist Defence personnel and their families by liaising with DHA, Toll Transitions and the Defence Community Organisation (DCO) in each region to make their relocation easier for them and their families. The DRHMs have considerable experience in all aspects of relocations and housing.

The ultimate aim of the DRHM is to ensure that you and your family experience high quality customer service as you undergo a removal or change to your housing situation.

The DRHM network seeks feedback from members on the complete relocation service. This feedback is used to provide management in Defence and the service providers with information on how members feel about their removal experience but more importantly, the feedback is used to ensure that all removals and future removals are as stress-free as possible. A DHRM may visit you during an uplift or delivery to discuss and assess the standard of service being provided. In some instances the DRHM will contact you after a relocation to discuss whether the relocation met your expectations. In the past, these discussions have revealed region-wide trends or issues which have been addressed with contractors.

If you have an inquiry regarding your housing maintenance/ allocation or relocation services, do not hesitate to contact your local DRHM. If you are dissatisfied with the service provided or decision made by DHA or Toll Transitions your local DRHM will assist you to address and resolve your concerns.

DRHM Contact Details		
DRHM Location	**Name**	**Contact**
Adelaide	Bill Griggs Leo Pope	08 7389 3225 0407 211 389 08 7389 3266 0418 801 981
Bandiana	Lea Gayfer	02 6055 2187 0439 452 291
Brisbane	Brian Grear Phyllis Gore	07 3332 6975 0402 824 035 07 3332 6992
Cairns	Merv Dicton	07 4411 7922 0408 457 468
Canberra	Anton Pecovnic Treena Stone	02 6265 8808 0404 823 765 02 6265 8809 0404 823 765
Darwin	Alan Purdue James Muir	08 8935 4346 0408 970 557 08 8935 4224 0458 241 867
Hobart	Tracey Pannell	03 5237 7277 0418 651 744
Hunter	Roger Lamothe Neysha Johnston	02 4034 6964 0413 728 512 02 4034 9565 0429 127 082
Liverpool	Carey Byrne	02 8782 4100 0409 125 687
Nowra	Steve Daley	02 4421 3855 0428 441 808
Perth	Allan Purdue Cam Druitt	08 9311 2376 0408 978 979 08 9311 2076 0408 978 979
Richmond	Sara Sullivan	02 4587 2314 0408 481 880
Southern Victoria	John Gaffney	03 9282 3667 0407 462 437
Sydney	Greg Richardson Carmen Azzopardi	02 9393 2146 0420 308 387 02 9377 2148 0408 972 933
Tindal	Kylie Henderson	08 8973 6594 0429 780 211
Toowoomba Ipswich	Chris Gordon	07 4631 4414 0419 103 415
Townsville	Merv Dicton	07 4411 7922 0408 457 468
Wagga	Lea Gayfer	02 6055 2187 0439 452 291

Selecting the right wiper and dispensing system for your wiping task

There's no doubt a cleaner workplace is a safer, healthier and more productive workplace. A key objective of cleaning and wiping tasks is to ensure product quality and machine performance, without compromising productivity or efficiency, while facilitating safe and healthy working conditions for the staff.

Given the different types of cleaning requirements in various workplaces three factors need to be considered when choosing the most appropriate wiping product Wiper Performance, Dispensing System and Operating Efficiency.

For instance, wiper performance in any particular cleaning task will depend on characteristics such as absorbency, strength and tear resistance, solvent resistance and low lint quality. Selection of a suitable wiper dispensing system will hinge on the cleaning application and environment with factors such as capacity, portability and sheet size coming into play. Dynamics influencing operating efficiency may include balancing wiping performance with environmental impact, waste reduction, and hazardous substances clean-up.

Four key advantages set Kimtech* Aviation wipers apart from conventional cloth-based cleaning products such as rags: Cost, Cleaning Efficiency, Environmental Outcomes, and Safety.

Cost savings

Lightweight and super absorbent, Kimtech* Cleaning wipers deliver cost savings throughout their product lifecycle. The lower weight and less required volume reduces transport costs, storage space requirement, resupply frequency, and disposal costs in comparison with traditional cloths and rags.

Increased efficiency

The wiper's performance impacts the overall efficiency of the cleaning operation. Kimtech* wipers are designed for efficient work in both material and packaging. The specially engineered material ensures long-lasting durability, excellent absorbency and may not introduce lint into the workplace or workpiece.

Environment-friendly

The higher absorbency and better wiping performance of Kimtech* wipers minimise the quantity required for each cleaning task. Being lightweight and compact, the wipers require less energy for transportation, and occupy less space in storage or landfill.

Safety

Quality of the consumable is an important factor with safety implications in any facility. Unlike the unknown quality of rags, the Kimtech* wipers can be confidently and safely used in these sensitive production environments. Their superior wiping attributes ensures faster containment and clean while minimising splashing, dripping and cross contamination.

Kimberly-Clark Professional* has been partnering with businesses to create Exceptional Workplaces* where safety, health, productivity and efficiency remain the primary focus. Improve efficiency and reduce costs with the right Kimtech* wiper. Contact Kimberly-Clark Professional for your free Kimtech* sample.

2016 ADF Transition Seminar Calendar

ADF Transition Seminars have been designed to assist with preparing your transition from Defence, by providing impartial information and directing you to additional sources of information.

The following topics are addressed during the seminars:

- Your Career and You
- Your Money and You
- Transition Support Benefits
- Transition Support & Administration
- Reserves
- Superannuation
- Health Insurance
- Department of Veterans' Affairs
- Veterans and Veterans Families Counselling Services

To find out more about the ADF Transition Seminars contact your nearest ADF Transition Centre:

http://www.defence.gov.au/transitions/my_nearest _adf_transition_centre.htm

http://www.defence.gov.au/dco/Moving_back_into _civilian_life.htm

Date	Location
9 - 10 March	Sydney
15 - 16 March	Brisbane
22 - 23 March	Townsville
13 - 14 April	Adelaide
19 - 20 April	Canberra
18 - 19 May	Melbourne
25 - 26 May	Darwin
1 - 2 June	Perth
15 - 16 June	Newcaslte
21 - 22 June	Wagga
12 - 13 July	Brisbane
20 - 21 July	Sydney
26 - 27 July	Cairns
2 - 4 August	Shoalhaven
10 - 11 August	Hobart
7 - 8 September	Canberra
14 - 15 September	Adelaide
21 - 22 September	Darwin
12 -13 October	Melbourne
18 - 19 October	Brisbane
25 - 26 October	Townsville
2 - 3 November	Liverpool
16 - 17 November	Perth

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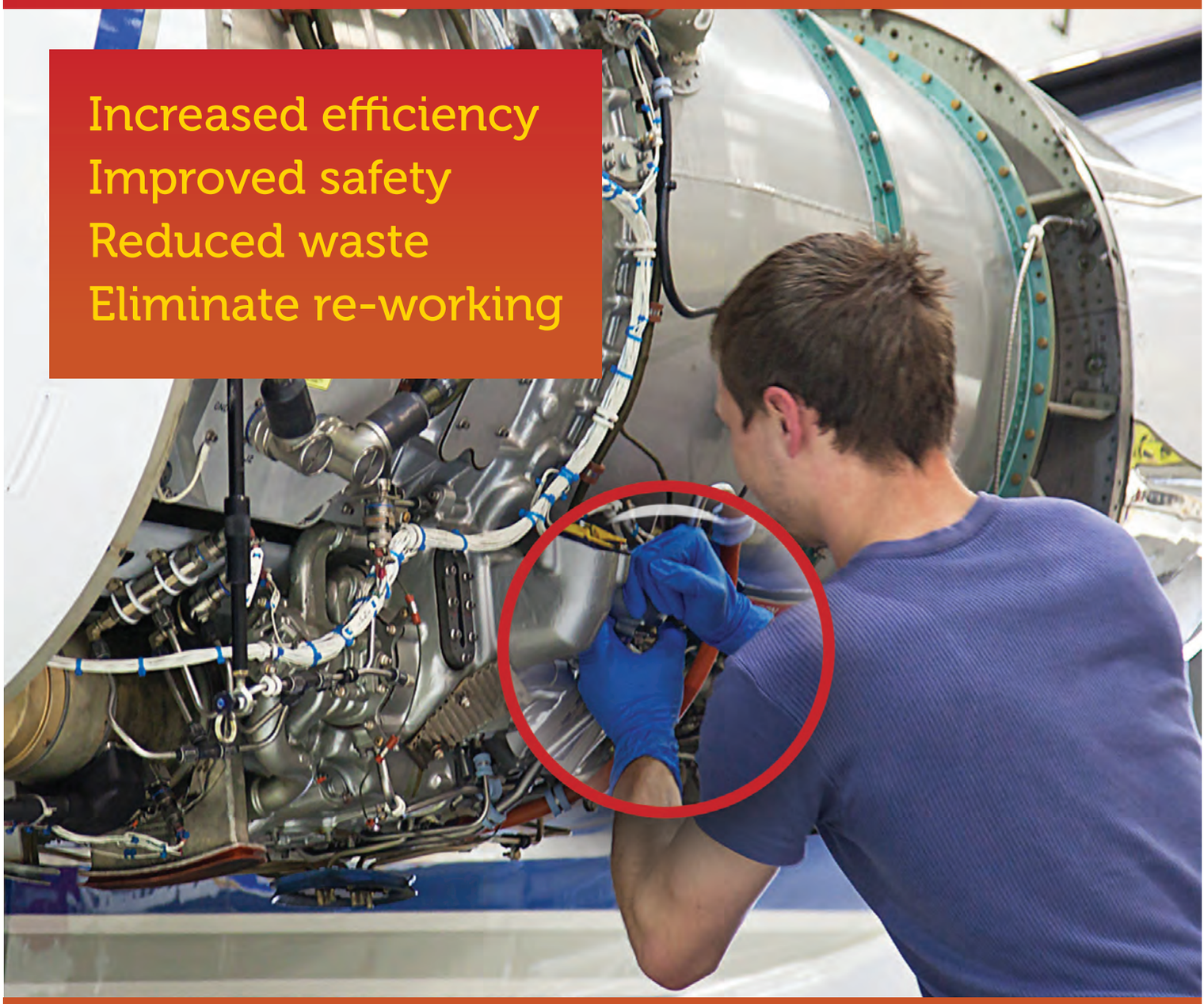

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Improved safety
Reduced waste
Eliminate re-working

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Neoprene nitrile gloves protecting hands against harsh solvents like Skydrol. Silicone and powder free gloves, 0.23mm thick x 295mm long for extra wrist protection. Chemical splash protection.

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Tough general purpose wiper ideal for demanding cleaning tasks like solvent wiping, removal of debris after paint stripping, sealant removal.

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