ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION
SYDNEY BRANCH

MAY 2020

Vol 2020-03 ABN 75 134 058 731
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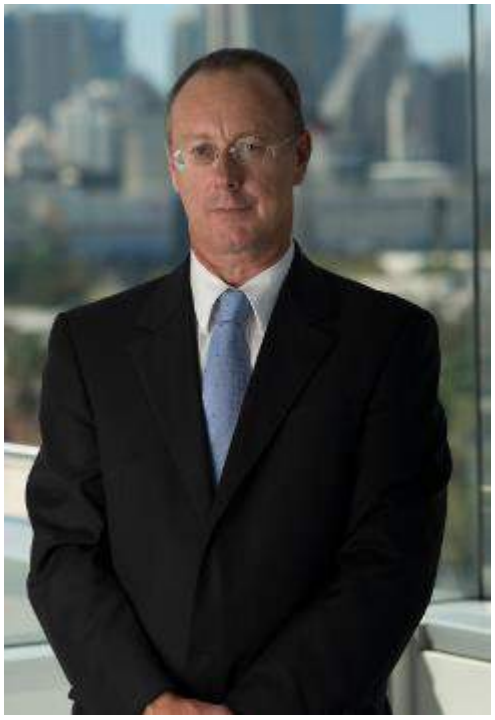
NEWSLETTER



'Chairman Mr David Cox FRAeS Sydney Branch Committee Update'

Dear Members

I hope you and your families are coping well during these incredibly unusual times. Talking to people I have found that for some it suits their lifestyle quite well but for others it has been very, very difficult. Although I think we can see a glimmer of hope for some relaxation of restrictions it is very likely that controls on meetings such as lectures, forums and networking events will remain in force for quite some time yet. Indeed, it is possible that our sort of events may well be amongst the last events to be reinstated.

Your committee and the Australian Division feel that it is very important that we get moving with providing a service to you in a way that works in the currently restricted environment. Accordingly, the Australian Division in conjunction with all Branches is investigating the use of webinars to provide members with the opportunity to receive presentations as well as to ask questions of the presenter from your home.

The Melbourne Branch is taking the lead in this endeavour and are hoping to conduct the first webinar in May. More information on the presentation and how to access it will be provided soon. Later in the month the Sydney Branch hopes to host a second webinar and the intention is to build this capability at a national level. This would give members access to lectures from around the country. I see this as a terrific silver lining to our current situation as I have often seen lectures in other cities that I would like to attend but up until now we haven't really had the technology to do that.

Another idea we are exploring is to share stories from amongst our membership. If you feel like you would like to contribute to this please get in touch with Jeff lock or myself.

We are fortunate to have our first contribution from Andrew Drysdale FRAeS immediately below and Melbourne Branch has placed their first story on their website about Bristol Freighters in New Guinea by Bristol Captain Ron Austin from Melbourne branch: **Read Ron's Story**

Finally, due to the covid-19 situation our 2019 AGM will be held via Webinar. Registration details for the Webinar are contained within the 'Notice of the 2019 AGM' on page 14 of this Newsletter.

With best wishes and stay safe David Cox FRAeS

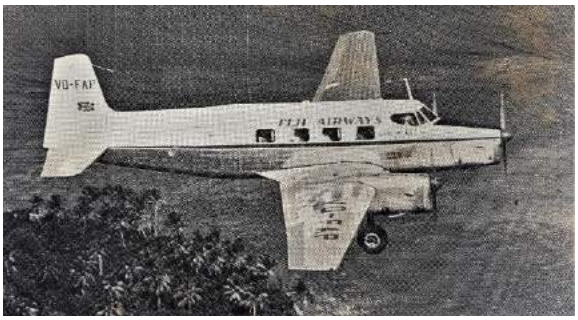
Pioneering Aviation in the Pacific – Andrew Drysdale FRAeS

The author was Fiji Airways (and Fiji's) first aircraft engineering apprentice and spent 15 years in the pacific islands as a LAME during a pioneering time in Aviation. He went on to become CEO of Fiji Airways, then Hazelton Airlines (now REX) and to head IATA in the Asia /Pacific region. The following is from his recently published book 'Sketches of Fiji'. https://sketchesoffiji.com/
Andrew is a Fellow of the Society and a past President of the Australian Division.

A little Fiji Airline: Following his 1931 flight with Wiley Post to circumnavigate the world in eight days, then war service with the RAAF, Tasmanian aviator Harold Gatty moved to Fiji as the Pan Am manager. He became involved in the Fiji community and served as a member of Legislative Council. He also purchased a copra plantation on remote Katafaga Island in the Lau group. Gatty became actively involved in attempts by the Fiji Colonial government, through its 'Fiji Air Services Commission', to establish a domestic airline. In 1951 a proposal put forward by Qantas was challenged by Gatty, and ultimately the Colonial Govt. rejected the QF proposal as being too expensive. Gatty then proposed that, via his Katafaga Estates Limited, he would establish an airline. Thus, was born 'Fiji Airways'. The first aircraft was a DH 89A Dragon Rapide which flew the inaugural flight from Suva to Nadi on 1st September 1951. The pilot was Captain Freddy Ladd.

Capt Ladd and Harold Gatty first flight to Nadi 1st. Sept 1951

As the company expanded, two more Rapides and a DH Beaver were added to the fleet. Then in 1954 the three engine, Australian built, DH Drover was introduced to replace the Rapides. Gatty died in 1957 and his widow then sold the company to Qantas (how the world turns!).



Fiji Airways DH drover

In 1959, now under Qantas management, Fiji Airways introduced the DH Heron Mk 1 aircraft and began services to Tonga and Samoa, and later to the Solomons via New Hebrides (as Vanuatu was then known). The value of these feeder services to the international airlines operating through Nadi was demonstrated in 1960 when BOAC and TEAL each subscribed $120,000 to become equal shareholders with Qantas. Management remained with Qantas.

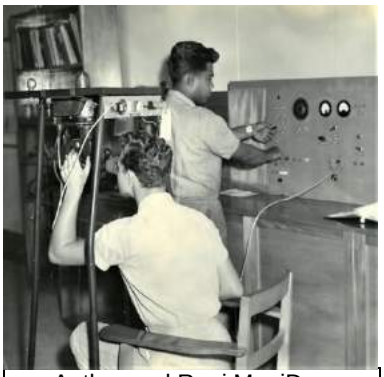
DH Heron low over Fiji's Korolevu beach resort

By 1964 flights to the Gilbert and Ellis Islands (now Kiribati and Tuvalu) were commenced and the DH Heron Mk 2 with retractable undercarriage was introduced. This was also the year that the company introduced the first Aircraft engineering apprenticeship scheme in Fiji. And that brings us to the beginning of these stories as the author was the first of those apprentices.

The apprentice years: When this story starts in 1964, the General Manager was Captain Ritchie and the Chief Engineer was Ken Boehm. Although I was officially the first apprentice there were three others already employed as trainees and we were all signed up at the same time. The apprenticeship contracts were formal documents printed on large, light blue, sheets of heavy paper. They were full of legal terminology and tied with government tape. Yes, the term 'red tape' is real. The contract was for five years which seemed an unbelievably long time, but in hindsight went very quickly. We signed on 2 January 1964.The pay rate was two shillings and sixpence per hour.

We were to receive our theory training at what was then the R. A. Derek technical school that had recently been built in Suva. Problem was they had no aviation instructors, so we enrolled in the automotive course. Then the British government sent an instructor from the UK to teach us. It seems the Colonial Service had one of its well-known glitches because the well-meaning young man who

arrived came from the English engineering file manufacturer 'Wilshire files' and knew absolutely nothing about aviation.
After a year of this, and with some heavy protests by Fiji Airways, a second British instructor arrived. What a difference! Forester Lindsay had been part of the design team for the famous Spitfire aircraft and had been responsible for the fuel system and later modifications to the flying control surfaces. Now we really did begin to learn theory of flight, aircraft engines and the standards, and regulatory regime of aircraft engineering. At the end of 5 years all of us became LAMES


Author and Roni MuniDeo calibrating a periscopic sextant

Pioneering flying: By 1965 Fiji Airways had a total of seven Herons and flew them throughout the Pacific. It was pioneering flying; navigation was by non-directional beacon (NDB), a World War II bomber drift sight stuck through a hole in the side of the fuselage, and a periscopic sextant mounted in the forward roof escape hatch. The first officer, who doubled as navigator, sat on the front right-hand passenger seat crosswise across the aisle. To allow him to do this, we had cut away the inboard armrest of the seat. The seat opposite was removed, and a navigation table installed. No calculations on 'G' forces in those days; and don't get the idea this was sophisticated. It was a piece of plywood screwed to the cockpit bulkhead and supported from the hat rack at the rear by alloy hooks. Note: hat rack – not overhead bin.


Capt Shearer navigating across the aisle credit Kennedy/Shearer

A 'Travelling Ground Engineer '(TGE) was a part of the crew on these flights. He carried a box of spares and his own toolbox, but he was also the flight hostess. When the aircraft landed at an outstation he would rush out, check the engines, dip the oil, supervise the refuelling with a hand pump from 44-gallon drums, take a fuel drain and check it, organize a change of the toilet (which was a tin can in a little cubbyhole at the back of the aircraft) and do the engineering walk-around inspection. He would then give the clearances to start the engines and climb in though the back door trying not to be blown away by the slipstream.
After take-off the engineer then morphed into being the flight attendant. We served sandwiches and soup, and occasionally milky coffee. Trays of sandwiches were stored in the hat rack and the coffee and soup were in thermoses jammed behind the last seat in the aircraft next to the toilet. The 'catering' was prepared by whatever local hotel was en-route to the airport. The crew would pick up the sandwiches, soup and coffee, then carry on to the aircraft.
The airfields we flew into were all World War II fighter or bomber strips. In the case of the Gilbert and Ellis islands these were simply coral dredged from the lagoon and laid on the sandy surface of an atoll. This worked quite well because the coral was crushed and, as it dried, it bound itself together almost like concrete - except for a continuous surface dust like talcum powder. Because of the horseshoe shape of these atolls both the approach and departure would be over water.
The airstrips were only a foot or so above high-water mark and were regularly affected by the wind and waves of passing storms. Funafuti was interesting because at spring tide you could dig your heel into the grass runway surface and watch water well up into the hole. This in turn gave rise to an algae growth on the surface of the runway that could be slippery at times.
Notwithstanding the local airfield manager, we would always do a low fly-past over these fields before landing to chase away the pigs, dogs, chickens, and kids who used the runway as their playground. The passenger terminals ranged from reasonably sophisticated buildings to World War II sheds. I regret now not photographing the terminal at Funafuti which was a small corrugated iron roof mounted on coconut posts, with no walls, proudly bearing a large sign, longer than the building, saying 'Funafuti International Airport'.
Several of these strips had no electrical lighting for the runway, and sometimes the lighting failed on those that did. On occasion we were caught out and had to land after dark. The airports had stocks of World War II 'gooseneck' lamps that burnt kerosene. These would be placed down each side of the runway and the cotton wicks lit. Quite exciting, especially for the passengers!

The Test Truck: The company had converted an old wartime Nissen hut into an overhaul shop for the Gipsy Queen 30 and Gipsy Major 10 engines. These were then test run on a homemade test truck. This was simply an old chassis on wheels with a galvanised water pipe frame on one end to mount the engine, and an enclosed galvanised iron cab at the other end that was, partially at least, soundproofed. On top of the cabin was a 44-gallon drum of hundred octane fuel with pipes running to a fuel control panel in the cabin and from there through fuel flow gauges and on to the engine.
There was a panel of other gauges to measure RPM, cylinder head temperature, oil pressure and temperature, and control levers for throttle and fuel mixture. The test propeller was fixed to a course pitch to load up the engine, and then reset manually to various finer settings during the tests. The exhaust pipes were open stub pipes cut to different lengths to tune the exhaust – very loud and with amazing red/blue flames. These we watched carefully through the glass window for length and colour.
This test truck was famously the centre of a rather funny event that occurred in December of 1965. We needed to overhaul the instrumentation, electric circuitry, and fuel pumping system for the truck, so the then new Qantas Engineering Manager, Grahame Marriot, submitted a capital expenditure request to the Board for their consideration at the mid December meeting. Being good fellows, the Board decided that they would take the opportunity to visit the troops at Nausori Airport, shake a few hands, issue some Christmas wishes, and inspect the test truck before making their decision. This was fine in principle, but when they opened the door of the test truck there inside, bubbling quietly away in four-gallon drums, were several mixes of home brew. This was known at the time as 'raisin jack' and my fellow apprentice Atu Waga was the chief brewer on behalf of the staff Christmas party. He had found that the hot, stable temperature inside the truck cabin was ideal for this purpose. Grahame Marriott was aghast. There he was, fresh on secondment from Qantas, and arguing the case for his first ever Board paper. The Board quickly left the scene leaving Grahame to invoke hellfire and damnation on those involved. Still, they did approve the expenditure, so I guess all was well. There was an irony in this; the reason for the brew was that, following a riotous Christmas party the previous year, the Board had reduced the budget for booze, so necessitating the raisin jack. And there was a sequel. Grahame's instructions to destroy the brew resulted in only a token gesture and at an appropriate moment during the following week's party the brew was produced with much fanfare by Atu and his fellow brewers.
The last I recall of that party was seeing Grahame Marriott driving his company-provided Holden station wagon down the grass cross strip of the airport to the village at the far end. The car was packed with bodies and there were people lying on the roof and on the bonnet. In the best tradition of Japanese company drinking parties, the next day discipline returned to normal, no one spoke of what had happened, and Grahame had endeared himself to his staff.
The missing control column: One morning we were dispatching a Heron from Nausori to the Solomons via New Hebrides. The aircraft was a charter flight carrying American returned servicemen and their wives who were revisiting the battlefields of Honiara. Now, when the Heron operated domestically it did so with one pilot – ah, the good old days – but for the regional flights we installed the second control column in the first officer's position. This was not unusual and was a design feature of the aircraft. However, on that morning I had forgotten to install the second control column, and nobody noticed until after the engines had started. No problem, the first officer opened the little direct vision window in the cockpit and called out. I got the column from the engineer's hut and handed it through the window to him. Whereupon the back door of the aircraft opened and out jumped a reasonably elderly lady exclaiming in a loud voice that there was no way she was going to travel on that aircraft. Looking at it from her point of view I guess one can understand and sympathise. We shut the engines down, disembarked the passengers, and then I gave the first of what subsequently became many engineering lectures on how the control systems on this aircraft worked. I took the lady to the cockpit and showed her physically how the control column was inserted and locked into place. It took a while, but we did get them convinced and the aircraft departed.
How on earth do you write up that event in the delay report?
Remote Engine changes: As engineers we were very proud of our on-time dispatch record and, considering the pioneering environment with very limited resources, there is probably some justification in this pride. The one thing that got us every time though, was those pesky Gypsy Queen 30 crankcase cracks. They occurred completely at random, sometimes even with new crankcases.

When it happened it was quite spectacular, especially on the inboard engine and some three to four hundred miles from the nearest island. The cracks would occur between cylinders three and four, midway along the case, which then allowed all the engine oil to leak away very quickly. Given the slipstream of the propeller, the oil would spread rapidly over the engine cowlings, fuselage, wing and flaps. This usually caused quite a lot of excitement for the passengers sitting adjacent to the engine line. We carried enough spares and ingenuity to get us home on almost every occasion, but there was simply no repair for these cracks, and it meant an engine change.

The pilot would radio Nausori control tower and the engineers on tarmac duty would be given the message. Sometimes it was simply shouted down from the little veranda that ran around the top of the tower. This was then relayed to the hangar crews, in person, on a bicycle. The hangar engineers would quickly load a spare engine (kept fully rigged for this purpose) into a relief aircraft and a specially selected 'engine change team' would head off as soon as the pilots could get there. Sometimes within an hour or so of receiving the engine failure message we were airborne. I was one of those on the team and many are the times when I went to work in the morning and didn't come home for several days.

Heron engine changes in the field were relatively easy, and we did enough of them to have the whole process down to a fine art. The lifting gantry, spare engine, parts and extra engineers all fitted easily into the relief aircraft and we could have the unserviceable aircraft airborne within four or five hours of the spare engine arriving. It usually meant only one extra overnight in the field for passengers and crew; and given we typically only carried twelve to sixteen passengers and three crew, this could usually be managed.

The RR Dart engines on the HS 748s we introduced in 1968 were an entirely different kettle of fish. One of the more difficult infield engine changes on the 748s was in June '74 at Funafuti in the Ellis islands (now Tuvalu). Accommodating forty passengers, two pilots, two hostesses and the engineer at that tiny place was not easy as it had only one hotel of seven rooms. But several opted to stay with local families and we managed. At that time the company had only three 748s and this meant that two were out of service for several days as we had to use one of these to ferry the spare engine to Funafuti. As you might imagine this was a major scheduling problem for our reservations people and our passengers.

One of the problems was trying to fit two 748s on the runway together at Funafuti. This is truly a very small atoll and the runway at that time was a World War II grass strip. It starts at the bottom corner of the island and ends almost at the other; and it is the local playing field when we were not there. We got the islanders to help us push the unserviceable aircraft off to one side of the field and into an area we cleared near the tiny shed that was the Funafuti International Airport terminal.

There were several other logistical problems: how to get the spare engine out of the hold, how to lift it into place, and how to lift off, and hold, the prop. We had the special Dart gantry to haul the engine out of the forward hold of the relief aircraft, but this was on small steel castor wheels and these immediately sank into the grass strip. The only machinery on that atoll were a few motorbikes, outboard engines and a single flatbed truck. What we did was to cut down the 2.5 inch galvanised water pipe flagpole at the terminal, the one at the school, and another one at the Government offices.

From this we fashioned a tripod. Then, by using this, a block and tackle, the engine gantry, and an awful lot of manpower, we could move the spare engine out of the aircraft onto the flatbed. We removed the prop from the unserviceable engine using our gantry, and then got some hefty locals to carry it to one side to rest on some old tyres. Then we lowered the failed engine on to some tyres, pushed the aircraft to a new position by hand, lifted the serviceable engine off the back of the flat bed, drove the flat bed away and pushed the aircraft to the engine. Then we carried the prop to the new engine, picked it up with our gantry and finished the work.

The job was a success, but before leaving the island we had to weld the flagpoles back in place!

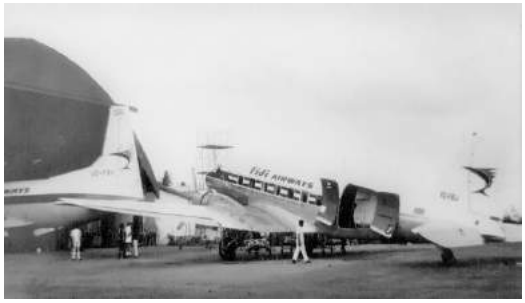
Hurricanes and aircraft: Hurricanes are a fact of life in Fiji, and with them is the torrential rain beyond anything that people in temperate climates could imagine. This of course gives rise to flooding. The Fijian name for the area where Nausori Airport is located is Luvu Luvu which means

flooded land. It is in the delta area of the Rewa River and floods were a regular occurrence during my engineering days.

We developed a regular routine once a hurricane warning had been received. Where possible the aircraft were flown out to Tonga or Samoa. The alternative was to stake them to the ground in the open using a system developed during World War II. This was two six-inch-long pieces of galvanised water pipe welded to form a cross. Through each of these we drove long spikes of steel into the ground and the tie-down ropes went around the cross of pipe. They were very effective. The alternative 'dead-man' system was the one described in the DC3 maintenance manual. This was to bury a block of wood tied to the end of a rope deep into the ground. This latter didn't work in the sandy, muddy, flooded Nausori ground.

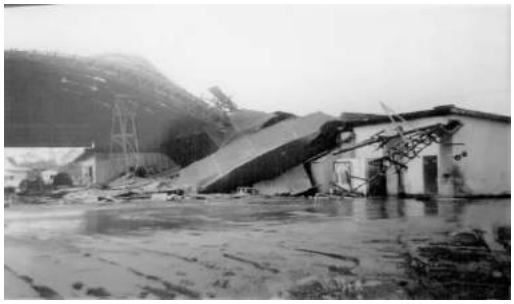
We developed another trick as well, and that was to use long thin bags of sand, some made from old canvas fire hoses, which we laid along the top of the wings just at the point of lift. This broke the airflow over the aerofoil section and prevented the aircraft getting airborne while stationary in winds of over 120 miles per hour. All very clever except sometimes they got blown off.

It says something for the ingenuity, planning, and resourcefulness of the traffic officers, engineers, pilots and other staff of Fiji Airways that we could be operational again within a few hours of the hurricane passing. This was particularly important as on several occasions our aircraft were used to carry relief supplies to areas that had been affected.



Nausori Hangar prior Hurricabe Bebe

When a hurricane was imminent, we would prepare the aircraft, lift everything we could on to the work benches and get ready for both the wind and the inevitable flood. We then sent most of the staff home, leaving a handful to stand by and see out the hurricane at the airport. The emergency rations of Pacific Biscuits and tinned meat became the only source of food, sometimes for two or more days. Believe me, you were ready for a change, and a change of clothes, at the end of that time. We joked that the biscuits would make you fart dust.



And post Bebe

An airline grows up: In 1965 the Fiji Govt became a fourth shareholder and Hawker Siddley 748 turboprops were introduced. In the late '60's other Pacific Governments purchased shares and in 1971 the name was changed to Air Pacific. BAC 1-11 Jets were introduced in 1972 and international services began to Australia and New Zealand. The company continued to grow albeit financially weak. B737's were introduced in 1981 and a financially disastrous DC10 lease in 1983 brought the company to its knees. Again, Qantas stepped in and provided management under John Schaap. DC10 operations were terminated and financial discipline returned. The author became CEO in 1988 in the aftermath of Major General Rabuka's coups. Despite the coups, the company went on to become a financially sound carrier of more than 50% of Fiji's tourists - a position it still holds today, now again called Fiji Airways.

Fiji Airways HS748, DC3, and a heron at Nausori airport near Suva 1967. It's the only pic I've ever seen of all three together

Andrew Drysdale FRAeS

More MQ-25 Unmanned Refuelling Aircraft for United States Navy:

Boeing has been awarded a contract modification to provide three more MQ-25 unmanned refuelling aircraft for the USN, bringing the total order number to seven. The modification is worth $84.7 million and exercises options for system demonstration test articles, which was stated as part of the original August 2018 deal. Dave Bujold, Boeing's MQ-25 programme director, said: 'The MQ-25 programme is vital in ensuring the Navy can deliver a critical unmanned aerial refuelling capability to the carrier air wing'. Boeing

recently completed the first round of testing for the MQ-25 test asset (known as T1) which involved nearly 30h of flight time at various speeds and altitudes.

Raytheon Technologies Corporation: announced the successful completion of the all-stock merger of equals transaction between Raytheon Company and United Technologies Corporation on April 3, 2020, following the completion by United Technologies of its previously announced spin-offs of its Carrier and Otis businesses. Headquartered in Waltham, Mass., Raytheon Technologies is one of the largest aerospace and defense companies in the world with approximately $74 billion in pro forma 2019 net sales and a global team of 195,000 employees, including 60,000 engineers and scientists. Raytheon Technologies has four market-leading segments focused on high-priority areas for customers:

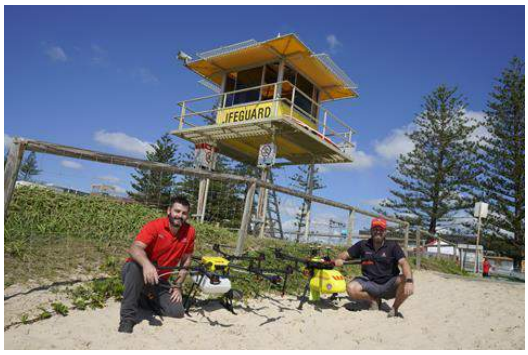
- **Collins Aerospace Systems** specializes in aerostructures, avionics, interiors, mechanical systems, mission systems and power controls that serve customers across the commercial, regional, business aviation and military sectors.
- **Pratt & Whitney** designs, manufactures and services the world's most advanced aircraft engines and auxiliary power systems for commercial, military and business aircraft.
- **Raytheon Intelligence & Space** specializes in developing advanced sensors, training, and cyber and software solutions — delivering the disruptive technologies its customers need to succeed in any domain, against any challenge.
- **Raytheon Missiles & Defense** provides the industry's most advanced end-to-end solutions to detect, track and engage threats.

RAAF CELEBRATES 99TH BIRTHDAY: On Tuesday March 31 the Royal Australian Air Force celebrated its 99th birthday. Established in 1921, the RAAF is the second oldest independent air force in the world and is now viewed as one of the most modern. Commenting on the anniversary, Chief of Air Force, Air Marshal Mel Hupfeld, AO, DSC, pointed to the role the Royal Australian Air Force has played in recent Australian emergencies, including nationwide bushfires and the current COVID-19 crisis. "It's been a tough start to the year but I'm incredibly proud of the way our people have supported the community," Air Marshal Hupfeld said. Australian Minister for Defence, Senator the Hon Linda Reynolds CSC, also paid tribute to Royal Australian Air Force personnel, past and present. "Thank you to those generations of men and women for your dedication and many acts of courage," the Minister said. "And thank you to those who serve today - you are part of a proud tradition. May you continue to serve with excellence." AVALON 2021 will be a cornerstone event in the Royal Australian Air Force's Centenary celebrations.

Westpac Little Ripper drones – fight against COVID-19: The Ripper Group, home of the Westpac Little Ripper drones, recently demonstrated the ways drones can be utilised in the fight against COVID-19. Currently working with authorities in Queensland, The Ripper Group is exploring how the company's specialised drones can assist during the COVID-19 pandemic, to reduce the spread of the disease and keep communities safe.

Westpac Little Ripper COVID-19 Spray drones in action
in a park at Mermaid Beach, Qld

The Ripper Group CEO, Ben Trollope said the two areas where Westpac Little Ripper drones can be a key tool in responding to the threat COVID-19 are in aerial spray and disinfection, and crowd control. "Through environmentally friendly active disinfectant agents we can neutralise the Coronavirus in public places on surfaces in places like playgrounds, malls, public gyms, public transport areas, sporting arenas, schools, universities, hospitals, child-care centres, aged-care facilities, shopping centres, supermarkets, factories and warehouses," he said.

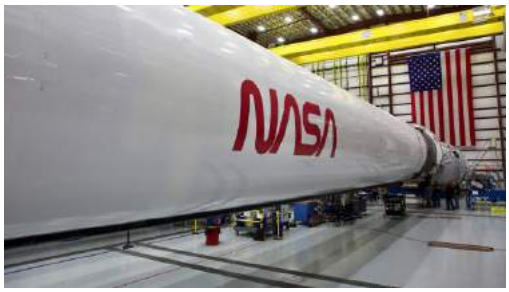


Westpac Little Ripper - CEO Ben Trollope with spray drone & SLSQ Jason Argent with speaker drone

The Westpac Little Ripper drones are also able to fly over public areas such as beaches and parks with cameras with

live video feed and loudspeakers to tell people to move on. "Using drones protects the lifeguards and police by allowing safe social distancing and does the job quickly and efficiently. This will protect first responders and front-line personnel," Mr Trollope said.The Ripper Group is working in collaboration with its global partner DJI out of China. DJI was engaged by the Chinese Government at the height of the pandemic outbreak in China, disinfectant spraying an area in excess of 600,000,000m². "These initial undertakings serve as a model for other countries looking to respond to the current health crisis. Longer term, they can provide lessons for how public and private health systems can incorporate drone technology into their planning to mitigate future pandemics," Mr Trollope said.
See The Ripper Group exhibit at ROTORTECH 2020 – Refer further details: https://www.rotortech.com.au/visit/registration.asp

NASA's Iconic Logo is coming back into Orbit: In 1992, NASA retired its iconic 1975 "worm" logotype in favour of the original 1959 "meatball" logo, which features a blue planet behind an orbiting spacecraft and the agency acronym in white serif type. Now NASA is bringing the worm back. The worm logo, designed by Richard Danne and Bruce Blackburn in 1975, "will help capture the excitement of a new, modern era of human spaceflight," NASA says. It will appear on the side of the Falcon 9 launch vehicle that's scheduled to take astronauts to the International Space Station in mid-May and will commemorate "the return of human spaceflight on American rockets from American soil," NASA says. The agency is still determining how and where else the logotype might be used, as the meatball logo will remain the agency's primary symbol.



NASA introduced the worm logotype to solve functional issues that arose with the meatball. The meatball has a lot going on, and by the 1970s, NASA found the icon difficult to reproduce. "Many people considered it a complicated metaphor in what was considered, then, a modern aerospace era," NASA writes. The logotype is starkly pared down in comparison to the previous design, relying on sleek, curvy type that's both minimalist and innovative, connecting the ligatures of the A and S, and even removing the bars of the As to bring NASA's message down to the bare essentials. Although the worm logo was retired in 1992 (except "on clothing and other souvenir items," NASA says) it has retained a cult following in the design world—diehard fans can even buy the original standard manual. It also saw a huge brand extension over the years, appearing in unofficial collaborations across the fashion industry. "It seems the worm logo wasn't really retired," NASA says in announcing the logo's return. "It was just resting up for the next chapter of space exploration." Refer for more NASA Logo information: www.nasa.gov/symbols-of-nasa

Podcast – Deep Dive: In an exclusive interview, Shephard Media's Air Editor Tim Martin speaks to Sir Brian Burridge FRAeS, CEO of the Royal Aeronautical Society about UK air power and key RAF acquisitions like the E-7 Wedgetail AEW&C platform and Protector UAV. They also discuss the role of the RAeS and its members on the next-generation Tempest fighter programme. Whilst the Podcast is some 51 minutes in length this interview commences some 17 minutes from the start - www.shephardmedia.com/news/defence-notes/podcast. Acknowledgement The Shephard News Team

The CAMCOPTER® S-100: Schiebel, together with partner Nordic Unmanned, successfully completed a two-day test of its sniffer capability on board the CAMCOPTER® S-100 UAS in the shipping lane outside Gniben, Denmark. Ships operating in Europe's busiest sea routes are permitted to emit exhaust fumes with a sulphur oxide content limited to no more than 0.1 percent. Amongst other solutions that were put in place to enforce this International Maritime Organisation (IMO) 2020 regulation, one option is to use Unmanned Air Systems (UAS), such as the CAMCOPTER® S-100, equipped with a sulphur sniffer. The UAS flies through the ship's exhaust plume to measure the sulphur emissions and uses its Automatic Identification System (AIS) to identify the ships. The

CAMCOPTER® S-100 performed two successful flights of about four hours during the trial and provided compliant measurements of sulphur emissions. The certified sniffer provides live readings of the sulphur level in the ship's exhaust plume. In addition to the sulphur sniffer and the AIS, the CAMCOPTER® S-100 was equipped with an L3 Harris Wescam MX-10 real-time Electro-Optical/Infra-Red (EO/IR) camera.

Knut Roar Wiig, CEO at Nordic Unmanned said: "Due to the extensive operational experience in the maritime area as well as its endurance and ease of deployment, the CAMCOPTER® S-100 is the ideal aircraft to sniff out the polluters. The measurement test scored 10 out of 10 points and we demonstrated our capability as an operator and ability to quickly get the required authorisations to deploy and fly the service. We really look forward to helping maritime authorities in Europe and other parts of the world to enforce the IMO 2020 regulation by deploying our crew and the CAMCOPTER® S-100 to conduct sulphur emission monitoring. If a ship is not following the regulations, we will definitely sniff it out.

Loyal Wingman achieves 'Weight on Wheels' and power-on milestones: Boeing Australia has achieved two more development milestones with the first prototype of Loyal Wingman, an unmanned aircraft being developed for the Royal Australian Air Force (RAAF). The drone turned on its aircraft power and stood on its wheels for the first time, further advancing the development programme. Boeing Airpower Teaming System programme director Dr Shane Arnott said: "We're continuing at pace toward our goal of flying later this year, so that we can show our customer and the world what unmanned capability like this can do. "The strong contributions from our industry team are powering our progress." The company achieved the two new milestones nearly two months after structural assembly of the fuselage was completed.

Currently, Boeing is developing three prototypes as a part of the Loyal Wingman – Advanced Development Program in partnership with the RAAF. At the time when Boeing concluded the structural assembly on the fuselage, RAAF Director-General of Air Combat Capability Air Commodore Darren Goldie said: "The partnership with Boeing is key to building our understanding of not just the operational implications for these sorts of vehicles, but also making us a smart customer as we consider options for manned-unmanned teaming in the coming decade. "Boeing is progressing very well with its development and we look forward to seeing the final product in the coming months." The development of the unmanned aircraft involves 16 Australian industries, which are supporting key deliveries. Once complete, the 11.7m drone will have a range of around 2,000nm. It is expected to complete its first flight this year.

Space Surveillance Telescope Sees First Light Through US & Australian Partnership:

In partnership with the Australian Ministry of Defence, the U.S. Space Force's (USSF) Space and Missile Systems Center's (SMC) Space Surveillance Telescope (SST) Program recently achieved "first light" on March 5, 2020, reaching a key milestone after it was moved from White Sands Missile Range, New Mexico (initially achieved first light in 2011) to Harold E. Holt Naval Communications Station in Western Australia.

Towering tendrils of cosmic dust and gas sit at the heart of M16, or the Eagle Nebula, the aptly named Pillars of Creation,, or NGC 6611, taken by the SST.

"This key Space Domain Awareness, or SDA, partnership builds on the long history of close defence space cooperation between the United States and Australia and has been a cornerstone of our continued alliance," said Gordon Kordyak, SMC Special Programs Directorate Space Domain Awareness Division Chief, United States Space Force.

Moving the SST to Australia satisfied a critical objective to improve the broader USSF Space Surveillance Network's ground-based electro-optical coverage of the geosynchronous space regime. First light is a significant milestone in meeting this objective. It means that course alignment of the telescope optics with the wide field of view camera has been completed to allow the first images of objects in orbit to be seen by the telescope. "Whether it is space traffic management or the protection and defence of critical space-based capabilities, delivering sensors that continuously improve our ability to maintain real-time awareness of the space domain is essential to facilitate the broader needs of both the U.S. and Australia," said Lani Smith, SMC Special Programs Directorate Deputy Director. "The SST program, which is a jointly operated program, represents delivery of our next iteration of sensing capability to meet this need."

The Ground-Based Electro-Optical Deep Space Surveillance System is responsible for tracking thousands of objects in space.

The collaboration and installation of the SST in Australia included the successful completion of an Australian purpose-built facility with mission-enabling site infrastructure and a 2-Megawatt Central Power Station for powering the telescope and the site. Moving forward, SST will undergo a comprehensive integration and testing regime before officially entering service in 2022. Once operational, the SST will become part of the global Space Surveillance Network, providing Space Domain Awareness for the United States, Australia and their key allies. The Royal Australian Air Force will operate SST with oversight and management by the USSF 21st Space Wing once the telescope is operational.

DVT expert treats NASA astronaut from Earth: In an astounding example of technology advancing health care, a blood clot in the jugular vein of an astronaut aboard the International Space Station (ISS) has been treated via telemedicine. University of North Carolina School of Medicine blood clot expert and member of the UNC Blood Research Center Stephan Moll was contacted by NASA for his vast knowledge and treatment experience of deep-vein thrombosis (DVT) on Earth. This was the first time a blood clot had been found in an astronaut in space, so there was no established method of treatment for DVT in zero gravity. The astronaut's blood clot was asymptomatic (fails to show the noticeable symptoms with which it is usually associated) but was discovered when the astronaut was taking ultrasounds of the neck for a research study on how body fluid is redistributed in zero gravity.

"My first reaction when NASA reached out to me was to ask if I could visit the International Space Station (ISS) to examine the patient myself," Moll said. "NASA told me they couldn't get me up to space quickly enough, so I proceeded with the evaluation and treatment process from here in Chapel Hill." Although the astronaut cannot be identified, we know that the patient was two months into a six-month NASA mission on the ISS when the DVT was discovered.

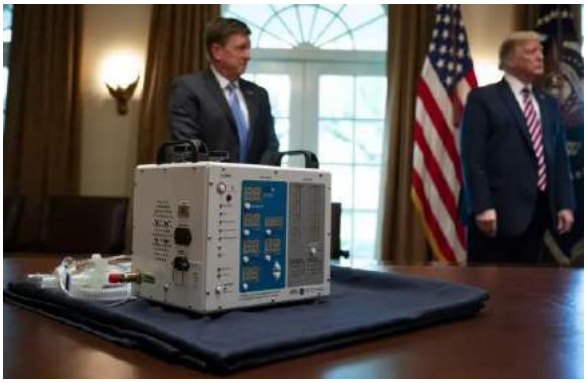
Moll explained that in a normal situation, a patient with DVT would be started on a course of blood thinners, which they would take for at least three months to prevent the clot from getting bigger and to lessen the harm it could cause if it moved to a different part of the body such as the lungs. "There is some risk when taking blood thinners that if an injury occurs, it could cause internal bleeding that is difficult to stop," Moll said. "In either case, emergency medical attention could be needed. Knowing there are no emergency rooms in space, we had to weigh our options very carefully."

Moll and a team of NASA doctors decided blood thinners would be the best course of treatment for the astronaut, but their pharmaceutical options were limited. The ISS keeps a small supply of medicines on board, and there was a limited amount of the blood thinner enoxaparin available. Moll advised NASA on what dosage of enoxaparin would effectively treat the DVT and last until NASA could get a new shipment of drugs — which Moll helped select — to the ISS.

Treatment aboard the ISS: Enoxaparin was delivered by subcutaneous injection (An injection given into the fat layer between the skin and muscle - to give small amounts and certain kinds of medicine) with the treatment lasting for about 40 days. On day 43 of the astronaut's treatment, a supply of apixaban — a pill taken orally — was delivered to the ISS by a supply spacecraft. Throughout the treatment process, which lasted more than 90 days, the astronaut performed ultrasounds of the

neck with guidance from a radiology team on Earth in order to monitor the blood clot. Moll was also able to speak to the astronaut during this period through email and phone calls.
"When the astronaut called my home phone, my wife answered and then passed the phone to me with the comment, 'Stephan, a phone call for you from space.' That was pretty amazing," Moll said. "It was incredible to get a call from an astronaut in space. They just wanted to talk to me as if they were one of my other patients. And amazingly, the call connection was better than when I call my family in Germany, even though the ISS zips around Earth at 17,000 miles per hour."
The astronaut stopped taking apixaban four days before the journey home — a decision made by Moll and his NASA counterparts because of how physically demanding and potentially dangerous the re-entry process can be for astronauts. They did not want an injury to be exacerbated by the use of blood thinners. The astronaut landed safely on Earth and the blood clot required no further treatment.
Moll continues to work with NASA and said there's a need for more research of how blood and blood clots behave in space. "Is this [DVT] something that is more common in space?" Moll asked. "How do you minimise risk for DVT? Should there be more medications for it kept on the ISS? All of these questions need answering, especially with the plan that astronauts will embark on longer missions to the moon and Mars."
The material for this case study was provided by University of North Carolina Health Care, with the study published in *The New England Journal of Medicine*.

Nasa develops ventilator tailored for Covid-19 patients in just 37 days:



'We know how to land on the moon and Mars, but building a medical device is new'

Engineers at NASA have developed a ventilator specifically designed to help coronavirus patients. The VITAL system – Ventilator Intervention Technology Accessible Locally – was created in just 37 days, the space agency says. Now, it has already passed critical medical tests and looks set to be fast-tracked for approval early next week. "We're rocket scientists and engineers, we know how to land on the moon and Mars," said Leon Alkalai, a technical fellow at the agency's Jet Propulsion Laboratory in California. "But building a medical device is new. We were humbled by that challenge to do something we've never done before for a good cause."
The prototype, which was shown to Donald Trump on Friday, works like traditional ventilators where sedated patients rely on an oxygen tube to help them breathe. But it is tailored to be more flexible and easier to maintain so it can be used more effectively in the field hospitals currently being set up in conference centres and hotels across the world. Because it has a life span of just three to four months – where traditional ventilators generally last several years – it is cheaper and quicker to build, NASA says.
"It goes against our culture to do something quickly in a domain where we're not experts," added Dr Alkalai. "But it fits with the JPL mantra: 'Dare Mighty Things'." Now, the California Institute of Technology is in the process of finding manufacturers to make the machine on scale after those early tests proved positive. "We were very pleased with the results in our high-fidelity human simulation lab," said Dr Matthew Levin who led that testing at the Icahn School of Medicine in New York. "The Nasa prototype performed as expected under a wide variety of simulated patient conditions. The team feels confident that the VITAL ventilator will be able to safely ventilate patients suffering from Covid-19 both here in the United States and throughout the world."
Speaking after those positive results were announced, Michelle Easter, a mechatronics engineer with Nasa, called the device a "crazy" project. "We have the potential to save human lives, people that we might know, our neighbours, our families, and that intensity is amazing," she said. "It's amazing, and as stressful as it's been for everybody in the last couple of weeks, not one of us can stop."

The Australian Youth Aerospace Association (AYAA): is a not-for-profit organisation run by and for students and young professionals to promote education, awareness, and involvement in the

Australian aerospace industry. The Royal Aeronautical Society Australian Division supports the AYAA through a Partnership Agreement.

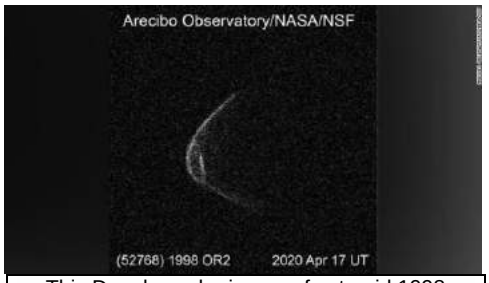
The AYAA hosts three major annual events; the Aerospace Futures conference (AF) for students and young professionals, the Australian Universities Rocket Competition (AURC) for undergraduate and postgraduate university students, and the Australian Youth Aerospace Forum (AYAF) for high school students. These are run in addition to numerous events hosted in every state, from networking to rocket projects; there are countless opportunities to get involved.

Covid-19 has dramatically impacted these events as follows:

1. **Australian Universities Rocket Competition (AURC)** launch date has been postponed till April 2021. However the documentation required to support the launch is continuing although the submission date is under re-view.
2. **Aerospace Futures (AF)** conference will transition to virtual content in 2020.
3. **Australian Youth Aerospace Forum (AYAF)** is going ahead in December and will be held in Brisbane for high school students.

Smaller state based events will be held as appropriate for each state.

The yearly **Spaceport America (SA) Cup,** which attracts international competitors, has also been cancelled for 2020 and the USYD Rocketry Team has re-scheduled their program accordingly including the rocket build as the university is largely inaccessible. To keep up to date with the changing environment refer: https://ayaa.com.au/ *Reporter: Muddasir Tahir, Sydney Branch Committee.*



This Doppler radar image of asteroid 1998 OR2 makes it appear as though the asteroid is wearing a face mask.

Giant asteroid flying by Earth next week looks like it's wearing a face mask

An asteroid estimated to be 1.2 miles wide flew by Earth on April 29 appearing to be wearing a face mask in deference to the pandemic, according to new images from Arecibo Observatory in Puerto Rico. The asteroid is called 52768 (1998 OR2), and it was first spotted in 1998. It passed within 3,908,791 miles of Earth, moving at 19,461 miles per hour - that's still 16 times farther than the distance between Earth and the moon. If it did impact Earth, the asteroid is "large enough to cause global effects," according to NASA, back when the asteroid was first discovered. "The small-scale topographic features such as hills and ridges on one end of asteroid 1998 OR2 are fascinating scientifically," said Anne Virkki, head of planetary radar at Arecibo Observatory, in a statement. "But since we are all thinking about Covid-19, these features make it look like 1998 OR2 remembered to wear a mask." Arecibo Observatory is a National Science Foundation facility managed by the University of Central Florida. A team of experts has been monitoring this near-Earth asteroid, among others. The observatory is supported by NASA's Near-Earth Object Observations Program and has been analyzing asteroids since the mid-'90s. During the pandemic, the scientists are continuing to make their observations on behalf of planetary defense. In line with social distancing, they have limited the number of scientists and radar operators at the facility, and they are wearing masks during observations.


Anne Virkki, the head of planetary radar at the Arecibo Observatory, wears her face mask with a range-Doppler radar image of asteroid 1998 OR2.

The asteroid was classified as a potentially hazardous object because it's bigger than 500 feet and comes within 5 million miles of Earth's orbit. The experts at Arecibo can monitor the asteroids and use observations to determine their path in the future to see if they pose a risk to Earth. "The radar measurements allow us to know more precisely where the asteroid will be in the future, including its future close approaches to Earth," said Flaviane Venditti, a research scientist at the observatory, in a statement. "In 2079, asteroid 1998 OR2 will pass Earth about 3.5 times closer than it will this year, so it is important to know its orbit precisely." It's the largest asteroid expected to zip by Earth within the next two months, but it's not the largest ever. That honor belongs to the asteroid 3122 Florence (1981 ET3), which flew by and luckily missed

colliding with Earth on September 1, 2017. It will make another pass again on September 2, 2057. That asteroid is estimated to be between two and a half and five and a half miles wide.

USAF eyes small flying car fleet by 2030: The USAF has launched a campaign to enter the **electric vertical take-off and landing (eVTOL) market**, setting a goal to have 30 flying cars in the service by 2030 as part of its Agility Prime initiative. This is an effort to accelerate support for the fledgling new aviation market, in the hope that it does not — like the small drone industry — migrate overseas. A five-day online event was hosted by the USAF, featuring leaders from the DoD and other branches of the federal government that would play a role in certifying a flying car, which the air force believes could revolutionise mobility. "What we've done with Agility Prime is put a strong demand from our military mission on this emerging market and made it clear to investors, regulators and innovators in this tech space that we want to get these vehicles certified,' Dr Will Roper, Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, announced in a 29 April media briefing. 'We want to start purchasing and buying them for military missions.

The USAF has committed $25 million in FY2020 to help kickstart the project and it is seeking opportunities for early adoption, with the potential for procurement and fielding by 2023. The air force is not funding R&D of these new air vehicles, leaving that work to private investors, but it will help finance testing, certification and eventually procurement. 'We're a great bridge market,' Roper said, arguing that the USAF will provide stability as new eVTOL makers work to convince regulators that this new class of vehicles are safe while scaling up production. 'There are going to be quite a few companies that can compete successfully in our series of Air Races,' he said. The three Air Race events — featuring proposed new vehicles with specific capabilities — are an important component of Agility Prime.

The air force has set a mid-December deadline for full-scale demonstration of three different variants. First is an eVTOL that can carry three to eight people as far as 100 miles (160km) in one hour. Another is a smaller vehicle to transport one or two people up to 10 miles with a speed of 45mph for at least 15min. A third eVTOL variant is an unmanned, cargo hauler. The USAF wants an aircraft with a 500lb (225kg) payload capacity, which can travel distances of more than 200 miles at speeds of 100mph for at least 1h 40min. 'When there is a revolution in new technology, we're accustomed to that coming with a jump in price,' Roper said. 'It is very unusual in the history of aviation to have a jump in performance and decrease in price.' However, he said this is possible because eVTOLs are leveraging technologies developed by the automotive industry, particularly hybrid and electric vehicles.

Berkshire sells entire stakes in U.S. airlines: Buffett: Berkshire Hathaway Inc sold its entire stakes in the four largest U.S. airlines in April, Chairman Warren Buffett said Saturday at the company's annual meeting, saying "the world has changed" for the aviation industry. The conglomerate had held sizeable positions in the airlines, including an 11% stake in Delta Air Lines, 10% of American Airlines Co, 10% of Southwest Airlines Co and 9% of United Airlines at the end of 2019, according to its annual report and company filings.

Airline stocks have been hard hit by the near collapse U.S. travel demand amid the coronavirus pandemic. U.S. airlines are cutting hundreds of thousands of flights, parking thousands of planes as U.S. travel demand has fallen by about 95% and there is no clear timetable for passengers to return to flights at pre-crisis levels.

Buffett said the airline industry's outlook rapidly changed. "We made that decision in terms of the airline business. We took money out of the business basically even at a substantial loss," Buffett said. "We will not fund a company that — where we think that it is going to chew up money in the future." Berkshire disclosed on April 3 it had sold about 18% of its Delta stake and 4% of its Southwest shares. Buffett said Berkshire had invested around $7 billion or $8 billion amassing stakes in the four airlines including American Airlines Group Inc. "We did not take out anything like

$7 or $8 billion and that was my mistake," Buffett said at the company's annual meeting which was livestreamed. "I am the one who made the decision."
Southwest, American and United declined comment. Delta said in a statement it was aware of the sale and has "tremendous respect for Mr. Buffett and the Berkshire team." The airline added it remains "confident that the strengths that are core to Delta's business – our people, our brand, our network and our operational reliability – will endure and position Delta to succeed."
One of Warren Buffett famous quotes: "If a farsighted capitalist had been present at Kitty Hawk, he would have done his successors a huge favour by shooting Orville down," Buffett wrote in his 2007 annual letter. "Investors have poured money into a bottomless pit, attracted by growth when they should have been repelled by it."

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100 years - the Spirit of Australia: "The story of Qantas is the story of modern Australia – past, present and future. It's a remarkable and unlikely tale of how a humble air mail operation in outback Queensland became a national carrier flying over 50 million passengers a year. It's a story of service – through peace, war, natural disaster and national celebration. It's a story of innovation – from a 31-stop, 12 day flight to London, to operating the world's first non-stop flights between Australia and Europe. But most of all, it's a story shared by all Australians. Thanks for joining us in Qantas' Centenary year as we celebrate that story and look towards creating new stories for future generations to tell." Alan Joyce, Chief Executive Officer and Managing Director, Qantas Airways Limited. Refer for further details: **qantas.com/au/en/100-years-of-the-spirit-of-australia**

2019 Annual General Meeting

Royal Aeronautical Society Australian Division Sydney Branch Inc

Date: **Wednesday 24th June 2020** Time: **Commencing 18:00 hours - sharp**

The Sydney Branch Committee invites Members to attend the 2019 AGM which will be held via a Zoom Webinar. Registration for the 2019 AGM Webinar is required in advance.
To register please click on the following link: **https://us02web.zoom.us/webinar/register/WN_4rSvjwlAT9WJiloFLq0mPg**

After registering, you will receive a confirmation email containing information about joining the webinar. Additionally, 10 minutes before the commencement of the 2019 AGM Webinar a ten minute reminder will be automatically sent to all who had registered.

2019 AGM Agenda

PRESENT: Members to sign attendance book. **APOLOGIES:**
PREVIOUS MINUTES: Minutes of the 2018 AGM, discussion and motion to accept.
BUSINESS ARISING: Discussion and motion to accept.
CHAIRMAN'S REPORT: Presentation of the 2019 Annual Report, discussion and motion to accept.
TREASURER'S REPORT: Presentation of 2019 Financial Statement. (Audited report will be sent with the June, 2020 Newsletter) discussion and motion to accept.
ANNUAL ELECTIONS: The Hon Secretary to report on Nominations received for the classes of Committee by the due date Tuesday 2nd June 2020 and, should there have been more Nominations received than positions available for any of the classes, the result of elections.
APPOINTMENT OF HONORARY AUDITOR: Mr Stephen Howard, Harrison and Howard.
GENERAL BUSINESS: Any business raised and accepted by the Chairman.
CLOSE OF AGM: Thank you for attending the AGM and the Committee looks forward to your continued support.

2020 Committee Nomination Form: Should you wish to nominate for the 2020 Committee, please complete the Nomination Form below and follow the instructions.

2020 Committee Nomination Form: **Send to:** The Honorary Secretary, RAeS Aust Division Sydney Branch Inc, 88 Trafalgar Street, Annandale, NSW 2038 or Email: sydneybranch@raes.org.au (please ensure that Nomination Forms have been correctly signed)
The 2019 Sydney Branch Annual General Meeting is to be held on Wednesday 24th June 2020, at 18:00 hours, in the **Mechanical Engineering Theatre, Mechanical Engineering Building, University of Sydney**. In accordance with the Branch Rules of the Sydney Branch of the Royal Aeronautical Society Inc passed at the AGM held 7 March, 2018, nominations for the Committee are called and shall be made in writing and signed by one member of the Branch and countersigned by the Nominee. The Committee consists of one Chairman, and 3 Student Representatives, who hold their positions for 12 months, and 10 Ordinary Committee Members (in total 14 people). The 10 Ordinary Committee Members will have a term of 2 years. As stated in the Sydney Branch Rules approved 7 March, 2018, half of the 10 successful candidates elected at the 2018 AGM will hold office for one year whilst the remaining five will hold office for 2 years. The 2019 Committee determined that the five Ordinary Committee Members who will hold their positions for a 1 year term will be: David Adkins MRAeS, Timothy King, Jeffrey Lock Affiliate, Peter Marosszeky FRAeS, and a vacant position (not filled at the 2018 AGM). Nominations are therefore called for the aforementioned 5 Ordinary Committee Members, Chairman, and 3 Student Representatives.
Please forward completed Nomination Forms to the Branch Honorary Secretary at the address above by Tuesday 2nd June 2020 which is at least twenty one (21) days prior to the 2019 Annual General Meeting.

I .....*(Nominator's Full Name)*
of .....*(Nominator's Address)*

nominate .....(*Nominee's Full name)*
of .....*(Nominee's Address)*

as an: Ordinary Committee Member / Student Representative / Chairman *(delete 2 of these classes as appropriate)* for the Sydney Branch of the Royal Aeronautical Society Australian Division for the Year 2020.

Signed:.....Date:.....Member Number:.....*(Nominator)*

Signed: .....Date: .....Member Number:.....*(Nominee)*

Tel contact: .....*(Nominee)* ***email:*** **.....*(Nominee)***

NOTE: PLEASE USE ONE FORM FOR EACH NOMINATION

Office Use Only: Nomination received by the Sydney Branch Hon Sec:.....*(Initials)*.....*(Date)*

CHAIRMAN'S 2019 Annual Report

ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION
¶SYDNEY BRANCH INC

Lecture and Events Program 2019

2019	Coord	Speaker/Event	Topic/Purpose	Venue	Attendance	Facebook/ Streaming*	EA CPD (hrs)

20 Feb	DA	Capt Georgina Sutton Mgr Base Ops Sydney International Qantas (ex JQ Chief Pilot)	Fabric and Wire to Wires and Plastic	USyd PNR	58	-	1.5
5 March	HT/JL	International Eminent Speaker	Dr Billy Fredriksson Swedish Aeronautics – Industry, Research, Technologies and Innovation	EA 8 Thomas St Chatswood	110	-	1.5
10 April	DC	Greg Ferguson Director, Rumour Control	Unlearned and Forgotten Lessons for today's Defence Forces from the Spitfire and Hurricane+AGM	USyd Mech Eng	44	-	1.5
4/5 May	BS	*Wings over Illawarra*	*RAeS Stall*	*Albion Park*	-	-	-
17 May	*DC/JL*	*UNSW Mech/ Mechatronic Prizegiving*	*Warwick Slade Memorial Prize Presentation*	*UNSW Ainsworth Bldg L5*	-	-	-
22 May	JL	Geoff Raebel	RAF Bomber Command	USyd Mech Eng	33	60	1.5
12 June	DC/PM	Fellows/Companions Reception	Networking & acknowledgement	Kirribilli Club 1800-2000	-	-	-
26 June	-	*AD Safety Event*	*Cyber, Risk & Mental Health*	*Four Seasons Sydney*	-	-	-
4 July Thursday	DC	Graham Millett, CEO Western Sydney Airport	Western Sydney International Airport	USyd Mech Eng	45	31	1.5
16-19 July	MT/BG	*AYAF Sydney*	*USyd – ctee support*		-	-	-
31 July	DC/JV	USyd Rocketry Team	Lab Visit/IREC Experience	USyd Mech Thtr & Aero Lab	25	-	1.5
4 Sept	DC	Anntonette Dailey, Exec Director, Australian Space Agency	Celebration of the Moon Landing: 50 years ago and The Australian Space Agency – 1 year on	PHM	43 (~70% NM)	23	1.5
19 Sept		*AIAA Sydney Students Industry Night*	*Careers Event*	*USyd*	-	-	-
23 Sept		*AVSOC Careers Expo*	*Careers Event*	*UNSW*	-	-	-
8 October	JL/DC	Matt Hall KS & Industry Forum	A Life of Flying	Refectory USyd Holme Bldg	85	11	1.5
19 November	*MC*	*AD Cool Astronautics*	*School Introductory Session*	*Qantas HO*	*20*	-	-
11 Dec	DC	David Kelly Senior Sales Director	100th Anniversary GE Aviation	USyd Mech Eng	42	-	1.5

Report

1. Deliver services in accordance with the Branch Purpose that members value:

As you can see from the preceding table we had another busy year!! Credit for this needs to go to our Committee. Sydney is very fortunate to have a very active committee, and this shows in the amount of work we get through. Apart from the quality and quantity of the events, it's worth noting:

- Our activities are broadening out from just facilitating lectures to include things such as careers nights, conference participation with the Division and Cool Aeronautics.
- Facebook streaming of lectures is growing. The numbers of people accessing this facility can be seen from the table. I continue to believe that this innovation will become an essential service to our members especially in outer Sydney and regional New South Wales where physical attendance is difficult. Being able to share lectures across all branches will be a fabulous addition to our value proposition to members.
- Matt Couts is developing our Cool Aeronautics capability – more on this in 2020.
- We held another Fellows evening to honour our new fellows and for all the fellows in the Sydney region to do some networking.

In 2019 we introduced a cover charge for non-members at our lectures. We provide pizza and drinks after the meeting to facilitate networking and we regularly see the majority of people at our lectures being non-members. Accordingly, it seems reasonable to introduce a

modest cover charge which we have now done. It does not seem to have impacted attendance.

The Kingsford Smith Memorial lecture was also a big success this year. Matt Hall's lecture was the ideal style and balance of what we would like to see at this event.

2. **Build the Branch brand to be a respected part of the Sydney aerospace community:**
   During 2019 we continued to work with other organisations such as AYAA and SADIG. With the assistance of the GM we also again undertook a series of meetings with government staff in NSW to raise the profile of the Society in government circles.
3. **Recruit members to ensure the ongoing health and sustainability of the Branch:**
   Our close coordination with the GM continues and we have seen a steady stream of membership applications.
4. **Build and sustain an active committee to support the Branch:**
   As I mentioned we have a very active committee. The set places for students continue to eb an essential means of keeping in touch with the student community.

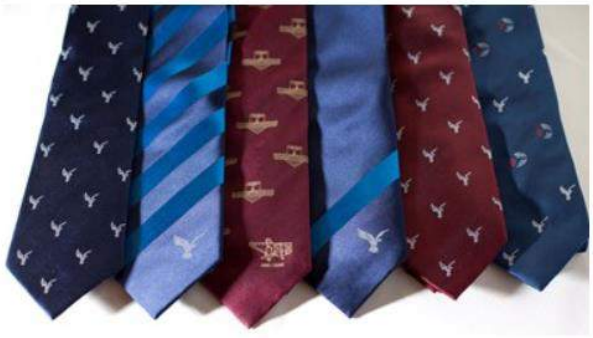
This Year: The Branch strategy 'one-pager' is attached. This will be updated soon at our Branch strategy day. However, in 2020 I expect we will be focussing on:

- Working hard on our marketing, including use of video and social media.
- Continue to reach out to New South Wales government and politicians.
- Continue to develop Facebook streaming of lectures and facilitate the creation of cells within particular companies who would meet at convenient times such as lunchtime to watch the lecture together – especially in the regions.
- Continue to grow Cool Aeronautics.

David Cox FRAeS, Branch Chair 10th March 2020

Closed Member Only Group on Facebook: Sydney branch is live video streaming our monthly branch lectures. Watch lectures live or later, at the "RAeS - Sydney Branch - Members Only" group within Facebook. Please note that this service is only available to financial members of the Royal Aeronautical Society.

Society Merchandise for Sale: Sydney Branch has a selection of Society Merchandise for sale at its regular monthly meetings. Items include Society Ties, Tee Shirts, Caps, Pins, Lapel Badges, Silver Kestrel Brooches, and Mugs.



Our Sales Director, Mr David Adkins, accepts cash, cheques, and credit cards through PayPal.

Past Newsletters are now stored on our website: Members are advised that all Sydney Branch Newsletters since February 2012 are now stored on our website. To access this information enter our web address (www.raes.org.au) into your browser, click 'About' then 'Sydney Branch' and scroll

this page to the heading 'Sydney Branch Newsletters'. Newsletters are arranged by month within each year heading.

Aerospace Websites: www.57rescuecanada.com : Follow Capt. Karl Kjarsgaard's adventures to recover Halifax bomber LW170 which is resting beneath 5000ft of water off the Irish coast;
www.adastron.com/707/updates/updates.htm : Diary of Boeing 707-138B XBA formally Qantas EBA.
https://airandspace.si.edu/collection-objects/assembly-bio-harness-armstrong-apollo-11
www.airshow.com.au www.atsb.gov.au
www.aviationmuseum.com.au-Temora Aviation Museum;
http://boxkite2014.org/book/book.htm - The Boxkite project.
https://en.wikipedia.org/wiki/Rolls-Royce_Trent;
hars.org.au Historical Aircraft Restoration Society
https://herox.com/SpacePoop The Space Poop Challenge
www.powerhousemuseum.com/whatson
https://qfom.com.au/ Qantas Founders Museum, Longreach, Qld
http://www.singaporeairshow.com/
https://www.youtube.com/watch?v=JGjmRRTThdk How TIME created their new cover image with 958 drones
http://www.rbogash.com/B-52/B-52_Disassembly.html How to move a B-52 without flying it – The Final Disassembly and Transport Update for the move scheduled 3/6/2018 - with the wings split and the fuselage in final stages of prep before hitting the freeway.
https://www.spitfireassociation.com THE SPITFIRE ASSOCIATION "Keeping the memory alive" Patron; Air Vice-Marshal Mark Skidmore AM (Ret'd), and President RAeS Australian Division.

DUE TO THE COVID-19 PANDEMIC ALL OF THESE DATES MAY CHANGE
TO KEEP INFORMED OF DATE CHANGES REFER TO THE APPROPRIATE WEBSITE

Diary: **Wednesday, 30 September:** 62nd Sir Charles Kingsford Smith Lecture to be delivered by Mr Alan Joyce AC FRAeS, Chief Executive Officer and Managing Director, Qantas Airways Limited. Venue: The Refectory, Holme Building, Science Road, The University of Sydney – commencing 18:00 hours. Further details to be advised. Please **'Save the Date'.**

5-8 October (tentative): AUVSI XPONENTIAL 2020 – Find Your Edge – being held at the Kay Bailey Hutchison Convention Center, Dallas, Texas. XPONENTIAL 2020 is the global stage for everything unmanned - from state-of-the-art propulsion technology, sensors, energy storage and UAS mitigation solutions to what's coming over the horizon in AI, 5G, edge computing and more. As the largest, most significant event for the unmanned systems industry, you'll find your edge as you explore the latest technology innovations, develop new perspectives as you hear from industry luminaries, and cultivate creativity at special networking events where you will meet some of the most influential leaders in the unmanned and autonomous space. Further details: www.xponential.org/xponential2020

14-16 October: ROTORTECH 2020 will be held at the Royal International Convention Centre, Brisbane. Registration is now open for the essential rotary-wing and unmanned systems industry event. Free-to-attend for accredited trade visitors. Accreditation is based on an involvement in rotary-wing, unmanned systems or affiliated industries in business, government agency, academic, maintenance, owners/operators, response and related sectors. Refer further details: https://www.rotortech.com.au/visit/registration.asp

7-8 November: Wings over Illawarra – The Sydney Airshow - Immerse yourself in history as you wander through rare displays of vintage and classic aircraft including the fully-restored Super Constellation and record breaking Qantas 747 along with some beautifully restored WW2 fighters. In 2020 your entry ticket will once again include access to the Historical Aircraft Restortion Society aircraft that are open for inspection. To thank the supporters of the Wings Over Illawarra event this year, WoI

are offering tickets for the 2020 event at half price - but be quick, they're only available for a limited time. For further information please refer: https://www.wingsoverillawarra.com.au/

16- 22 November: Qantas Centenary Birthday Week (still confirmed) – The Longreach Qantas Founders Museum will host a week of activities to celebrate the Qantas centenary. For more information: qfom.com.au/event/qantas-centenary-birthday-week/ For personal contact: *Nicole Kuttner, Communications Manager, Qantas Founders Museum & Qantas Foundation Memorial, P.O. Box 737, Longreach, Q. 4730 T: (07) 4658 3737 F: (07) 4658 0707 M: 0428583787*

28 Jan-4 Feb, 2021: 43rd Scientific Assembly of the Committee on Space Research (COSPAR) and Associated Events - COSPAR 2021 will be held in Sydney. Host Organization: Australian Academy of Science; Scientific Program Chair: Prof. Iver Cairns, University of Sydney, School of Physics. Abstract Deadline – closed. Abstract acceptances and program notification letters were sent out 31st March, 2020. The theme of the COSPAR 2021 Assembly is *Connecting Space Research for Global Impact*. More information can be found at www.cospar2020.org

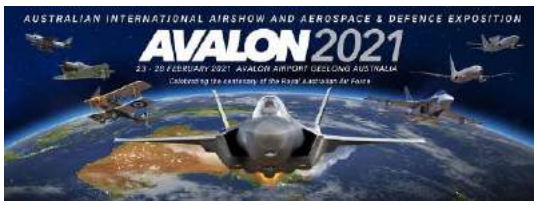
March 31, 2021: Marks the Royal Australian Air Force 100 years as an independent service. For further details refer: airforce.gov.au/our-mission/air-force-2021

June 24, 2021: Aviation Safety Australia 2020 has been deferred 1 year to 24th June 2021 – due to COVID-19 pandemic. A new program will be issued at the start of the new year and Invitations will be reissued in early 2021. Registrations remain open at 2020 prices, which will not be adjusted until January 2021. For further details and to register at 2020 prices refer: https://www.raes.org.au/eventdetails/5392/aviation-safety-forum-2021

Postponed – New dates to be confirm in 2021: Dr Behrooz Barzegar, recently retired from Airbus. He will discuss his Integration and Architectural roles in Airbus entitled **'Aerodynamic Design of Commercial Aircraft - Airbus A380 and the future'** including the Beluga XL.

Postponed – New dates to be confirm in 2021: Celebration of the Qantas Centenary Fly In - The weekend is designed for general aviators and enthusiasts alike to fly to Longreach, celebrate the centenary of Qantas and explore the many wonders of our outback town. For more information about the Fly In Weekend, please click the link below to the Media Release about tickets being on sale for the Fly In Weekend: centenary-fly-in-tickets-on-sale To book directly for the Fly In Weekend: tour/qantas-centenary-fly-in-weekend For more information about the Museum's Centenary Events: QFM-Qantas-Centenary-Program-of-Events.pdf For personal contact: *Nicole Kuttner, Communications Manager, Qantas Founders Museum & Qantas Foundation Memorial, P.O. Box 737, Longreach, Q. 4730 T: (07) 4658 3737 F: (07) 4658 0707 M: 0428583787*

Postponed – New dates to be confirm in 2021:– The Longreach Qantas Founders Museum will host a 1920s themed evening gala to open this exceptional weekend to celebrate the centenary of Qantas Airways. The gala evening will be held in the 1922 National Heritage Listed Longreach Qantas Hangar, where guests will enjoy delicious canapes and a unique dinner under the stars. During the evening, guests will be entertained by a 1920's swing band Serenity, local performances and fireworks. The weekend is designed to celebrate the centenary of Qantas. For more information: qfom.com.au/event/october-centenary-gala-weekend/ For personal contact: *Nicole Kuttner, Communications Manager, Qantas Founders Museum & Qantas Foundation Memorial, P.O. Box 737, Longreach, Q. 4730 T: (07) 4658 3737 F: (07) 4658 0707 M: 0428583787*



November 2021: The Australian International Airshow has been deferred to November 2021 – Further details to be provided in due course Refer: www.airshow.com.au

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