ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION
SYDNEY BRANCH

DECEMBER 2019

Vol 2019-09 ABN 75 134 058 731
PO Box 573, Crows Nest, NSW 2020
Web:www.raes.org.au
Email:sydneybranch@raes.org.au
https://www.facebook.com/groups/RAeSSydney/

NEWSLETTER

'100th Anniversary GE Aviation'

Speaker: **Mr David Kelly FRAeS**
Senior Sales Director
GE Aviation

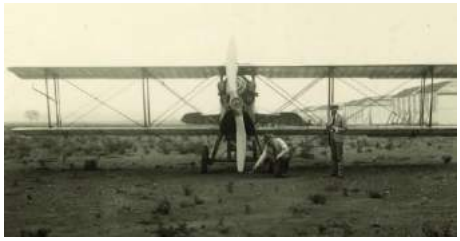
Date: **Wednesday, 11th December, 2019**
Time: **18:00 for 18:30 hours (sharp)**

Venue: **Mechanical Engineering Theatre**
Mechanical Engineering Building, University of Sydney

Refreshments will be available prior to the commencement of the meeting. Attendance will attract 1.5 CPD hour

Profile: David Kelly is a Senior Sales Director for GE Aviation involved with the sale of GE and CFM commercial aircraft engines and services to airlines in the South Asia Pacific region. He is an experienced airline industry executive over 30 years' experience, many of these involved with new aircraft evaluation and fleet planning activities. David holds a Bachelor of Aeronautical Engineering degree from the University of NSW and is a Fellow of the Royal Aeronautical Society.

Synopsis: This year marks the 100th anniversary for GE Aviation. On July 12, 1919, GE took flight when its experimental turbosupercharger, attached to the piston engine of a US Army biplane, first lifted off a grass runway at McCook Field in Dayton, Ohio, launching GE into the new era of aviation. Since then, GE has been reimagining flight through each succeeding generation.



David will reflect on the past 100 years of GE's engine technology evolution, in particular what this has meant for its customers, as well as provide a glimpse of the future.

Agenda:
18:00 Registration and refreshments
18:30 Welcome by Mr David Cox, Chair of the Sydney Branch
18:35 Presentation by Mr David Kelly
19:30 Q&A
19:35 Supper

RSVP: Registration for the evening **is required** by clicking on/copying and pasting into your URL this link: **http://raesdec19.eventbrite.com.au** Your registration will be confirmed by email with an attached ticket. **Please print the ticket and present the ticket at the door. Please note:** A **'**Non Members Fee' of $10 applies and is payable via credit card. Non Members should enter the code **NM** when requested to enter a RAeS/EA membership number. Any member who does not have access to the internet can send a letter to Mr Jeff Lock, 4 Hillcrest Place, North Manly NSW 2100 with your name (plus names of accompanying persons), membership number or state 'Friend' if you are a Friend of the Branch, and phone number.

Lecture registration includes:

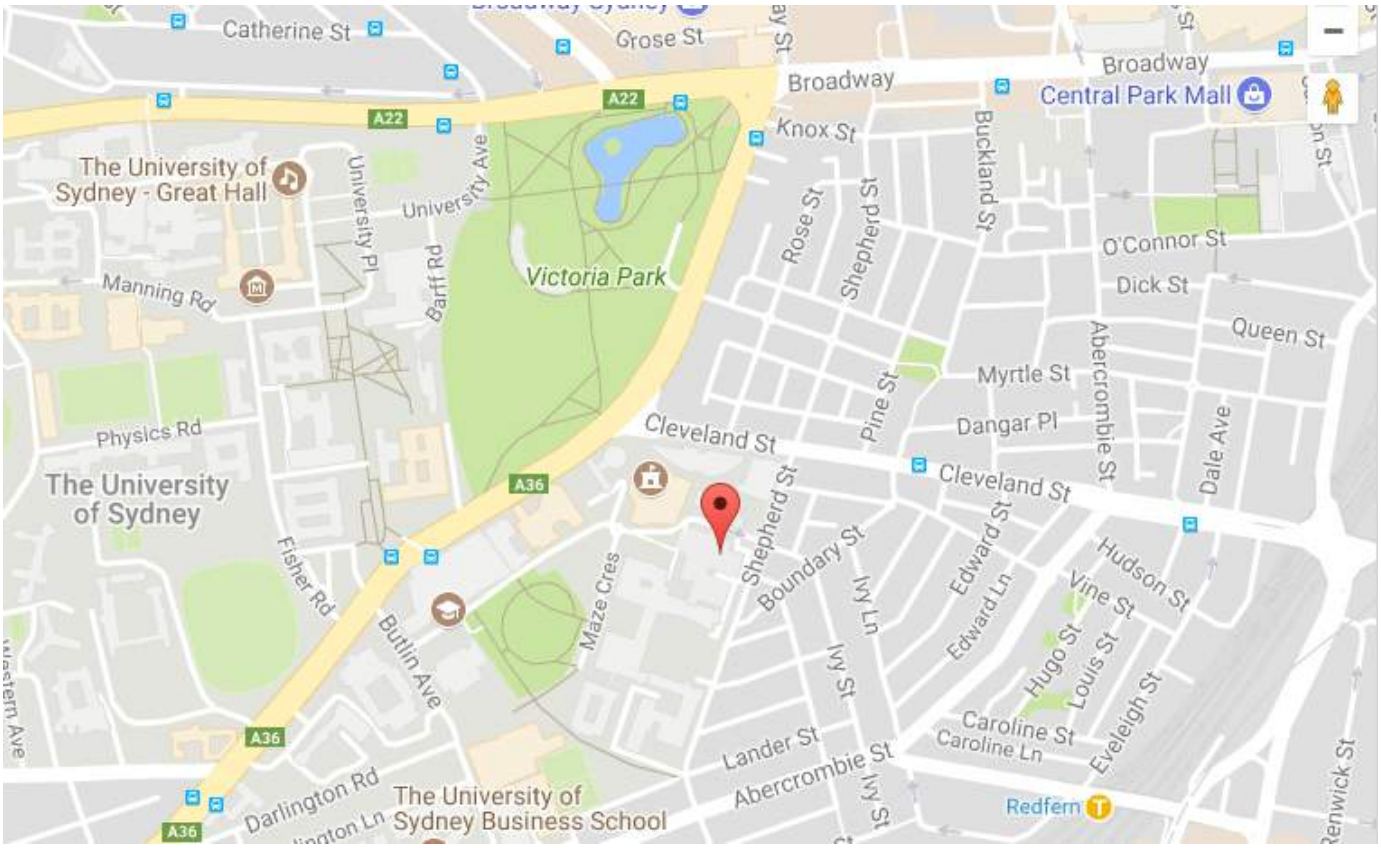
• Attendance at the Event and Q & A session

• Networking opportunities at the welcome tea and coffee

• Following the presentation, light supper (pizzas) will be provided to give the speaker and attendees the opportunity to mingle and to continue discussions.

Public Transport: The closest train station is Redfern station, which is a 10 minute walk away from the venue. From Railway Square near central station any 42X bus (e.g. 422, 426…) and the M30 will take you to the University of Sydney (on City Road) – bus confirm with bus driver on boarding. Please allow time to travel by public transport, including waiting time, and time to walk to the venue. Please refer for further details: http://www.sydneybuses.info/routes/timetables-route-maps

Parking: is available in the Shepherd Street multi-story car park, located on the corner of Cleveland St and Shepherd St. The rate is $2 per hour (up to $6 maximum), but note that only gold coins are accepted in some machines. Parking is also available in University of Sydney On-Campus Parking for $2 per hour (up to $6 maximum). Additionally, free parking is available in surrounding streets. Please observe parking restrictions and allow time to drive to the University of Sydney, park, and walk to the venue. Venue map copy and paste address into your browser: http://sydney.edu.au/maps/campuses/?area=CAMDAR Scroll down the 'Building Bar' on the left hand side to: Mechanical Engineering Building J07 and click.



Report on the 61st Sir Charles Kingsford Smith Lecture and Annual Branch Dinner held 8th October, 2019 at The Refectory, Holme Building, The University of Sydney

The 61st Sir Charles Kingsford Smith Lecture was delivered by Mr Matt Hall who recently became the first Australian to win the Red Bull Air Race World Championship realising a dream eight seasons in the making in Chiba, Japan on 8th September 2019. The evening commenced with welcoming drinks and canapes for 85, followed by Matt's presentation – a very passionate and motivating speaker. The speech in reply was delivered by Mr John Vincent, Australian Division Councillor who represented Mr Mark Skidmore, President, Royal Aeronautical Society Australia Division who was unable to attend this event.

Matt discussed his life of flying including his time with the Royal Australian Air Force and his participation in the Red Bull Air Races which was supported with film of some of his many participations in the Red Bull Races. Matt finished his Red Bull Air Race career with one world championship, seven race wins and 30 podiums. This result makes Matt the 10th world champion since the air race attained world championship status in 2006.

Matt, from Newcastle, is a third-generation pilot and his country's foremost aviator. He flew solo in a glider at age 15, got his pilot's license at 18, and has flown more than 6000 hours in various aircraft. A decorated former Wing Commander in the Royal Australian Air Force, he was named Fighter Pilot of the Year in 1997 and became a Fighter Combat (Top Gun) Instructor.

Matt supported his presentation with some Q&A from the audience after which Mr David Cox, Chairman of the Sydney Branch of the Society presented Matt with the 61st Sir Charles Kingsford Smith Medal, accompanied by Mr John Vincent.

Before concluding the formal presentations Mr David Cox acknowledged the presence of Mr Tom Sonter who discovered the 'Southern Cloud' on 26th October 1958 – 27 years after its disappearance during a flight from Sydney to Melbourne, on a stormy day 21st March 1931.

Mr David Cox then invited all to enjoy the Annual Branch Dinner which followed.

Matt's presentation was videoed and has been added to Facebook which is available to watch at the "RAeS - Sydney Branch - Members Only" group within Facebook. Please note that this service is only available to financial members. The transcript is also available on the website.

This year was the 91st Anniversary of Charles Kingsford Smith and Charles Ulm's 1928 trans-Pacific flight which was completed in Brisbane on 9th June 1928.

The Prestigious Lecture and following Annual Branch Dinner was proudly sponsored by:

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Boeing's Loyal Wingman Advanced Development Program Update: Boeing Australia is rapidly evolving its autonomous systems technology capabilities in the lab and in the field as it prepares for first flight of the Royal Australian Air Force's (RAAF) Loyal Wingman prototype in 2020. "Our aircraft and mission system are well advanced in our rigorous design and test program, bolstered by Boeing's adoption of digital engineering," said Dr. Shane Arnott, director of Boeing's Phantom Works International. "As a result, we have a live digital copy of the entire aircraft design

that we've been able to "fly" thousands of times under different scenarios to test aircraft performance and the mission system."

The Boeing team is using its world-class Systems Analysis Laboratory based in Brisbane to simulate and model critical mission capabilities and the aircraft product lifecycle. "That's making the real difference in ensuring we can maintain an agile schedule, and offer a truly affordable, attainable unmanned teaming solution for global customers," Arnott said. In fact, the Boeing team has already taken the learnings from the lab and is advancing field testing the mission system with surrogate aircraft.

Boeing has fielded a team of 15 autonomous test bed aircraft to refine autonomous control algorithms, data fusion, object detection systems, and collision avoidance behaviours. "We've flown 10 of those autonomous test beds in formation using our mission system technology," Arnott said. "We are continuing to increase the speed and complexity of our testing, most recently with five much larger high-performance jets with the capacity to fly up to 300 kilometres per hour, ahead of the full-speed prototype flight."

Announced by the Australian Government in February 2019, the Loyal Wingman program will result in a prototype aircraft that will test the potential of this disruptive new technology. It is designed to protect and extend airpower by teaming multiple unmanned platforms with manned assets to achieve a range of missions.

Digital engineering has enabled Boeing to develop, simulate and test mission system behaviours that ultimately will increase customer capabilities – such as situational awareness and ISR (Intelligence, Surveillance, target acquisition, and Reconnaissance). The team is working closely with the RAAF to refine the manned-unmanned teaming solution to address specific operational needs, and ensure manned pilots can trust and easily understand the unmanned systems flying with them. "This has significantly de-risked and reduced the aircraft test program costs, and improved the robustness of the mission system to support a wide range of possible threat scenarios," he said. "We've placed a particular focus on ensuring our underlying 'watchdog algorithms' provide the right level of AI and autonomy for manned-unmanned teaming operations. "The algorithm rules defined by our customer are designed to ensure the operator in command of the teaming fleet can expect the same outcome each time – with a focus on building operator trust in autonomy behaviours."

The work being done in Brisbane also serves as the foundation for a global unmanned smart teaming system Boeing launched at the Avalon Airshow called the Boeing Airpower Teaming System (ATS). Designed and developed by Boeing Australia and powered by AI, the ATS is a modular and highly customizable aircraft with fighter-like flight capabilities.

Kristin Robertson, vice president and general manager of Boeing Autonomous Systems, said Boeing sees the ATS working as a true force partner, where the pilot of a manned aircraft could call on the team to complement and support a specific threat-based mission. "It's our goal to help customers bring quantity to the fight and to integrate sovereign capability, data links, sensors and communications systems in a wider ecosystem of platforms that work together," Robertson said. "The testing being done now is another step in getting a force multiplier to the war fighter, but with the confidence in AI they need."

Reginald Royston (Roy) Ferris BEM C.Eng FRAeS F I Mech E, 13th February, 1927 – 26th August 2019: Reginald Royston Ferris sadly passed away on August 26th, 2019. He had a tremendous career in the British Fleet Air Arm joining at the age of 15 during the 2nd World War, where he gained his British Empire Medal - one of the youngest people ever to receive this medal for valour, working on Helicopters that had crashed in the Malayan jungle during the Malaya

Emergency. His reputation was first class all over the world and many who are still alive will be sad at his passing.
After 15 years in the Fleet Air Arm Roy resigned and joined British Aerospace in Bristol where he was deeply involved with the design of the Concord and later in the Far East with the BAC 111.
Roy came with his family under contract to Australia for the sale of the Concord and stayed on to take on sales of the BAC111. I think I have written enough about him now, only to say again, many people who knew him, will be very sad at this news. Sincerely Mrs Dawn Ferris married to Roy for 64 years.

Closed Member Only Group on Facebook: Sydney branch is live video streaming our monthly branch lectures. Watch lectures live or at a later time, 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.

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.

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.

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

Diary: Dec 4-6: 11th Asia Pacific International Symposium on Aerospace Technology (APISAT), being held at **Surfers Paradise Marriott Resort, Gold Coast.** The symposium provides the opportunity for industry engineers and researchers of universities and academic institutes from Asia-Pacific nations, to discuss the current and future advanced topics in aeronautical and space engineering. On Friday 6th December an Offsite Tour of the Hypersonics Facilities at the Centre for Hypersonics, University of Qld will conclude the Symposium. For further information please refer to the conference website: www.apisat2019.com

11-16 February, 2020: Singapore Airshow – Fly Above Expectations - Changi Exhibition Centre Singapore. Every two years, high-level government and military delegations, as well as senior corporate executives around the world attend the Singapore Airshow to forge partnerships and seal deals in this region. As Asia's largest Airshow, this is the place to be for leading aerospace companies and budding players eager to make their mark in the international aerospace and defence market! The event offers a unique platform for industry thought leadership through its high-level conference, forums and co-located events. Leading industry players, government and military chiefs gather here bi-annually to contribute to dialogues, exchange ideas and seek solutions and strategies to advance the interests of the global aerospace and defence sector. For further details refer: https://singaporeairshow.com/trade/about-singapore-airshow

19 March 2020: International Eminent Speaker Program – 2020 - to be delivered by Professor Ian Poll OBE FREng FCGI Hon FAIAA FRAeS, Emeritus Professor of Aerospace Engineering at Cranfield University and CEO of Poll AeroSciences Ltd. The title of his presentation is 'Aviation and the environment gathering storm or golden opportunity?' - Aviation facilitates and, in many cases, enables economic growth and social mobility at the global level. To support a growing global economy, air transport capacity must also increase. But how can we do this sustainability, when aviation currently uses fossil fuels and such an expansion could have consequence s for the environment? In the lecture he will explore how the chemical compounds found in jet engine emissions can affect the Earth's thermal radiation balance and the implications for "global warming". This event will be a joint meeting with Engineers Australia. Further details including the venue will be advised in due course.

2-3 May 2020: 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/

4-7 May: AUVSI XPONENTIAL 2020 – Find Your Edge – being held at the Boston Convention and Exhibition Center, Boston. 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

15-23 August 2020: 43rd Scientific Assembly of the Committee on Space Research (COSPAR) and Associated Events - COSPAR 2020 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: **mid-February 2020,** The theme of the COSPAR 2020 Assembly is *Connecting Space Research for Global Impact*. More information can be found at www.cospar2020.org

Wednesday, 30 September 2020: 62nd Sir Charles Kingsford Smith Lecture to be delivered by Mr Alan Joyce AC FRAeS, Chief Executive Officer, Qantas Group. Further details to be advised. Please **'Save the Date'**.

23-28 February 2021: The Australian International Airshow will comprise industry-only trade exposition days from Tuesday 23 February to Friday 26 February, with public airshow and entertainment days from Friday 26 February to Sunday 28 February. AIRSHOW 2021 CEO Ian Honnery said the RAAF Centenary milestone, together with the 2020 Centenary of the formation of Qantas, means organisers are planning for an event that will eclipse Airshow records. For further details refer: www.airshow.com.au

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

The Committee wishes you all the best for the Festive Season and the New Year

Thanks Boeing for your help – at our recent 'Workshop Strategy Day' the yearly risk assessment for the 'Next Run' identified that Rudolph was getting older and slower and the concept of breeding 'faster' reindeer was identified.

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