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PO Box 1583, Crows Nest, NSW 2065

Web: [www.raes.org.au](http://www.raes.org.au)

Email: [sydneybranch@raes.org.au](mailto:sydneybranch@raes.org.au)

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**NEWSLETTER**

**Webinar**

Title: **“From concept to capability  
Hawker Pacific’s role in Australian  
aviation industry capability”**

Speaker: **Mark Pinna**  
**Principal Design Engineer**  
**Hawker Pacific Special Missions**



Date: **Wednesday 15<sup>th</sup> July 2020**

Time: **Commencing 18:30 hours (sharp)**

Registration for the Webinar is required in advance.

To register please click on the following link:

<https://raesjuly20.eventbrite.com.au>

(Please note that Sydney Branch members will be given first access to register by Wednesday 8th July, before registration opens Australia wide.)

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

Attendance will attract 1.5 CPD hours

**Profile:** Mark has worked in the civil and defence aviation industries for eighteen years, gaining experience in project management, airworthiness, engineering and certification activities. Currently working as Chief of the Office of Airworthiness within the Hawker Pacific ADF B300 Military Design Organisation (MDO), Mark, is responsible for airworthiness activities and the development and maintenance of Engineering practices and policies within the Hawker Pacific MDO.

Prior to his current role, Mark worked as a Project Manager and Design Engineer within Hawker Pacific, helping the Special Missions team with bespoke modification programs for customers such as the ADF, NZDF, RFDS, Pel-Air Aviation and Babcock Offshore Services. His strong dedication and commitment to projects earned him the opportunity to be briefly contracted to Marshall Aerospace and Defence Group to provide engineering support activities on ADF C-130H & C-130J Hercules aircraft.

Mark has a Bachelor of Engineering Honours (Aeronautical) from the University of Sydney and an MBA (Executive) from the AGSM at the UNSW Business School. In his spare time, Mark enjoys trail running and time outdoors with family.

If you would like to connect with Mark about his experience in the civil and defence aviation industries you can reach him at [mark.pinna@hawkerpacific.com](mailto:mark.pinna@hawkerpacific.com) or LinkedIn: markpinna.



**Synopsis:** Special mission aircraft modifications are a complex endeavour requiring the support of a broad range of capabilities from customer requirements definition, through design development, certification, production, and testing to delivery and in-service support. Hawker Pacific has a long and proud history delivering mission focused solutions to civil and defence customers in Australia and Asia Pacific region.

Mark will provide a glimpse of the range of capabilities required to realise such projects, demonstrating the on-going capacity of Australian industry to support the realisation of aviation special mission requirements.



## Snippets from a Flying Career – Captain Brian Greeves FRAeS

*Brian Greeves began his career in the Royal Air Force before becoming an airline pilot ending his flying career as a senior captain with Cathay Pacific in Hong Kong. He was the International Federation of Airline Pilots Associations (IFALPA) Design and Operations Committee chair and a member of its Aerodrome Ground Environment Committee. He now runs his own aviation consultancy providing services to airports, air navigation service providers, air operators, pilot associations, regulators, and training organisations nationally and globally. He is a Fellow of the Society, a Liveryman of the Honourable Company of Air Pilots and a Member of the International Society of Air Safety Investigators.*



You could say that I was born into the Royal Air Force, as I started my life in No 52 Officers' Married Quarters, RAF Lindholme (Yorkshire, UK) on a snowy day at the end of April. My father was a squadron leader, having joined the RAFVR (Voluntary Reserve) just before the outbreak of the World War II from Queens University, Belfast, where he was a research physicist. (My younger son thinks it is very amusing that Lindholme is now an open prison!)

Fast forward 16 years, when I attended the Officer and Aircrew Selection Centre at RAF Biggin Hill for the five-day selection process. I was awarded an RAF Scholarship and a Special Flying Award, the latter giving me 30 hours flying at a civilian flying school. I chose to go to the Oxford Air Training School (Kiddlington) where I learnt to fly on a Piper (PA 28) Cherokee 140 going solo on 07 September 1967. During one of my "circuits and bumps" sorties, I narrowly missed an Andover aircraft that was dropping paratroopers at Weston-on-the Green...I am not sure if this was an "omen" of things to come.



My RAF Scholarship provided two years of school fees and a guaranteed place at the RAF College, Cranwell to join the Engineering Branch, subject to me obtaining the necessary grades in my A Level" (Advanced Level is like the HSC). Following the exams, the RAF informed my mother (I still have the letter) that my "A Level" results (due to my lack of application) were not good enough to become an engineering officer, but I could join as a pilot, a secretarial officer or a supply officer. My real ambition was to become one of the rare engineering officers that obtained their wings and were used as maintenance pilots. I naturally chose to become a pilot, though I was disappointed about the engineering. The day after entering the RAF College, as a flight cadet, I was ordered to retake my A Levels and to go to university. The RAF College could only award degrees to cadets on its approved engineering course, so all other degrees had to be obtained from an external university. 50 of us out of 144 (do not ask me why I was on the list) were selected and we spent the next year doing all the usual cadet things (cleaning kit, marching, physical training, cross country runs, on exercise, academic and military subjects) whilst also re-studying advanced mathematics and physics.



At the end of the year, I obtained a place at Exeter University to study Engineering Science. I was promoted to an Acting Pilot Officer on 15 September 1969 (the anniversary of the Battle of Britain) and started my course in October of the same year. At the same time, I was posted to the Bristol University Air Squadron (BUAS) (formed in 1941) being the one that catered for Exeter University. BUAS was based at Filton, where the Concorde was built! (The University Air Squadrons were formed to provide an alternative way to train pilots and recruit potential officers.)

I had 3 years of bliss, flying the Chipmunk T10 every third weekend and being given priority without having to attend the weekly lectures held at the BUAS HQs. Each vacation, I either flew at Filton or attended the summer camps at different RAF Stations. At RAF Binbrook, I was almost taken out by a target cable released by a Canberra of 13 Squadron. 13 Squadron was the "punishment" squadron and was filled with pilots that had CAT points to their names. CAT stood for category of repair with 1, minor and 5, a write off. Several of the pilots on 13 SQN had over 10 CAT points each!



In 1971, I was temporarily detached to the Central Flying School, RAF Little Rissington, as a supernumerary, ostensibly to work in operations. In reality, I became "rent a stude" for the instructors under training. Instead

of having to fly with another “would be” instructor, they would fly with me and give me the “instructional patter”.



In return, I got to fly the Varsity, Jet Provost 5 and my beloved Chipmunk. The highlight was a sortie in the Gnat, where we went supersonic (the only time in my life) in an inverted dive.

The last summer camp was at RAF Manston. The weather was perfect and as a senior student (substantiated pilot officer and holder of the Preliminary Flying Badge, affectionately known as “Budgie Wings”), I got to do the morning weather flights, formation and aerobatics and even a spares delivery flight.



At the end of the camp, I flew across England to RAF Kemble in a 4-ship box formation. At the time, it was a “big deal”!



My third-year project was on the “Jet Flap” and I visited Royal Aircraft Establishment Bedford to see the prototype Hunting 126 (XN714) powered by the Bristol Orpheus engine (later to be developed into the Pegasus for the Harrier) and talk to the engineers. Although, its last flight was a few years earlier (on loan to NASA), it was still a useful visit. Whilst there, I grabbed the chance to fly an Auster.



Returning to RAF Cranwell, as a graduate officer and with an honours degree in engineering, initially in the rank of flying officer and soon to be promoted to flight lieutenant; hence the derogatory “nickname” of “Green Shielders”... named after the stamps that were given out with petrol and other purchases and could be exchanged for gifts. I flew the Jet Provost (JP)3 and then the JP5. My memories of my time there include “Winking Willie”, the light on top of the



College that provided an incredible lighted beacon on the flat Lincolnshire landscape (the highest point is 551 feet (168m) above sea level), the power stations on the River Trent that could be identified by the number of chimneys and were another essential navigation aid; carrying a screwdriver to wind back the fatigue meter (5.5 G was the maximum but sometimes manoeuvres did not quite go as planned and the G limit was exceeded); low level flying and being able to DR position (I would definitely get lost now!); and finally getting my

“wings”.



I was posted to the multi-engine No 5 Flying Training School at RAF Oakington (just outside Cambridge) where I flew the Vickers Varsity, known as the “flying pig”. The aircraft had two large radial engines (Bristol Hercules 264) with an incredible device known as the Hobson injection carburettor. My disappointment at not making it to fighters was tempered after my first overseas flight to RAF Gatow and experiencing the delights of Berlin years before the wall came down.



After I graduated, I did a spell at the Joint Airmiss Centre, RAF Uxbridge (where I had lived as a child), before being posted to the Varsity Refresher Squadron as a “professional co-pilot”. These were wonderful months crewing up with pilots returning from ground duties and undertaking regular training flights to Berlin, and, of course, visiting Cambridge’s bars and clubs!

I finally got the posting of my choice to No 46 Squadron to fly the Andover. The Andover CMk1 was a “zipped up” HS748 which had been purchased as



a short-range tactical transport aircraft. In order to produce the required thrust, it was refitted with larger RR Dart engines and propeller blades (14 feet disc). The longer blades required a longer undercarriage, which meant it was extremely hard to load and unload the aircraft. The answer was to enable the aircraft to kneel! Our party trick was to do a high approach and short field landing (selecting



reverse at around 5 feet above the ground); stop the aircraft; kneel and off load a small armoured vehicle; unknelt and reverse to the beginning of the runway; and then perform a short field take off and a high rate of climb. I have out climbed a Jaguar, albeit with a PR Pod fitted, to 1000 feet!

As a “singly”, I volunteered for weekend flying and enjoyed dropping paratroopers from the Territorial Army (TA is like the Reserve) on to remote landscapes in England and Scotland, after first making them airsick by flying low level across the countryside. This was also the first time I nearly died in an aircraft, when one of the 1 tonne containers, we were dropping, caught up on the ramp and we began to stall. We were less than 200 feet with the stick shake operating, when the dispatcher (an Army corporal) cut the cord that had caught up in the rollers and was able to push the container off the ramp. Afterwards, we saw that his thumb was sliced and bleeding as he had initially used the wrong edge of the knife!

No 46 Squadron was disbanded in August 1975 as part of the defence cuts, but I was posted to No 32 Squadron at RAF Northolt, some months before this happened.

No 32 SQN was the VIP Squadron and carried anyone of significance except for the British Royal Family, who flew on “The Queens Flight”. TQF has now been disbanded and 32 Squadron has been rebranded as 32 Royal Squadron. No 32 Sqn had Andover CC Mk II (a regular HS748); HS125 business jets and Whirlwind helicopters. I arrived shortly after the demise of the Beagle Basset CC1 aircraft originally procured to carry V-bomber crews

During my time at Northolt flying “VIPs” (including the PM, cabinet ministers, foreign royalty, 3-5 Stars of every armed service and other passengers, whose details are still restricted) all across Europe, including many trips to Northern Ireland, because of the troubles. On one of the latter flights, Tom, a Special Branch superintendent, was “flying” the aircraft and pulled his handkerchief from his top pocket only to see the “rounds” (bullets) that he had taken from his pistol fall onto the floor and under the rudder pedals. As the smallest member of the crew, I was “volunteered” to retrieve them which I fortunately managed to do...it would have been an interesting entry in the “Techlog”!

Our station commander and squadron boss were outstanding people, encouraging us to make the most of being on a “mixed squadron” with the Royal Navy and with the opportunity to fly (unofficially) different aircraft types. I learnt to fly the Whirlwind (definitely an amateur). I remember returning from RAF Benson to pick up extra glasses for the mess party and landing the helicopter in a strong wind with the encouragement of the squadron QHI. Paddy Graydon, the squadron boss, walked out to the pan and told us that he had seen his career “flash before his eyes”! My flights in the HS125 were less dramatic and I enjoyed flying the “pocket rocket”.

I also did some short detachments to RAF Germany (Wildenrath-another RAF station where I had lived and gone to school) to crew the Air Officer Commanding in Chief’s Andover and to Norway to cover for the General’s (Allied Commander Northern Europe) crew while one of his RAF pilots went on leave. At Wildenrath, I took up the offer from the Army Air Corps to fly a Beaver and, after a nearly ground looping it, I remembered how to use the rudder!

After Northolt, I was posted to 115 SQN (Flight Checkers) as a captain. 115 SQN was reequipping with the Andover (E 3A) aircraft (previously Argosy aircraft) and wanted a mix of Andover and flight checking experience. I completed the captaincy course and, whilst waiting for the refurbished aircraft to arrive, I was sent to HQ British Forces in Belize (Central America) as OC, the Tactical Air Operations Centre. Guatemala had made threats to seize disputed territory and the British Government had responded by setting up a semi-permanent force under the command of an Army colonel. My job was to task the helicopters (Pumas and Scouts) and, when required, the Harriers. (I also got the chance to fly the Pumas and Scouts.)

There are so many stories from my time there but taking the helicopters to the Cays (small islands) and sunbathing with the Clansman radio, in case of a call out, was the ultimate in “cool dude”. My adventures with the Puma QHI (must be something about helicopter instructors), included landing on HMS Antelope (later sunk in the Falklands) and leaving wheel dents in the heli-deck; striking the rotors on a tree whilst



descending into a non-authorized clearing; and escaping without a Board of Enquiry or other disciplinary action. Just as well as I was the Forces' Flight Safety Officer. I also used the opportunity to travel to most of Central America (Guatemala excluded), Mexico and parts of the USA. Returning to Brize, I started my flight checking role conversion and quickly discovered that what appeared to be a boring flying job was the opposite. There was a large amount of precision manual flying required and we were tasked to carry calibration at every RAF, RN and Army Aviation Base that had any sort of navigation, approach, and landing aid in the UK, RAF Germany, and Cyprus. We also were given a few "secret squirrel" tasks which resulted one day in an unauthorized formation with a Phantom (F4), an Avro Shackleton (a 4 piston-engined aircraft like a Lancaster) and, ourselves, an Andover. The picture won "Photo of the Month" at 11 Fighter Group, but fortunately never made it to 38 Air Support Group!



My secondary duties on the squadron were Survival Instructor, having completed the Army Combat Survival Instructor's Course with the 22 SAS Regiment; and Unit Flight Safety Officer (FSO). My greatest contribution as the FSO was to be involved in two very near misses with Jaguars, one at RAF Coltishall and one at RAF Lossiemouth. We were carrying out routine checks of the ILS which involved flying a 5-mile arc across the ILS beam. Despite the briefings, the fighter aircraft were allowed to make approaches and the result was a near miss on both occasions. The good news was that the two incidents resulted in the squadron's long-standing bid (I authored the paper) to have strobe lights fitted and the aircraft repainted in conspicuous colours (red and white) being finally actioned by "the powers that be".



Brize Norton was home to the "shiny fleet", the VC10, and though I never got to fly it, I did sit on the jump seat during their Monthly Continuation Training. I did, however, get to fly the Jetstream (which replaced the Varsity Trainer) when one of our ex-squadron members brought the aircraft to Brize on a land away for one of his students.

It was Belize that made me decide to leave the "peacetime" air force. I had enjoyed a high level of autonomy and responsibility...the concise job description from the Force Commander was "Do the job and don't exceed the flying hours". On my return to the squadron, even as an aircraft captain, squadron adjutant and the other appointments, I never achieved the same level of satisfaction.



At the end of 1981, I left the RAF, having married 3 months earlier, into a cold and uninviting civilian world. In retrospect, it was the right move and provided me with many opportunities to fly a range of large and small airliners, to build an expertise in operational, safety and technical matters, and to have a lot of fun, but, as they say, those stories are for another day.

**Captain Brian Greeves FRAeS**

**U.S. Air Force F-22 Stealth Fighter Just Crashed. How Many Are Left?** A USAF F-22 assigned to the 43rd Fighter Squadron, part of the 325th Fighter Wing currently based at Eglin Air Force Base, Florida crashed at approximately 9:15 a.m. Friday 15th May, 2020 12 miles northeast of Eglin main base on the test and training range. The pilot ejected safely from the aircraft and has been transported to the 96th Medical Group hospital on Eglin for evaluation and observation. He is currently in stable condition. The mission was a routine training flight. A board of officers will investigate the accident.



The crash reduces by one the F-22 training fleet but does not directly impact the front-line Raptor force. Which is not to say future crashes will not quickly erode the Air Force's deployable F-22 fleet. There are not a lot of Raptors to go around.

Lockheed built 195 production and development-standard F-22s for a total cost of \$67 billion, a sum that includes development but doesn't include ongoing upgrades to the jets. The last Raptor rolled out of Lockheed's Georgia factory in December 2011. Accidents in 2004, 2009 and 2010—and now the 2020 crash—have destroyed four Raptors. Other, older F-22s went into storage after running out of airframe-life. The Air Force in 2017 rebuilt one timed-out F-22 in order to reinforce the flyable test fleet. As recently as the early 2000s, the Air Force anticipated buying more than 400 F-22s in order to replace, on a one-for-one basis,

all the F-15C Eagle fighters then in the inventory. Instead, Defense Secretary Robert Gates in 2009 abruptly ended Raptor production. “There is no doubt that the F-22 has unique capabilities that we need—the penetration and defeat of an advanced enemy air-defense and fighter fleet,” Gates explained at the time. “But, the F-22 is, in effect, a niche, silver-bullet solution required for a limited number of scenarios—to overcome advanced enemy fighters and air-defense systems,” Gates added.

Within a few years, however, it was clear that Gates’ decision was premature. The explosive growth in Chinese military power and the appearance of Chinese and Russian stealth-fighter designs underscored the growing challenge to America’s command of the air. Older American planes such as the A-10 and F-16 could be vulnerable without adequate protection from F-22s.

Meanwhile America’s other stealth fighter, the ground-attack-optimized F-35, proved to be a mediocre dogfighter. Design flaws also have limited the F-35’s ability to fly at supersonic speeds. Desperate to shore up its fighter numbers, the Air Force in its 2020 budget restarted acquisition of the Boeing F-15 after a 16-year break. All that is to say that every F-22 is precious.

The US Air Force at present plans to operate the Raptor through the 2050s. In 16 years the service has lost four F-22s. If that accident-rate holds, the Air Force might lose an additional 10 F-22s to non-combat accidents before the type’s out-of-service date in 2060 or so. In short, the Air Force has enough F-22s to keep its existing squadrons in business. But only barely. An uptick in crashes, or high losses in combat, quickly would force the flying branch to adjust or shrink the force structure. Read full article: [www.forbes.com/sites/davidaxe/2020/05/15/an-f-22-stealth-fighter-just-crashed-how-many-are-left/](http://www.forbes.com/sites/davidaxe/2020/05/15/an-f-22-stealth-fighter-just-crashed-how-many-are-left/)

**New laws to register engineers in NSW:** On 3 June 2020, the NSW Parliament passed the Design and Building Practitioners Bill. The new Act introduces a requirement for professional engineers to be registered to practice without supervision. It will initially apply to five areas of practice: civil, structural, mechanical, electrical and fire safety engineering (more areas of practice can be added through Regulation). Although the registration requirements are contained within a law for ‘building practitioners’, it is expected to spread to include all professional engineers including aerospace engineers - for further information refer: [www.engineersaustralia.org.au/Design&BuildingPractitionersBill](http://www.engineersaustralia.org.au/Design&BuildingPractitionersBill) .

Due to similar changes in Victoria last year and the long-standing laws in Queensland, from 1 July 2021 (the three largest states for engineering work and roughly 75% of the Australian economy) it will be mandatory for all practicing engineers to be registered under a formal registration process. Engineers Australia has established a National Engineering Register which is a comprehensive directory of Australian engineers who have met the high standards of professionalism expected within the industry, and which provides engineering professionals and employers with a tool that connects talent to opportunities - For further information refer: [www.engineersaustralia.org.au/National-Engineering-Register](http://www.engineersaustralia.org.au/National-Engineering-Register)



For Aerospace Engineers the NSW Design and Building Practitioners Bill will be raised at the next Joint Board of Aerospace Engineers (JBAeroEng) Committee Meeting to manage. The RAeS Australian Division is a Technical Society of Engineers Australia and this relationship is managed through a joint Board, JBAeroEng, which comprises three members from RAeS AD and three from Engineers Australia. Society Members will be kept informed on progress.

**'Keeping Ansett alive': an airline reborn in hipster clothes and basketball:** September 11, 2001 might be branded as the darkest day in our collective memory, but for Ray Cervai, it was the events of three days later that stood out for him personally. That was the day Ansett Australia grounded all flights, leaving the Melbourne businessman, who officially supplied the airline with merchandise, with more than half a million dollars of Ansett-themed products stored in his shed. “It felt like someone had shot me in the stomach,” says the semi-retired Cervai.



Almost 20 years on, another airline –[Virgin Australia](#)– entered voluntary administration. The collapse, like Ansett’s, was precipitated by a massive global disruption, this time coronavirus. As the government fended off appeals for a bailout, the treasurer, Josh Frydenberg, pointed to Virgin Australia’s 90% foreign ownership to declare: “This is not Ansett. This is not the end of the airline.”

[As potential buyers mount bids to save Virgin Australia from collapse](#), the legacy of Ansett has evolved from an aviation powerhouse into a small but thriving community.

While the airline may have stopped flying, the Ansett name and logo live on as a basketball club, a museum in regional Victoria, and a now-booming online retail business for Cervai.

He says the week of Ansett's collapse was one of the worst weeks of his life. "I was always more worried my Ansett business would go down rather than the airline itself."



Unsure of what to do with the hoard of Ansett clothing, gifts, toys and other items he had, with no orders to fill, Cervai received a call a day after Ansett's collapse from someone offering to buy him out for 20 cents per T-shirt and 30 cents per jumper. "I said, are you serious mate? Pardon my French but you can go and get f....d," he says. Instead, the semi-retired Cervai decided to start up a [website to sell the items](#). While its sales were quiet in its early years, he says Ansett merchandise is now more popular than ever. "Now it's

selling like hotcakes, it's hard to believe," says the 73-year-old, who reports a recent sales spike over the past two years has peaked during the coronavirus lockdowns.

He also attributes a part of the surge in sales to the indie pop band Client Liaison, which he supplied with Ansett props for a 2017 [music video](#). He says he can now notice a spike in sales on his website after the band has a concert..

Cervai now stores the remaining "tens of thousands" of Ansett products in a large shed at his home in Mickleham, in Melbourne's north. He says many former Ansett employees "come by to have a cry and get their Ansett fix". He also supplies clothing for the annual Ansett employee reunion in Brisbane each July, as well as a cruise that former flight attendants take in Sydney each year.

His first job was working as a mail deliverer for Ansett as a teenager in 1966, and remembers being tasked with racing "hot off the press" newspapers from Melbourne city to Sir Reginald Ansett – the airline's founder – as he sat in a Cadillac on the airport's tarmac.



Cervai met his wife at Ansett, who worked as a secretary in the finance department. The couple's children now refer to him as the "Ansett man" for giving them airline-themed gifts each year and wearing Ansett clothing around. "I can't let it go, I'll see my time out selling all this stuff, not for the money. It's about, what does that guy in The Castle say, it's the vibe of the thing. To keep Ansett alive," he says.

While Cervai offers arguably the largest range of Ansett clothing, he does not supply the jerseys worn by Darwin's Ansett Basketball club, which fielded more than 220 registered players in the most recent season.



The Ansett Basketball club was formed in 1975 by the airline's workers, who would be based in Darwin for two and three-year rotations. After Cyclone Tracy devastated the city, the club served primarily as a social outlet for employees new to the town which had lost much of its infrastructure and gathering spaces. Paul Hunt, a former Ansett Basketball president, coach and player whose son plays for the team, says "It was certainly put together by a group of

guys who liked to have a drink."

The club even fielded Glenn Marsland, a basketballer who represented Australia in the sport at the 1972 Munich Olympics, who had moved to Darwin after the peak of his career to work as an air traffic controller at Darwin airport. Ian Davies, who was part of Australia's basketball team at the 1980 and 1984 Olympics, also played for Ansett later in his career.

When Ansett collapsed in 2001, the club had about 160 players, and stopped receiving Ansett sponsorship. The airline had sponsored the 2000 Sydney Olympics and the cricket, but its sponsorship of the basketball team had constituted a handful of domestic return airfare vouchers each year the club would raffle off to raise funds.

"We thought at the time that the airline would be rescued, probably like everybody else now thinks with Virgin. It came as a fairly big shock when we realised it wouldn't exist," Hunt says.

In 2018, the basketball club was featured on ABC's show Gruen, about carrying a sponsor's name that no longer exists. At the sight of an Ansett player pictured mid-slam dunk, host Wil Anderson joked, "they managed to stay in the air longer than a commercial airline".

The club now boasts more than 220 players and won the NT's highest state competition in 2016 before a crowd of 750. "Ansett is synonymous with basketball now, we're one of the strongest clubs in the city," Hunt says. In 2018, the basketball club was featured on ABC's show Gruen, about carrying a sponsor's name that no longer exists. At the sight of an Ansett player pictured mid-slam dunk, host Wil Anderson joked, "they managed to stay in the air longer than a commercial airline". To view the ABC Gruen clip, click on: <https://twitter.com/ABCTV/status/1002036950117728256>

Ansett is also an important part of the identity of Hamilton in western Victoria, where a [museum](#) is dedicated to the airline, and Sir Reginald Ansett's road transport businesses, that started in the town. The Sir Reginald Ansett Transport museum in Hamilton, Victoria is built inside the hangar that housed Ansett's first Fokker Universal aircraft in 1936 and which flew Ansett's inaugural route between Hamilton and Melbourne in 1936. Ansett's family attended the museum's opening in 1991, which was built after locals took the idea to the council. It is now run by volunteers seven days a week, and hosts about 300 visitors a month, which are mostly former Ansett employees, coach passengers who stop off in Hamilton and local school groups.



Displays include a restored Fokker aircraft, models, vehicles, flight attendant and baggage handler uniforms, inflight kitchen dining sets used in service, and other memorabilia. "A lot of people don't even realise there is an Ansett museum, but it's actually gotten busier for us after the collapse," says Heather Kruger, secretary of the museum. Heather sympathises with the uncertainty Virgin employees are facing – almost two decades after Ansett grounded its flights, she is still hopeful it will return to the skies. "Sir Reg put Hamilton on the map. We're still hurting, we'd love for Ansett to come back.

**F-35's Image as \$428 Billion Bundle of Flaws Improved by Fixes - 11 May, 2020:** The F-35 fighter jet is starting to outlive its reputation as a \$428 billion bundle of flawed hardware and buggy software: Lockheed Martin Corp. and the military have eliminated all of the deficiencies believed to endanger pilots and about 90% of other serious flaws that could hamper missions. That's down from 111 "Category 1" safety-of-flight and mission-impeding deficiencies in January 2018, according to Defense Department data compiled by the Government Accountability Office. The improvements may be critical to reassuring lawmakers and U.S. allies buying the F-35 that the costliest U.S. weapons system is worth its price tag, especially as pressure builds to reduce government spending after the response to the Covid-19 pandemic escalates budget deficits. The aircraft is already being operated by forces in the U.S., U.K., Israel, Japan, South Korea and Australia.



*An Inverted F-35C Aircraft Fires an AIM-9X Missile*

The Defense Department's F-35 program office has "done a good job at working" with the Air Force, Navy and Marine Corps "to really prioritize what needs to get fixed versus what would be just a helpful thing to the pilot -- getting to the actual things they need to get at, Jon Ludwigson, the US Government Accountability Office's top F-35 analyst, said in an interview. He said "they have procedures in place to work around" the remaining flaws. The last "Category 1A" deficiency that could endanger pilots was deemed corrected in mid-November, 2019. Now, Lockheed and the Pentagon are resolving eight remaining "Category 1B" deficiencies that pose a "critical impact on mission readiness." Five of those are expected to be completed and verified by December, 2019, the program office said. The program office said three of the eight deficiencies carried over into intensive combat testing that began in the late 2018; five emerged since then during separate software testing. The F-35 is a flying computer, with more than 8 million lines of software code.

Results from the combat testing are needed for the Pentagon to make a decision, expected by early 2021, on authorizing Lockheed to ramp up full-rate production. About 520 of a potential 3,200 F-35s for the U.S. and allies already have been delivered and will have to be retrofitted as flaws are fixed. Brett Ashworth, a spokesman for Bethesda, Maryland-based Lockheed, said in an email that "most of the deficiency reports are enhancements and do not represent a contractual deficiency. However,

as with any development effort, additional deficiencies can be identified as new capabilities are developed and delivered.”

**Remaining Flaws:** The remaining serious deficiencies include excessive pressure in the cabin that could injure pilots’ ears, obscured night-vision camera images under some conditions and limited radar sea-searching capability. The program office anticipates resolving the first two matters next year (2021) and the radar issue in 2024.

Despite the progress, Category 1 deficiencies “are serious problems” that “need to be sorted through quickly, and the fact that there are eight still on the list is disappointing,” said John Venable, a Heritage Foundation analyst. Venable, who supports the F-35 program, is a retired Air Force pilot and has interviewed scores of F-35 pilots. Given the F-35’s simultaneous development, testing, operations and added technical improvements “it would not surprise me if the number of deficiencies grows,” Venable said. Beyond the eight most serious outstanding flaws, the F-35 program still faces 860 lesser software and hardware deficiencies, of which 104 are considered fixed but with verification pending. The remainder have a fix under investigation, in the works or are deemed less critical “mission enhancements” that don’t need immediate attention, according to the program office. That’s up from 855 in January 2018. About 85% are software-related.

The open deficiencies “mean there are many things like that that can go wrong, which goes a long way to explain the low full mission-capable rates for the program,” said Dan Grazier, a military analyst for the Project on Government Oversight who tracks the F-35 closely. “All of us have dealt with computer issues,” he said. “That is just frustrating when you are sitting at a desk,” but “when you are flying close to the speed of sound, trying to locate and track an enemy target, seemingly minor issues like a glitched computer can mean the difference between success and failure.”

**NASA’s Artemis Lunar Exploration Program:** NASA is committed to landing American astronauts, including the first woman and the next man, on the Moon by 2024. Through the agency’s [Artemis](#) lunar exploration program, NASA will use innovative new technologies and systems to explore more of the Moon than ever before.

NASA will collaborate with their commercial and international partners to establish sustainable missions by 2028 and then will use what was learnt on and around [the Moon to take the next giant leap – sending astronauts to Mars](#).

**Why Go to the Moon:** With the Artemis program NASA will:

- Demonstrate new technologies, capabilities, and business approaches needed for future exploration including Mars
- Establish American leadership and a strategic presence on the Moon while expanding our U.S. global economic impact
- Broaden our commercial and international partnerships
- Inspire a new generation and encourage careers in STEM

**How Will NASA Get There:** NASA’s powerful new rocket, the [Space Launch System](#) (SLS), will send astronauts aboard the [Orion](#) spacecraft a quarter million miles from Earth to lunar orbit. Astronauts will dock Orion at the [Gateway](#) where they will live and work around the Moon. The crew will take expeditions from the Gateway to the surface of the Moon in a new human landing system before returning to the orbital outpost. Crew will ultimately return to Earth aboard Orion.

**When Will NASA Get There?:** Ahead of the human return, NASA will send a suite of science instruments and technology demonstrations to the lunar surface through [commercial Moon deliveries](#).

The agency will fly two missions around the Moon to test its deep space exploration systems. NASA is working toward launching [Artemis 1](#) in 2020, an uncrewed flight to test the SLS and Orion spacecraft together.

[Artemis 2](#), the first SLS and Orion flight with crew, is targeted for launch in 2022. NASA will land astronauts on the Moon by 2024 on the Artemis 3 mission and about once a year thereafter.



Artist's concept of the Space Launch System rocket



Gateway 2024 Artist Concept (NASA)

**What Will NASA Do There?:** While Mars remains NASA's horizon goal, they have set their sights first on exploring the entire surface of the Moon with human and robotic explorers. The Agency will send astronauts to new locations, starting with the [Lunar South Pole](#). On the Moon, NASA will:  
Find and use water and other critical resources needed for long-term exploration  
Investigate the Moon's mysteries and learn more about our home planet and the universe  
Learn how to live and operate on the surface of another celestial body where astronauts are just three days from home  
Prove the technologies needed before sending astronauts on missions to Mars, which can take up to three years roundtrip  
Going forward to the Moon will be the shining moment of our generation - the [Artemis generation](#).  
Are you ready?

**Where Did The Name Artemis Come From?:** Artemis was the twin sister of Apollo and goddess of the Moon in Greek mythology. Now, she personifies the Agency's path to the Moon as the name of NASA's program to return astronauts to the lunar surface by 2024, including the first woman and the next man. When they land, the American astronauts will step foot where no human has ever been before: the Moon's South Pole.

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**June 5, 2020 - Northrop Grumman Corporation Awarded NASA Contract to Provide First Crew Module for Artemis Program Gateway:**

Northrop Grumman has been awarded a contract by NASA to execute the preliminary design and development of the Habitation and Logistics Outpost (HALO). It is to be deployed in lunar orbit as the first crew module of the **NASA Gateway**, a space station orbiting the moon providing vital support for long-term human exploration of the lunar surface and deep space. The HALO design is derived from Northrop Grumman's highly successful Cygnus spacecraft, a human-capable vehicle that delivers supplies, spare equipment and scientific experiments to the International Space Station with 13 successful missions to date.



"The success of our Cygnus spacecraft and its active production line helps to enable Northrop Grumman to deliver the HALO module," said Steve Krein, vice president, civil and commercial satellites, Northrop Grumman. "HALO is an essential element in NASA's long-term exploration of deep-space, and our HALO

program team will continue its work in building and delivering this module in partnership with NASA." Building off of Cygnus' heritage pressurized cargo module, Northrop Grumman added command and control capabilities, including environmental control and life support systems, which, when coupled with NASA's Orion spacecraft capabilities, can sustain up to four astronauts for up to 30 days as they embark on, and return from, expeditions to the lunar surface. By leveraging the active Cygnus production line, Northrop Grumman has the unique capability of providing an affordable and reliable HALO module in the timeframe needed to support **NASA's Artemis program**.

The HALO module represents a critical component of NASA's Gateway serving as both a crew habitat and docking hub for cislunar spacecraft, or spacecraft that navigate between the Earth and the moon. HALO will feature three docking ports for visiting spacecraft, including the Orion spacecraft and other lunar support vehicles.

From the first lunar lander to the space shuttle boosters, to supplying the International Space Station with vital cargo, Northrop Grumman has pioneered new products and ideas that have been put into orbit, on the moon, and in deep space for more than 50 years. As a part of NASA's Artemis program, we are building on our mission heritage with new innovations to enable NASA to return humans to the moon, with the ultimate goal of human exploration of Mars.

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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



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](http://qantas.com/au/en/100-years-of-the-spirit-of-australia)

**Letters to the Editor: May 2020 Newsletter:** *David and others, I am replying to the most excellent and informative letter from David Cox in which he introduces the May 2020 Newsletter which is full of interest. In particular for me, the writing of Capt Ron Austin about Bristol Freighters. He mentions the demise of the aircraft IMC in PNG, I worked on that aircraft as an apprentice and remember its send off from Bristol as a demonstrator, I was working in the Flight Sheds at the time and listened to the speeches by the Australian High Commissioner and the Bristol Directors. Later in his article Ron mentions the Pakistan Air Force aircraft and the fact that they were capable of dropping 4000 lb bombs. After my apprenticeship I was working as a Flight Test Observer and one of my first tasks involved the Freighter bomb clearance trials. My logbook reminds that on January 10th 1950 I observed, from our chase aircraft, the clean delivery of a bomb from the Freighter into the mud flats of the Severn River.*

*Best to all, John Burleigh FRAeS 18<sup>th</sup> May 2020*

*Editor: John has advised he is reviewing a lecture he gave a few years ago on the relationship that the Bristol company had with the RAAF since it delivered the Boxkite in 1913 - which will be published in our newsletter as part of the Society's 'Stories' initiative.*

**June 2020 Newsletter:** *In reference to Peter Marosszeczy's story 'Working on Boeing Aircraft' - How about the amount of Swiss cheese in the BASI summary! Or put another way, just about everything that could go wrong did! Regards, David Cox FRAeS, Chair, Sydney Branch RAeS*

**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](http://www.raes.org.au) ) into your browser, click 'Branches', 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](http://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; <https://www.abc.net.au/radio/programs/conversations/beverley-bass/11060672> : Podcast - This is your captain speaking. On the morning of the attack on New York's Twin Towers, Captain Beverley Bass was flying from Paris to Fort Worth, Texas.

[www.adastron.com/707/updates/updates.htm](http://www.adastron.com/707/updates/updates.htm) : Diary of Boeing 707-138B XBA formally Qantas EBA.

<https://www.aerosociety.com/events/catch-up-on-events/video-audio-archive/> : Many podcasts and videos of previous presentations including Vulcan to the Skies (podcast and video), and The U-2 Reconnaissance Aircraft Incident of 1 May 1960 (podcast only).

<https://airandspace.si.edu/collection-objects/assembly-bio-harness-armstrong-apollo-11>

[www.airshow.com.au](http://www.airshow.com.au)

[www.atsb.gov.au](http://www.atsb.gov.au)

[www.aviationmuseum.com.au](http://www.aviationmuseum.com.au) - Temora Aviation Museum;

<http://boxkite2014.org/book/book.htm> - The Boxkite project.

[https://en.wikipedia.org/wiki/Rolls-Royce\\_Trent](https://en.wikipedia.org/wiki/Rolls-Royce_Trent);

[hars.org.au](http://hars.org.au) Historical Aircraft Restoration Society

<https://herox.com/SpacePoop> The Space Poop Challenge

<https://news.northropgrumman.com/news/features/apollo-13-failure-was-not-an-option> - Fifty years ago April 17, 1970, the Apollo 13 Command Module and crew safely returned home.

[www.powerhousemuseum.com/whatson](http://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](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:** 62<sup>nd</sup> 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](http://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 Restoration Society aircraft that are open for inspection. To thank the supporters of the Wings Over Illawarra event this year, Wol 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/](http://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 31<sup>st</sup> 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](http://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](http://airforce.gov.au/our-mission/air-force-2021)

**June 24, 2021:** Aviation Safety Australia 2020 has been deferred 1 year to 24<sup>th</sup> 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](http://centenary-fly-in-tickets-on-sale)

To book directly for the Fly In Weekend: [tour/qantas-centenary-fly-in-weekend](http://tour/qantas-centenary-fly-in-weekend) For more information about the Museum’s Centenary Events: [QFM-Qantas-Centenary-Program-of-Events.pdf](http://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/](http://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](http://www.airshow.com.au)



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