



OCTOBER 2021 ISSUE 47

# AIR PILOT



## INSIDE

## THE GREEN ISSUE

INVESTING IN GREEN AVIATION  
THE GREEN EVENT  
HOW GREEN IS YOUR AIRFIELD?

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## THE JOYSTICK CLUB



## THE HONOURABLE COMPANY OF AIR PILOTS incorporating Air Navigators

### FORMER PATRON:

His Royal Highness  
The Prince Philip  
Duke of Edinburgh KG KT

### GRAND MASTER:

His Royal Highness  
The Prince Andrew  
Duke of York KG GCVO

### MASTER:

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### CLERK:

Paul J Tacon BA FCIS

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A Livery Company of the City of London.

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Except where specifically stated, none of the material in this issue is  
to be taken as expressing the opinion of the Court of the Company.

# DIARY

With the gradual relaxing of lockdown restrictions the Company is hopeful that the following events will be able to take place 'in person' as opposed to 'virtually'. These are obviously subject to any subsequent change in regulations and members are advised to check before making travel plans.

## OCTOBER 2021

14 <sup>th</sup>	GP&F	APH
14 <sup>th</sup>	New Members' Briefing	APH (and Zoom)
21 <sup>st</sup>	T&A	Guildhall

## NOVEMBER 2021

2 <sup>nd</sup>	ACEC	APH
6 <sup>th</sup>	Air Pilot Flying Club AGM	White Waltham
16 <sup>th</sup>	APBF	APH
18 <sup>th</sup>	GP&F	APH
18 <sup>th</sup>	Court	Cutlers' Hall
18 <sup>th</sup>	Scholarships Presentation	Cutlers' Hall

## DECEMBER 2021

8 <sup>th</sup>	APT/AST	APH
16 <sup>th</sup>	GP&F	APH
16 <sup>th</sup>	Carol Service	St Michael's
16 <sup>th</sup>	Carol Service Supper	George and Vulture

**Cover photo:** Ampaire's modified Cessna 337 made the first hybrid electric aircraft flight in Scotland – the 120 miles from Kirkwall to Wick – in August (Ampaire Ltd) ; The Joystick Club attracts budding aviators, with the Company's help

### Applications for Visits and Events

Please kindly note that we are ceasing publication printed 'flyers' and application forms for visits and events. From now, details and applications for all visits and events will only be available online - on the website and a via links in the e-news and events bulletins which are circulated by email to members.



Access the Company's  
website via this QR code,  
or follow us on  
Twitter; @AirPilotsCo



# A MESSAGE FROM YOUR EDITOR...



On the surface, aviation has a great story to tell: the latest airliners need less than one quarter of the fuel to fly a passenger 100km than did their predecessors of 60 years ago and make less than one tenth of the noise of those earlier aircraft. Even in the last 20 years the average specific fuel

consumption of new aircraft has effectively halved, and noise has dropped commensurately.

The trouble is that over those 60 years, the number of revenue-passenger-kilometres flown by the world's airlines (pre-Covid-19) rose by a factor of over 50, so while the impact from fossil fuels of a single flight is much reduced, the cumulative effect of air travel is much greater than it was six decades ago. Likewise, while the take-off noise of a single airliner now is a tiny fraction of that of a Boeing 707, the sheer number of take-offs and landings means that noise is at least as much of a perceived problem for those living or working under flightpaths as it was then. The same can be said of contrails – then an occasional streak across the sky, now often effectively a whole man-made cloud cover – and of airport-generated ground traffic.

As attendees at the Company's Green Aviation Event later this month will hear, there are exciting technical advances coming which could mitigate some of the worst impacts of aviation, but not all. Electrically-powered propellers will still make a noise, as will the smoothest, minimum-drag airframes. High-bypass engines – whether burning sustainable aviation fuels (SAF) or hydrogen – will still form contrails unless flight levels are changed.

Most importantly, however, unless its image can have the same magnitude of makeover as its technology might, aviation will still be branded by public opinion as noisy and polluting – notwithstanding the overwhelmingly positive effect it has had on global economies and lifestyles for more than a century. Those who seek to curtail the growth of air travel, to block runway development and to close existing airfields seem to be in either ignorance or denial of the enormous strides made by the aviation community in recent decades – and equally blind to the further improvements which will be made before new runways and next-generation aircraft come into service. In many cases they are fighting tomorrow's battles with yesterday's statistics, and unless the aviation community can find a way to counter this threat, all that technological promise could come to nought.

*Allan Winn - Editor*

# IN THIS ISSUE...

## NEWS

- 4 The Founders' Hall
- 5 Centenary Statue of Lord Trenchard
- 7 Gazette

## REPORTS

- 6 The Livery Dinner 2021
- 8 The Master's Message
- 10 Regional Reports - Australia
- 11 Regional Reports - South Australia
- 12 Regional Reports - New Zealand
- 13 Regional Reports - New Zealand Conference
- 14 Regional Reports - Hong Kong
- 15 Regional Reports - North America
- 16 From the desk of the (new) DAA
- 17 Young Air Pilot Update

## FEATURES



- 18 Green Aviation: Our Last Chance?
- 20 Jet Zero to Green Aviation Hero?
- 23 Aviation Finance in the Green Environment 2020 - 2050
- 26 Hydrogen - The First Frontier of Decarbonisation?
- 27 How Green is your Airfield?
- 28 Academic Bursary Awards 2021
- 29 Youth in Aviation Programme
- 30 Profile: The Joystick Club
- 32 Into the Overshoot

### Guidelines for submissions to Air Pilot

Please submit contributions as follows:

- Text in word document, including your name below the title of the piece;
- No embedded photos;
- All images to be sent as jpeg files with a file size of at least 2MB;
- More than 2 images to be sent via a Dropbox file, rather than an e-mail attachment





# NEWS ROUNDUP



## AROUND THE HALLS

By Past Master Chris Ford

At 11.00 on a warm 18<sup>th</sup> August, The Master and 13 members and partners gathered at the Grand Avenue entrance to Smithfield Market to be guided round a selection of Livery Halls by Wing Commander (Ret) Mike Dudgeon OBE, a Past Master of The Mercers' Company. The initial route was to see The Founders' Hall in Cloth Lane, then on to The Information Technologists' Hall, a small but ideal building formerly The Rose & Crown Inn and on to The Farmers' & Fletchers' Hall. Whilst access was not possible to all locations due to time constraints, Mike was able to explain the history behind each building and progressively as we moved through the streets of London he explained the origins, ethos and *raison d'être* behind the Livery movement and each Company we visited.

Thereafter it was a well-paced walk via The Butchers' Hall to London Wall and The Ironmongers' Hall, Plaisterers' Hall to The Barber-Surgeons' Hall, at which point Mike explained that the Barbers had indeed been the Surgeons of the old days! After briefly seeing Salters' Hall and Brewers' Hall, it was then on to Pewterers' Hall.

Whilst Mike clambered the stonework in the Churchyard of St John Zachary in Gresham Street, we gathered to listen to his tales of land ownership by the older Companies. Goldsmiths' Hall, Wax Chandlers' Hall and Saddlers' Hall then followed, with fascinating stories of each be recounted.

A bit of ducking and diving through the lanes north of Cheapside led us to a welcome break at The Mercers' Hall. Here, Mike had kindly agreed with their Beadle to provide



*The magnificent interior of Mercers' Hall*

refreshments and a comfort break. After this respite Mike informed us about his own Company and its many links with the ancient City - the Mercers are first in order of precedence within the City Livery Movement. Built on the footprint of The Hospital of St Thomas and now incorporating an adjacent Chapel, The

Mercers' Hall is indeed a lovely building which is currently housing an art exhibition of paintings of famous individuals associated with that Company over the years.

After this welcome break the party continued past Mansion House to visit Painters' Hall, Vintners' Hall, Innholders' Hall, then past our Company's old offices in Dowgate Hill to see The Halls of The Tallow Chandlers, The Skinners and lastly The Dyers. Now with somewhat a case of "information and cultural overload" the party adjourned to The Banker where a suitably filling lunch and cool drink was enjoyed by all.

On behalf of the Master and all who attended we thank Mike Dudgeon for his most informative and entertaining tour. We all came away much the wiser about Livery matters, the history of some and the unique architecture of others. We only saw those Halls in the western part of the City and this account of the day cannot begin to even break the surface of the history of these Halls or answer any questions that many may have about the dates and tales of damage in not only the Great Fire of 1666 but Zeppelin raids of the Great War and the Blitz during World War Two. For that, may I recommend that you peruse *The Livery Halls of The City of London* by Anya Lucas & Henry Russell published by Merrell. This contains detailed descriptions of all 40 Livery Halls and their history and is packed full of the most wonderful pictures of the interiors of each.



*The Air Pilots party at Mercers' Hall, with guide Mike Dudgeon at far right*

# THE CRANWELLIAN ASSOCIATION CENTENARY STATUE OF LORD TRENCHARD

*By Liveryman Sir Michael Graydon and Sir Chris Coville*

On 7<sup>th</sup> August this year, Viscount Trenchard, Honorary Air Commodore in the Royal Air Force Auxiliary, unveiled the statue of his grandfather Marshal of the RAF Lord Trenchard, widely known as the 'Father of the Royal Air Force'. The ceremony took place at the RAF College Cranwell, which was the first Air Academy in the world and was founded by Lord Trenchard when he was Chief of Air Staff.

The first cadets arrived at the Royal Air Force College in 1920. As the Centenary of this important date in RAF history approached, the Cranwellian Association deliberated on how best to record the event. After considering all options, it was concluded in 2017 that a statue of the College's founder would be both a lasting memorial for future generations and also a fitting tribute to the man whose vision made it all possible.

That, of course was the easy bit! A team was set up in 2018 to turn the dream into a reality, and address the many complex issues associated with such a project: raising the substantial amount of money, selecting a sculptor, agreeing a design and overcoming the many bureaucratic hurdles of planning and getting approval from English Heritage and other interested agencies.

After a rigorous selection process, the team chose Vivien Mallock, a renowned sculptor, much respected in military circles. The direction to Vivien was simple: produce a statue of our founder, facing the College, and looking across the parade square. Vivi set to work in late 2018, firstly producing a small-scale maquette to get the stance and overall representation right.

Meanwhile, strenuous efforts were being made to raise the circa £140,000 needed to pay the sculptor, design and deliver a plinth recording Trenchard's several founding achievements. The plan was to celebrate the Centenary Year with a formal unveiling in June 2020 at the annual reunion of the Cranwellian Association. The project team made several visits to advise on minor points of detail, before in Spring 2020 it was decided that the mould was perfect, and the foundry took over to complete the transformation into the final bronze statue.

But of course there was one very big problem – Covid-19!



*The original maquette*

In Spring of last year, a difficult decision was taken: to cancel the annual reunion, but complete the installation in the Centenary Year. Accordingly, at 08:00 on 16<sup>th</sup> October 2020, after four years of hard work, a low loader arrived at the ceremonial gates of the RAF College.

A short time later, a small ceremony involving the Association President, Sir Michael Graydon, and the



*(L to R) Lord Trenchard, Viv Mallock, Sir Christopher Coville and Sir Michael Graydon at the unveiling of the statue (Photo by kind permission of the Commandant, RAF College Cranwell)*

current Lord Hugh Trenchard, grandson of the great man, marked a historic moment in the history of the RAF College and the RAF. There the statue waited, the founder patiently gazing across the parade square towards his College, until the formal unveiling on 7<sup>th</sup> August this year.

The ceremony was moving, and the unveiling perfect with the help of air cadets from Trent Wing who graced the day along with members of East Midlands University Air Squadron and the Sleaford Concert Orchestra. In his address, Sir Michael Graydon referred to the statue of the Founder looking across the parade square with pride; "I hope" he said "that... his presence will promote some new traditions at the College, whereby the graduation reviewing officer will pay respects to the man whose vision and fortitude, against much challenge and ignorance, created both the Royal Air Force that has served this nation and the free world so well, and this magnificent College which over its 100 years has established a world-wide reputation and created a great heritage... that will be both inspirational and unforgettable to those who have the privilege of passing through its portals today. We forget heritage and its lessons at our peril."

[www.cranwellianassociation.org.uk/trenchard.html](http://www.cranwellianassociation.org.uk/trenchard.html)



# LIVE DINING RETURNS! THE LIVERY DINNER 2021

*By The Editor*

For the first time since the Annual General Meeting in March 2020 the Company dined formally on 22<sup>nd</sup> July, with the Livery Dinner held at Carpenters' Hall. At the Court meeting before dinner, nine new Liverymen were clothed and certificates awarded to three Master Air Pilots, one Master Air Navigator and two Master Rearcrew. Following a lively drinks reception, 149 members and their guests enjoyed an almost Covidy-derestricted meal, missing only the ceremony of the Loving Cup.



*The Master with Wardens John Denyer and Jonathan Legat, IPM John Towell, Master-Elect Robin Keegan and Warden Richie Piper*

The Principal Guests for the evening were Sir Stephen Hillier, Chair of the Civil Aviation Authority; Robert Courts MP (Minister for Aviation, Maritime and Security); and the Sheriff of the City of London, Christopher Hayward. Other guests who joined the Master on the top table were the Master Scientific Instrument Maker; the Master Fan Maker; the Immediate Past Master Farmer; the Colonel Commandant Army of the Air Corps; and the President of the Air League.

In his address Sir Stephen listed three principles and three priorities for the CAA under his leadership, and six immediate issues that the organisation was tackling. His three principles were:

- Independence – a CAA which was unbiased, without undue influence, but not isolated from the aviation sector and an engaged regulator;
- Leadership – the CAA had a key leading role in the UK aviation enterprise, but did not itself deliver aviation safety. Safety was delivered by those who fly aeroplanes;
- Inclusivity – A CAA for all;

His three priorities were:

- To continue to be a world-class air and space regulator, trusted by those who regulated and those who fly;
- To be able to change – the enterprise of which we were

all part was changing rapidly;

- To continue to have excellent people;

The six immediate issues facing the CAA were:

- Covid-19 recovery – how and when it could happen, in a safe and effective way;
- Environmental sustainability;
- Withdrawal from EASA;
- International engagement;
- Innovation and technology;
- Project Horizon – defining the CAA of the future.



*The Master with (L to R) Master Air Pilots Capt A J C McDonald; Peter, Lord of Abbots-Hay; and Sq Ldr Peter Lovegrove; Master Air Navigator Fl Lt Steven Sansford; and Master Rearcrew John Spencer and Nicholas Horst*



*The Master with new Liverymen (L to R) Christopher Reynolds, Ian Dugmore, Cynthia Robinson, David-John Gibbs, John Petersen, Alan Carter, Peter Bailey, Victor Flintham, Mark Green.*



*The Master with Chris Bramall (Master Fan Maker); Martyn Wheatley (Master Scientific Instrument Maker); Sheriff Chris Hayward; Robert Courts MP (Minister of Aviation); Sir Stephen Hillier (Chair, CAA); David Bolton (IPM Farmer)*



*The Master greets the Sheriff*



*The new Liverymen are introduced to the assembled diners*

## TROPHIES AND AWARDS 2021

The Company has announced the winners of its Trophies and Awards for 2021. Further details of the winners, and their citations, will be included in the full report of the T&A Banquet in the December issue of *Air Pilot*.

### Lifetime Contribution to the Aerospace Industry

The Award of Honour: *Martin Baker Aircraft Company Ltd*

### For Outstanding Courage or Devotion to Duty in the Air

The Grand Master's Award: *Crew of NH90 NZ3301:*

*Flt Lt Hamish Reichardt (Captain)*

*Sgt Jennifer Hart (Helicopter Loadmaster)*

*Flt Lt Loic Ifrah (Co-pilot)*

*Sgt Phillip Delaney (Helicopter Loadmaster)*

The Master's Commendation: *Maj Kevin Anderson*

The Master's Medal: *Lt Col Adam Thornton*

The Master's Medal: *Flt Lt Matthew Douglas*

The Hugh Gordon-Burge Memorial Award:

*Crew of TALON 42*

The Prince Philip Helicopter Rescue Award:  
*CH47F Crew and UH60M Crew:*

*Pilot in Command: CW5 Joseph Rosemond*

*Pilot: CW2 Brady Hlebain*

*Flight Engineer: Sgt Cameron Powell*

*Flight Engineer: Sgt George Esquivel*

*Pilot in Command CW5 Kipp Goding, Pilot:*

*CW2 Irvin Hernandez*

*Crew Chief: WO1 Ge Xiong*

### Flight Operations

The Sir Barnes Wallis Medal: *Sqn Lr James Skinner*

The Grand Master's Medal: *Flt Lt Ryan Stowe*

The Johnston Memorial Trophy: *The RAF Sentinel Force*

The Sword of Honour: *Stuart McKay*

The Myles Bickerton Trophy: *John Stirk*

### Flight Test

The Derry and Richards Memorial Medal: *Kelly Latimer*

The Eric 'Winkle' Brown Memorial Trophy: *Capt Richard Dane OBE*

### Safety and Survival

The Sir James Martin Award: *Garmin Ltd*

The Cumberbatch Trophy: *Tim Tucker*

### Training

The Glover Trophy: *Captain James Lowrey*

The Central Flying School Trophy: *Flt Lt James Hobkirk*

The Pike Trophy: *Primo Lonzardi*

John Landymore Trophy: *at the discretion of the Scholarship Committee*

### Regional Awards

The Grand Master's Australian Medal: *Flt Lt Laura Ashleigh Haws RAAF*

The Australian Bi-Centennial Award: *Flt Lt Geoffrey Fox RAAF*

The Captain John Ashton Memorial Award: *Royal Flying Doctor Queensland Section*

The Jean Batten Memorial Award: *Sir Peter Robert Jackson ONZ KNZM*

### Aviation Media

The Award for Aviation Journalism: *Arthur Williams*

# GAZETTE

APPROVED BY THE COURT 16<sup>TH</sup> SEPTEMBER 2021

## ADMISSIONS

### As Upper Freeman

Christopher Charles COOPER

Mark William HALL (HK)

Simon HINDMARSH

Malcolm Ronald HURMAN (AUS)

Clayton Jonathan REID (NA)

William John SEYMOUR (HK)

Pierre STEYN (AUS)

Christopher John STRADLING

Alexander James WILLIAMS (AUS)

### As Freeman

Brant GUMBLEY

Arne Haskjold KRUMSVIK (OS)

Philip Ramon LITTLEHALES

Howard Munro SHERRIFF

### As Associate

Matthew Adam Gordon BRIE

Liam Joseph PETERSON (AUS)

Kaartik WALIA (AUS)

## ACKNOWLEDGED BY THE COURT 16 SEPTEMBER 2021

### REGRADING

#### As Upper Freeman

Cameron BROWN

Christopher CHOWN

Philip MACGREGOR

Cameron RUCKLEY

Andy TAYLOR

#### As Freeman

Leah MANSFIELD

## REINSTATEMENT

### Upper Freeman

Erwin EIJSERMANS

### DECEASED

William CHARNOCK

David HUGHES

Barry MARSDEN (NA)

Ronald PRICE (NA)

### RESIGNATIONS

Neil ASHLEY

Michael CARRIVICK

Hannah CAWTHORNE

Timothy COOPER

Rod DINGWELL (NA)

Paul DUNCAN

Alan EVANS

Robert GIBSON

Peter HARTSHORNE

Kimberley HOMANS

Mike Matthews (NA)

Jeremy MCKINNEY

David MOORMAN

Colin NEILSON

Natasha QUINN

Lendy RENEGAR (NA)

David STREIF (OS)

Martyn YOUNG





# MASTER'S MESSAGE

*Sqn Ldr Nick Goodwyn*

Twenty years ago, on 11<sup>th</sup> September 2001, I and my squadron colleagues were preparing to bid farewell to a long-standing friend, fellow pilot and instructor

on his departure from the RAF into the airlines. Our plan, to host a 'reverse' squadron lunch in the Officers Mess, was in motion and we were settling in for a long afternoon when I was quietly called out of the dining room to the mess reception to be shown footage of the second aircraft impacting the twin towers of the World Trade Centre.

It was immediately apparent that we were witnessing an event of horrific and immense magnitude and of consequence, although at that point who could foretell what that would be?

I slipped back into the lunch and quietly explained what I had seen to my Boss and to our padre who was also attending. We rapidly brought proceedings to a close and I recall the padre, with great presence and sensitive judgment, offering a prayer to all those affected by the unfolding tragedy. As we returned to work, Ops Wing was already messaging on the closure of all US airspace and of mass diversions, and we sensed and anticipated that somehow, a call to arms was imminent. Subsequent events proved this to be the case. Aviation, both commercial and military, changed forever in a moment.

Today, two decades on, we have all recently witnessed scenes reminiscent of the fall of Saigon in 1975 with the withdrawal from Afghanistan of coalition forces and a monumental military (and commercial) effort to airlift out of Kabul after a 20-year presence. My thoughts have reflected on all of those servicemen and women, civilians and their families whose lives have been, and continue to be, impacted by this turbulent period of our history.

## COMMERCIAL AVIATION CHANGED IN THAT MOMENT ON 9/11

The consequences of this human tragedy manifested in rapid and enduring changes to regulatory, airline and airport procedures focusing on safety and security. Twenty years on, we all experience the way we, as crew and passengers, and our baggage, are scrutinised and scanned,

how airport sensitive areas and cargo are monitored. We endure full-body scanning, enhanced X-ray of carry-on items and are perhaps no less aware of how agencies use intelligence to detect suspicious passengers and others and to verify identity. Most pertinent are the reinforced cockpit doors, closed-circuit cameras and the locked-door policies. Acutely, I wonder how those measures have affected our profession both in developing a distance between flight and cabin crew members but also how they have changed the perception of flight crew as a career. We now have generations of budding young aviators who have not experienced the exquisite excitement of visiting the cockpit in flight, as I was fortunate to do, and to be inspired by that to chase the dream to fly.

Commercial and military aviation - indeed all aspects of aviation - are changing again as we look to the challenges and impact of environmental change and how our profession and industry can adapt to achieve, through technological and operational development, targets of decarbonisation, net-zero emissions and sustainable aviation.

This issue of Air Pilot reflects on this subject and what we



*Baghdad Airport, January 2006*

can do, as Air Pilots and as a Livery Company to influence and inform. Whilst we look to COP 26 in Glasgow and the joint Air Pilots and Worshipful Company of Scientific Instrument Makers (WCSIM) event at Glaziers Hall on Monday 25th October, this subject will be

enduring and I hope that future editions of Air Pilot will be informative and educational as those technologies develop and we learn and understand and influence more.

As mentioned elsewhere, the Lord Mayor has written to strongly support the event. It fits closely with his vision for the City of London playing a world leading role in mobilising private finance in support of public finance to bring about the changes necessary in our society in the fight against climate change.

I am delighted and honoured that we are working in partnership with other Liveries and the Mayoralty on environmental issues and, in particular the WCSIM and



my fellow Master, Martyn Wheatley, Master Elect Charles Holroyd, Clerk Misha Hebel and our joint Liveryman Robert Seaman. Their Worshipful Company represents those professionals who are interested in the craft of scientific instrumentation and related disciplines, and their approach is represented by their motto: 'Looking



*Baghdad, January 2006*

forward – giving back'. This fits well with a Company whose craft is so closely linked to innovation today whilst remaining proud of the traditions which it upholds and which is involved both directly and indirectly with the aviation industry through instrumentation

and control systems, and with efforts both academic and industrial to use technology to move the UK to net zero. Like the Air Pilots, they support and create opportunities for both young and old alike through schools, academies and universities and are welcome partners in our activities on environment.

## COMPANY MATTERS

Since the last edition of Air Pilot, we were able to gather together again and dine as a Livery at Carpenters Hall. I hope that all of you who were able to attend enjoyed the occasion as much as I did in hosting our distinguished guests including: Sheriff and Alderman Chris Haywood; the Chair of the UK CAA, Sir Stephen Hillier; the Aviation Minister Robert Courts MP; and the Masters and Clerks of three Livery Companies. My thanks go to our own Clerk and office team for all the hard work in making the evening such a success. I very much look forward to the Trophies and Awards Banquet in October and the opportunity to welcome many of you at Guildhall.

Our Company visits have restarted, and I thank all the team for their perseverance and efforts in putting the excellent programme together. In early August, I put on my walking shoes, dusted off my sun hat and joined the guided tour of some of the Livery Halls of the City. Wg Cdr (ret) Mike Dudgeon, a Past Master of the Mercers' company and a Blue Badge Guide, was our guide, stopping briefly at each to explain the history of the Company and of their Hall and we were able to enter the Mercers' Hall to visit their Chapel and Ambulatory. The tour and talks

were superb, and I look forward to joining many of the other visits all of which I heartily recommend if you can make them.

Lenka, Benji and I also had a most pleasant afternoon at the West London Aero Club at White Waltham and the venue for the Air Pilots Flying Club Summer BBQ. It was lovely to see so many members there, and we were very well looked after in the breezy sunshine. The day before, we hosted a number of the Young Air Pilots and members of the YAP development group at our house for a BBQ. Thank you to YAP Chair Will Wright for co-ordinating the afternoon.

Even as the summer holidays draw to a close, the scholarships season is still in full swing. With Warden Richie Piper, I was privileged to travel to join seven of our gliding scholars and to present their end of course certificates to them in the Officers' Mess at Middle Wallop. They had completed their gliding nearby at Upavon airfield, all under the expert guidance of the Portsmouth Naval Gliding Club, and I was humbled by their thanks and gratitude (and that of their parents) for the opportunity that we, the Air Pilots, had given them. Their enthusiasm, teamwork and talent were highlighted by the PNGC team and reflected in the Scholars' pride and excitement on what they had achieved that week. I thank all of the Air Pilots Scholarships and Bursaries team for what you do - the proof is really in the pudding!

Finally, I look forward to a busy period ahead. The Livery events calendar is rapidly gathering momentum and our own activities grow apace. We welcome the new DAA Paul Stone into our midst and I wish him well in his new role with us. Thanks again to all who contribute to this magazine and to the editorial team. A last request: Allan, our Editor, would like to develop a correspondence section as a regular feature, and will welcome Letters to the Editor for publication. I am sure you will oblige!



*Presenting Gliding Scholarship certificates at Middle Wallop*

# REGIONAL REPORTS

## Australia Region

*By Upper Freeman Rob Dicker, Chairman, Australia Region*



I'm looking forward to the day when I don't have to mention the word Covid in my regular article for Air Pilot but this month I'm afraid it is inescapable. Until the Delta variant of Covid-19 came along

New South Wales had done a pretty good job of managing outbreaks through testing, contact tracing and isolation. That approach has been defeated, however, by the new variant, with daily case numbers reaching a peak of over 1,000 at the time of writing and the whole of the state under lockdown. A similar situation exists in both the Australian Capital Territory and Victoria.

The upside to this situation is that vaccination rates have picked up significantly as it is recognised that this will be the only way out of lockdowns. Supply issues remain, but assuming current vaccination rates continue, enough of the population should be vaccinated by year end to put an end to lockdowns.

Obviously, with 60% of the Australian population in lockdown there are serious knock-on effects for aviation and aviation related activities. June passenger traffic numbers are reported to be down by 41% on 2019 figures after climbing to a high of 92% just before lockdowns were introduced. This has resulted in staff layoffs across the major carriers and suspension of the travel bubble with New Zealand, which is also in lockdown. Most major aviation events have been postponed until 2022 or, as in the case of the Avalon Airshow, cancelled altogether. This is disappointing as it was slated to be the major airshow during the RAAF's centenary year.



*Tony Alder presents the P G Taylor Award to Qantas Academy's Pierre Steyn*

The only airshow event still standing in 2021 is Wings Over Illawarra, scheduled to be held at Shellharbour Regional Airport, south of Sydney, on the last weekend of November. If it goes ahead, it will enjoy good support from the RAAF.

Apart from being the RAAF Centenary year, 2021 also marks 80 years of operation of The Australian Air Force Cadets

which started out as the Air Training Corps in 1941. There are various events happening around the country to mark this milestone, including a reception in Adelaide attended by the Chairman of the AAFC Foundation, Upper Freeman AVM Kym Osley, and other Company members.

Notwithstanding the current lockdown in the south-eastern states there have been opportunities for social gatherings in the other states. Earlier in the year Flt Lt Josh Brown gave a lecture in Adelaide on the commissioning into RAAF service of the Boeing P-8A Poseidon, which is operated by No 11 Squadron from RAAF Base Edinburgh in South Australia.



*AVM Kym Osley and Company members at the AAFC 80th Reception*

In early September, members of the Queensland Working Group travelled to Wellcamp airport, near Toowoomba, to visit the Qantas Group Pilot Academy. The academy had its genesis back in 2018, when we were living in a different world, and Qantas decided it needed to do something to secure and train future pilots. The purpose-built facility, operated by Flight Training Adelaide (Queensland), was opened in early 2020 with the ability to train up to 250 pilots annually. Training rates have, however, been significantly lower since opening at the outbreak of the pandemic.

Queensland Working Group Chairman Capt Tony Alder presented the academy with a perpetual trophy that will be awarded to the student displaying exceptional professionalism and airmanship throughout the course. The P G Taylor Award was accepted by the academy's Chief Operating Officer, Pierre Steyn.

Hopefully, by the time of my next report Australia will have reached its target of an 80% fully vaccinated population that will allow it to reopen its borders and for aviation to start getting back to something like normal.

# The South Australian Working Group

By Liveryman Robert Moore

The South Australian Working Group has some very enthusiastic members involved in flying their Vintage aircraft and who on occasion get together to fly in formation over significant events in the State.

Like many Air Pilots members, they also enjoy displaying their aircraft at vintage aircraft regattas and airshows. In the last few months there have been two events of significance, a regional airshow in the Barossa Valley and a fly-over of the City of Adelaide on 25<sup>th</sup> of April during the ANZAC Day March.

The ANZAC Day participants were: DHC-1 Chipmunk flown by Steve Nelson; DH.82a Tiger Moths flown by Steve Johnson and Tim Brownridge; an 80-year-old Moth Minor flown by Steve Jenkins; a Vietnam-conflict Cessna 180 flown by Darryl Hill; and the restored CAC Boomerang flown by Jim Whalley, the son of the pilot who flew it in WW 2. ANZAC Day is a public holiday here in Australia in remembrance of the Gallipoli Campaign during the Great War.

## THE BAROSSA AIRSHOW APRIL 2021

The Barossa Valley is a well-known wine-growing region 75km north east of Adelaide, where a regional airshow is held every two years, with the proceeds going to a local charity. This year the Air Pilots played a large part in the airshow, with seven pilots flying demonstration aircraft,



*The Anzac Day de Havilland flypast*

with another in the commentary box.

Jim Whalley displayed his helicopter, SIAI Marchetti S.211 and Boomerang; Steve Johnson his 1941 DH.82a; and Steve Jenkins his Moth Minor. Tim Brownridge flew his Stinson Reliant, while Chris Spirou flew a Pitts and Stewart Warren a Beechcraft Debonair in a joint routine (Chris has been a display pilot since the 1960s).

Also taking part were Chantal Didenko who flew a Jabiru in a display of Recreational Aircraft Australia (RAAus) aircraft and Vlad Zhelezarov who flew the Piper PA-25 Pawnee glider tug, and Maikha Li, who was in the commentary box.



*Chris Spirou and Stewart Warren do their double act*



*Maikha Ly (in trilby) busy commentating at Barossa*





# New Zealand Region

*By Liveryman Allan Boyce, Chairman NZ Region*

The politics of world envy has changed. "Fortress New Zealand" can no longer be held up as a safe haven from Covid-19. We have had a border failure and the Delta variant of the virus is rampant in our teenagers and young adults. More than 21,000 people have been classified as close contacts throughout most of NZ, but mainly in Auckland.

The whole country is in Level Four lockdown again. Compliance is very good, but the mood is a little rebellious this time, not because of the lockdown itself, but for two reasons associated with the lead up to the border breach. The first is that many commentators are questioning whether the strategy of elimination that our government is following is feasible or even possible. There are signs of government doubt emerging as well, and it is just possible that the politicians may "pivot" to another strategy in the near future. The second reason for disgruntlement is that accusations of government incompetence with our vaccine roll out are rife. Phrases like "vaccine stroll out", "trickle out" or "dribble out" have been used by many columnists in NZ newspapers. No amount of spin from the Prime Minister or health officials can hide the fact that just over 20% of the population has been fully vaccinated. We are 115th in the world in terms of vaccination rates.

## AVIATION IN NZ

NZ Aviation is pretty sad at the moment. The tourist helicopters and small fixed-wing aircraft are very under employed. Our largest airline, Air New Zealand, has deferred its capital-raising again, after its largest shareholder (the Government) indicated that it would not support a raising due to the changeable conditions prevailing. As a result of the nationwide lockdown, the airline is operating only a skeleton service and has reported a huge loss for the previous year.

A bright spot for NZ is the debut of its largest aerospace company – Rocket Lab Inc - on the US NASDAQ exchange, valued at around \$US4billion. Its momentum has propelled the whole NZ aerospace industry on to the world stage with a host of companies leveraging on the recognition that Rocket Lab has created.

Once the level of lockdown reduces, recreational flying will resume, and I am hoping to attend the NZ Tiger Moth Club fly-in at Taumarunui in October. Personally, we

have managed to keep our own agricultural helicopters airborne through the winter, despite supply-chain difficulties. We recently had a set of main rotor blades marooned in Hong Kong for a couple of weeks on their journey from Los Angeles to New Zealand. We were lucky that the blades arrived just at the end of the scheduled servicing and did not cause a grounding.



*Rocket Lab's Mahia launch site is driving NZ aerospace growth*

## AIR PILOTS

The NZ Region is holding regular committee meetings - mostly by zoom, and physically occasionally. Our lecture programme has been disrupted, but Liveryman Mike Zaytsoff managed to run two Cold Weather Operations Seminars in May. The committee is planning our official visit to the Regulatory Agencies in Wellington in October and our Formal Dinner on 20<sup>th</sup> November at RNZAF Base Auckland, Covid-19 restrictions permitting. Alas, the Master will be unable to join us physically.

On a lighter note, prior to the lockdown, the country's farmers massed their tractors and their dogs in most towns in New Zealand for a "howl out". This made entertaining TV viewing. They were protesting about the mass of new restrictions and costs on their operations. The final straw was a tax on big gas-guzzling utility vehicles. The government advocates electric vehicles with a purchase subsidy, and has suggested the farmers should replace their 'utes' with electric vehicles. Just as the discussion was developing, a major power outage caused the lights to go out for thousands of homes, on the coldest night of the year thus far. This tilted the discussion somewhat as to how can we charge all these electric vehicles, with much finger-pointing and blame-shifting by the politicians. It appears an administrative error did not provide enough time to fire up a standby power station which uses "dirty" coal imported from Indonesia.



# Cold Weather Operations Conference in NZ

*By Liveryman Mike Zaytsoff*

Earlier in the year, the New Zealand Region of Air Pilots was faced with several challenges. The first was that, just like every region and every aviation sector around the world, we have countless pilots out of work. While I managed to hang onto my job by a razor-thin margin, it is not possible to ignore the plight of so many other talented colleagues, especially when I know full well the misery they are going through after my career suffered a similar downturn following the horrific events of 11<sup>th</sup> September 2001. With stewardship of the pilot profession being integral to the Company's mandate, what could we do in New Zealand to keep these fine people engaged in aviation until the job situation improved?

Our second challenge was that one of our major advocacy initiatives was running out of momentum. The NZ Region strongly supports the Erebus National Memorial project (<https://www.erebusnationalmemorial.nz/>) to remember the 257 souls lost when their Douglas DC-10 did not return from Antarctica in 1979. Over 40 years later, there is still no permanent national memorial to this tragedy. The last challenge we faced also stems from this accident: that is, when most people think of New Zealand and Antarctica in the same sentence, they think of the Mount Erebus tragedy. But, in reality, the Royal New Zealand Air Force has been safely operating in, out, and around Antarctica for over 50 years - a fact that was not lost on the Company when the RNZAF's No 40 Squadron was awarded the Brackley Trophy to commemorate this achievement back in 2017.

We came up with a novel solution to tackle all three of those challenges at the same time: a Cold Weather Operations Conference, held on 4<sup>th</sup> and 5<sup>th</sup> May, to give interested pilots theoretical and practical lessons on flying in an extreme cold environment. Even if they were never exposed to such weather conditions, at least they would get a refresher in CRM, aircraft systems, meteorology, and aerodynamics.

The keynote speaker was Wing Commander Richard Beaton of RNZAF No 40 Squadron, who discussed his journeys to Antarctica in both the Lockheed C-130 Hercules and Boeing 757. Wg Cdr Beaton spoke about how the USAF's C-17 Globemaster carries enough fuel to depart Christchurch, NZ (NZCH), hold over the Antarctica landing site for at least 90 minutes, then return

to Christchurch if the weather unexpectedly deteriorates. The RNZAF's B757, however, does not have that luxury when it comes to fuel capacity. Captains like Wg Cdr Beaton have to make a decision at their Point of No Return (PNR) whether to continue to Antarctica or return to NZ. Antarctic forecasters are advised ahead of time of approximately when that PNR will occur. They then prepare a specially issued Terminal Area Forecast around the time the aircraft reaches its PNR to assist with the decision to press on to Antarctica or return to NZ.



*Wg Cdr Beaton addresses the seminar*

As we all know, with any forecast... they're not always correct! There had been a few unintentional hair-raising moments when the weather deteriorated unexpectedly, as Wg Cdr Beaton personally attested to. The RNZAF has developed special procedures to deal with that contingency.

Earlier in the day our NZ Region Chairman Allan Boyce spoke to the participants about our work on the Erebus National Memorial. He updated them on how a chosen site came close to finalisation, only to be withdrawn at the last moment for further study. Chairman Boyce encouraged the audience to get involved because the Mt Erebus tragedy is too important an event in the country's history to give up on.

One of the fortuitous benefits for the participants was learning about the USA's method for reporting runway contamination to pilots. The USA was one of the first countries in the world to implement ICAO's Global Runway Format (GRF) that is required to be implemented by ICAO signatories later this year. The USA implemented the GRF way back in 2016, so conference participants got an advance view of the new runway contamination reporting process that will shortly be adopted worldwide. Overall, the event was a success and we plan to turn it into an annual professional development seminar.





# Hong Kong Region

*By Freeman David Sampson, Honorary Secretary, Hong Kong Region*

On 15<sup>th</sup> July, after more than a year since an official Air Pilots function, more than 40 members and their guests piled onto two old teak junk boats and set off for the day to Clear Water Bay, a common junk boat mooring area in Hong Kong. The weather was unfortunately less pristine than hoped, with only short periods of sunlight and bouts of rain throughout the day, but after we arrived at our anchoring spot, it soon became clear that the weather would cause no hindrance to the enjoyment we would have.



*Let Battle Commence!*

Over the last year, pilots in HK have been subject to some of the most comprehensive and restrictive Covid-19 measures, both at home and abroad. Some in the airline world have spent up to six weeks flying around in a closed-loop operation, unable to go home while in the pattern and not being able to go out at all while overseas. Those in the business-jet world have had multiple rounds of full quarantines depending on where they fly to, also subject to varying rules and restrictions. Post-flight testing, and continued testing on days off or between trips, has made life for many incredibly stressful and difficult. Many more, like countless others around the world, have seen themselves grounded for over a year, as their aircraft are parked up or rarely flying, creating nervous and uncertain times. Restrictions were also placed on daily life, including the numbers of people for public gatherings.

For many, this was therefore the first major gathering of large groups other than in private households for close to a year. Due to governmental restrictions, we couldn't feasibly hold any Air Pilot functions, however, being a relatively small community of Air Pilots in Hong Kong, many of us had seen each other in smaller groups prior to this occasion. It goes without saying that it was truly enjoyable to see all the familiar faces in the same place and be able to catch up with others on how we were

going throughout the pandemic. We even had a couple of new members who had signed up for the event and we were all overjoyed to see new enthusiastic aviators joining the Air Pilots. We tied up both junk boats together, allowing people to flow between the two freely, which also encouraged mixing of people.

There was plenty of food and drink, and much time spent in the sea bobbing about on inflatables and continuing the eager conversations with each other. We discussed the future



*Debriefing in the pool*

of the Air Pilots in Hong Kong, and developments seen around the world. We are seeing more younger aviators join up, which has been an encouraging sign for the HK Region. We are a small but social and close-knit region, and this was reflected in the atmosphere of the day.

This has been a difficult and tiresome year for all, but it shows that we as pilots are resilient and manage situations that are difficult with passion and professionalism. The atmosphere on the junk boat was by no means gloomy or depressing, with many just glad to be surrounded by fellow pilots and those with similar interests. It was also an opportunity to allow the spouses and partners of our members to mix and socialise, increasing the closeness of the community. Overall, the day out was a fantastic success, and an encouraging sign that there may finally be light at the end of the tunnel.



*The long journey home*





# North America

*By Liveryman Alistair Beaton. North America Regional Chairman*

Recently I met Capt Clayton Reid, President, Operations Manager and Chief Pilot of Sky Helicopters, based at Pitt Meadows Regional Airport, one of four general aviation airports in the Vancouver, British Columbia area.

The Westlund Group, whose President is Andrew Westlund, is a group of small companies that operates such diverse businesses as medical and wellness Spas and clinics, corporate wireless, phone and internet Services, and vinyl wraps for vehicles. Andrew Westlund states that: "Our various businesses grow when we interrupt our industries and do things differently from, and better than, our competitors. Sky Helicopters is no exception to the Westlund Group ethos.

focus, it is also involved in firefighting and forestry work. The forestry work includes logging and tree planting support, and forest health surveys. Other commercial work carried out has included construction, and wildlife habitat and population assessments.

The company has a new integrated events and hangar facility as its base of operations. Apart from a well-appointed conference room (available for rental), reception and waiting rooms for guests, offices and a pilot lounge, the hangar /events centre boasts a full-sized commercial kitchen with full catering and security services. A very high-quality audio/video/projection/lighting system is installed. A commercial flower service is also available



*Trips to snowfields are big business for Sky*

Sky Helicopters presently operates an Airbus H125 Astar, two Bell 206 Jet Rangers and three Robinson R44s. All of these are kept in tip-top condition by Westlund's aircraft maintenance organisation, Sky Aerospace, and flown by five full-time pilots, one of whom has just recently arrived from the UK.

Clayton Reid has accumulated more than 13,000h of accident-free flying in the challenging, mountainous terrain of supernatural British Columbia. He holds an ATPL / IFR - Transport Canada Pilot Licence for Helicopters and is endorsed on the Bell 47, 204, 205, 206, 212, the Airbus 120, 125 and 130 (and others), as well as an FAA endorsement on the S61. He is also a Class 1 Flight Instructor and Flight Examiner.

Sky Helicopters has been providing aerial services in Western Canada since 2011. Although tourism is its main



*Sky's hangar doubles as an events venue (Sky Helicopters)*

for weddings, trade shows and conferences. The beautifully kept shiny helicopters make a great backdrop for any corporate event, but flying the participants at such events is of course the big idea!

Sky's Heli-Adventure activities include champagne flights over Vancouver and 'Sea to Sky' remote back country trips. It also conducts flights to local wineries, craft beer breweries and fishing lodges, as well as alpine picnics and winter snowshoeing flights. It also offers spectacular 'proposal' flights to couples and, of all things, mountain elopement weddings!

Sky Helicopters/Westlund Group certainly seems to live up to its mission statement of doing things differently and doing things better! I would like to thank Capt Reid for his time and for allowing me the privilege to visit and learn about Sky Helicopters.



# FROM THE DESK OF THE (NEW) DAA

*By DAA Upper Freeman Paul Stone*



It is a great honour to be selected to take over from John Turner as the Director of Aviation Affairs. I received a good grilling from the interview panel in July and, although I managed to pass this first step, I think the most important part of the selection process has only just begun - making

sure I serve the Company to the best of my ability by maintaining the high standards set by my predecessor. JT really has set a high bar: he has developed the role, provided excellent professional and technical advice and managed to harness some of the incredible talent that exists within the Company, right across the globe. I may be a fresh face, with different perspectives but, thanks to JT's excellent work, I anticipate that my initial months will be 'steady as she goes' as I learn the role.

Like many Company colleagues, I was propelled into the aviation community by a flying scholarship, and learned to fly aged 17, before passing my driving test. The Falklands War was a big influence and I decided that flying Sea Harriers was clearly the most exciting job in aviation at the time. That set the context for 20 great years in the Fleet Air Arm flying the 'SHAR' operationally alongside a brace of test flying tours after graduating from ETPS in 1995. Career highlights included commanding both 800 and 801 Naval Air Squadrons and a tour in the USA as a test pilot on the Boeing X-32 Concept Demonstrator.

After leaving the Royal Navy, I joined BAE Systems as the Harrier project test pilot. Yes, for full disclosure, I was recruited by John Turner and followed in his footsteps to become Director Flight Operations. After a final spell in BAE Systems as a Campaign Director for Typhoon Capability I tried to semi-retire in 2019 and dabbled with consultancy until I realised just how much I was missing test flying. So in July this year I started as the Volocopter test pilot for another foray into the world of VTOL, but this time with a more modest flight envelope, higher voltages and much smaller carbon footprint.



I am also a passionate General Aviation enthusiast, having owned four taildraggers and a Gyrocopter. As the Chief Pilot for the Shuttleworth Collection I consider myself the luckiest aviator in the world, flying some legendary aircraft including my favourite from that era, the DH-88 Comet. I stopped counting aircraft types-flown passing around 200 as I soon realised that I was a mere whippersnapper compared with Winkle Brown's record breaking 487 types. But I still love the diversity that aviation brings and the fact that you learn something new every day.

I am married to Rosie, a Colonel in the Army reserve, a Deputy Lieutenant of Lancashire and a Court Assistant in the Company of Communicators. My son, Daniel, has joined the world of the WAFU and is part way through Elementary Flying Training in the Royal Navy; my daughter, Sally, has just completed her first year at Edinburgh University studying Chemistry, mostly from the comparative comfort of her student digs.

Finally, as I prepared for my new job with Volocopter earlier this year, it dawned on me that we have entered another great era in aviation: The eVTOL race to commercial operations feels a bit like the 1920's aviation boom with some incredible innovation that has engaged Generation Z, inspired hundreds of designs and created a multitude of new companies.

I watched my old ETPS tutor and fellow Shuttleworth Collection pilot, Dave Mackay, shoot into near-space and sat mesmerised by SpaceX formation landings, drones on Mars and *New Shepard* passenger missions. We are witness to some staggering achievements in space.

The increasing focus on environmental challenges has produced even more rapid progress in sustainable aviation fuels, electric propulsion and a drive for operational efficiency and changes in aircraft design.

All this has led me to conclude that there is no better time to be involved in aviation and no better time to be the Director of Aviation Affairs for the Honourable Company. I look forward to serving you all.



*DAA's experience spans more than a century (of technology!)*



# YOUNG AIR PILOT UPDATE

*By William Wright – YAP Committee Chair*

We are at the halfway point of the Air Pilots year (at the time of writing). So, within the context of development of the young members, I thought it prudent for a progress check-in. Before I do, however, there are two points to mention. Firstly, thank you to Toby Eden, who wrote the last YAP update in my absence. Many young people have borne the brunt of Covid-19 over the summer and our committee can certainly attest to this, with several of us personally affected. The second is a new committee appointment. Dom Registe has joined the team as the scholarship liaison. A former scholar himself, he is perfectly suited to support the activities of the Scholarships Committee. Welcome Dom.



*Getting started in an aviation career is a big challenge in today's environment (grummana5/iStock)*

As pilots we all know the importance of a review. It is built into our failure management processes; think DODAR (Diagnose, Options, Decide, Act/Assign, Review) as an example. From my perspective, it is possible to use this model in other walks of life. This is because DODAR (and others) are essentially tools for change management. And change is what we are trying to enact in the young members. It is what our development work is. Therefore, a candid look at our progress provides us with a strong feedback loop.

With that in mind, behind the scenes we have listed all our achievements of the first six months and compared them with the roadmap that we created in March. Firstly, what is apparent is that we have achieved a huge amount against the backdrop of Covid-19 and uncertainty. Whether it's been transitioning from online events to in-person, facilitating all formats of mentoring, engaging on social media, or supporting the next generation to up-skill,

we have contributed to every area we set out to (in some form or another). Thank you to all those who have facilitated and supported this work - you know who you are. As with any worthwhile review, we have also looked at some of our failures. They, too, allow us to learn so that we may improve. If framed correctly, they may give us a better insight into what 'good' looks like, than do our successes. I'll refrain from discussing those in this forum, though.

If I were to reflect on the two objectives we set out at the start of the year - engagement, and events & visits - I would say that we are making steady progress on both. The exciting part is continuing this trend through the remainder of the year and into next.

It has also not passed me by that this is a green edition of *Air Pilot*. It would therefore be remiss if I was to neglect discussing the place of young members within this context.

Our young members are part of a generation who are arguably the first to be brought up to consciously consider their impact on the environment. Global warming has been an ever-present item on the agenda for the past 20 years or so. Driven by the age of information, new technology and a firmer stance on 'doing the right thing', they are inherently socially conscious. However, many aspiring young aviators face the unenviable challenge of finding their feet in the aviation industry. Establishing careers in this climate should not be underestimated and it is their first challenge. However, I am sure that prospective young aviators would consider the stance their future employer takes on the environment, for example. Though I am under no illusion that it won't be a priority. With that said, it does not disqualify their opinion on how Jet2050, etc may be achieved.

In fact, I believe it presents a unique opportunity for regulators, airlines, and other industry stakeholders to listen to this socially conscious generation while they enter the industry. Creative solutions may well be found as they experience it with fresh eyes, so to speak. And if nothing else, a diversity of thought can challenge previously held norms that may well lead to influencing positive change. This is why I'm glad that the Air Pilots Environment Group has included the young members in its work towards a greener, more sustainable future. We very much look forward to the green event in October and the success of the working group itself.







*Legacy airframes powered by green electricity mark a technical milestone in aviation's green revolution (Ampaire)*



# GREEN AVIATION: IS THIS OUR LAST CHANCE?

*By Warden John Denyer*

With the spotlight on climate change and the environment in the lead-up to COP 26, this edition of Air Pilot looks at various financial, technical and infrastructure aspects of the issue and their importance to, and impact on, aviation. In this opening feature, Warden Denyer previews the Livery's initiative in bringing the topic to the fore in October's Green Aviation Event.

The 26<sup>th</sup> United Nations Climate Change Conference of the Parties (COP26) is being hosted in Glasgow in November 2021. Many believe it will be the world's best last chance to get runaway climate change under control. The UK's presidency of COP26 gives the country a particular opportunity to demonstrate leadership in securing global net zero by mid-century and keeping a 1.5°C global temperature rise within reach, and our Government has set itself appropriately challenging targets.

Aviation is clearly a significant carbon emitter, though it is currently some way from being the UK's largest contributor. However, the projected growth in demand for aviation, coupled with significant planned reductions in carbon emissions from other high emitters such as electricity generation, road transport and housing, could make it a very prominent contributor in percentage terms to the UK's carbon budget by mid-century.

The Air Pilots has a clear professional interest in the contribution of aviation to the economy, so in late 2020

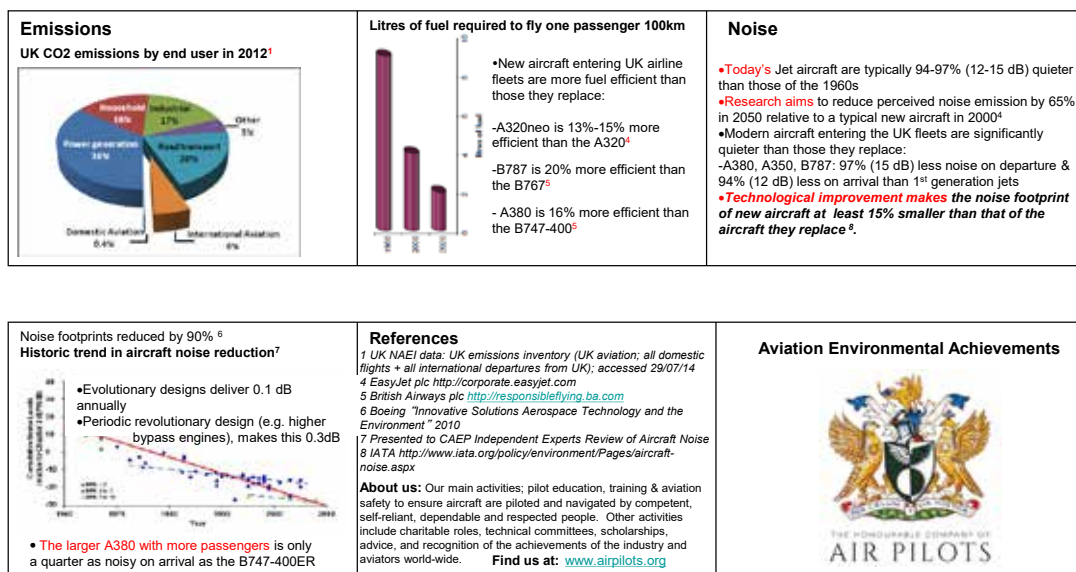
the Environment Group of the Company's International Technical Forum proposed an event in the run-up to COP26 with the aim of highlighting the actions required from the aviation sector to meet the government's "Green Industrial Revolution". The event will bring together pilots, technologists, airlines, investors, policy makers, regulators, and the City. The Air Pilots has an independence and lack of bias that gives it an authoritative voice on this matter. By leveraging our unique position in both the aviation community and in the City of London, we intend to raise awareness and influence how these various stakeholders work together to deliver the government's decarbonisation targets.

Our 'Green Aviation Event' will take place on 25<sup>th</sup> October in Glaziers' Hall, hosted by the Air Pilots and our project partners the Worshipful Company of Scientific Instrument Makers. The Lord Mayor has written to strongly support the event. It fits closely with his vision for the City of London playing a world leading role in mobilising private finance in support of public finance to bring about the changes necessary in our society in the fight against climate change. As the Lord Mayor puts it: "The Livery Companies of the City of London have a rich history of innovation over the centuries, tackling societal challenges and setting standards. This initiative is an example of this as the world seeks to tackle the seemingly intractable issue

of the decarbonisation of the aviation sector''.

The event is in two parts. At the morning session a number of keynote speakers have agreed to present their visions of the way forwards for aviation. We are privileged to have among our morning speakers Aviation Minister Robert Courts, new Sheriff- (and Vice President of the Green Finance Institute) Alison Gowman, CEO of the Aerospace Technology Institute Gary Elliott, and Chair of the CAA Sir Stephen Hillier. This morning session sets the scene by underlining that emissions reduction is not simply a matter of airframe, engine and fuel technologies, but is dependent on procedural issues such as airspace changes, regulation of novel technologies, and safe handling of new fuels such as hydrogen. Underpinning these work streams

the Aerospace Technology Institute, WizzAir, and the Jet Zero Council. The session will be open to members of the Air Pilots and the Instrument Makers, and other Livery Companies. The day is an invitation-only event aimed at bringing stakeholders together and facilitating discussion. It is not planned as a press event, though there may be some press coverage. Our line with the press will be not to defend aviation's contribution to climate change but rather to point to the future and the range of work that is in hand to dramatically reduce that contribution. In doing so we will illustrate how the sector has very significantly reduced fuel burn per passenger kilometre over the decades (albeit in response to economic rather than environmental pressures) to give confidence that



*Data gathered by the Company show how far aviation has already moved*

will be the need to finance the rapid development and deployment of innovative technology, investment in a fleet of new aircraft, and in the infrastructure to support new fuel production, distribution and storage, and so on. During the 20<sup>th</sup> century the growth of all these support activities and financing structures was incremental in response to the progressive evolution of aeronautical technology. During the first half of the 21<sup>st</sup> century that change will need to be revolutionary rather than evolutionary, with the requirement to develop and integrate novel technologies, legislation, regulation and operation at a rate never seen before, even in the aviation business which has so often been at the sharp end of technological development. Investor confidence together with regulatory and legislative responsiveness will be essential to enable this progress and government has a vital role to play in facilitating this step change.

The afternoon session is open to a wider audience and, together with further guest speakers, will feature displays and stands from organisations including Imperial College,

significant future change is very feasible with the right incentives. We will also highlight the importance of aviation to the economy and, again not in a defensive way, contrast emissions from aviation per passenger km compared with other transport modes. This latter point is likely to become an increasingly important metric as people become more aware of their personal carbon budget and look to make properly informed choices about the most effective ways to manage it.

By the end of the event, we hope to have showcased what is being both done and planned to decarbonise aviation, highlighted the interdependence of the many different stakeholders to make that happen, and facilitated an ongoing conversation between the parties. The Government's Green Industrial Revolution is only just beginning, and we hope that by establishing a sound Air Pilots position on Green Aviation at the outset, we may continue to bring a pilot-focus and influence its evolution for the long term.

# JET ZERO TO GREEN AVIATION HERO?

*By Liveryman Robert Seaman, Environment Lead*



A global tide on climate change will change the face of aviation; where are we in the race to net zero?

After the heady expectations of the Paris Climate Agreement in 2015 were deflated by US withdrawal, the climate change debate has seen a

resurgence as political forces recently aligned to seed a green industrial revolution.

Many governments are now seeking to convert their climate policies into real world legislation that binds all sectors of their economies to mitigating global temperature rise to well below 1.5°C. Human-generated carbon dioxide (CO<sub>2</sub>) is the number one culprit. The UK will host the 26th United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP26) in Glasgow this November and take up the presidency. It is determined to use its international leadership to propel outcomes from the Paris Agreement. Governments have a keen eye on aviation as it is

notoriously difficult to decarbonise. Aviation contributes some 2% of global CO<sub>2</sub> emissions and this value is predicted to rise relative to other sectors, like energy, which have alternative pathways to decarbonisation through renewables and nuclear. Decarbonisation of aviation is a critical success factor for the UK Prime Minister's green industrial revolution and a real opportunity for the sector. The UK's proposed Jet Zero strategy seeks to achieve this by supporting a basket of measures that can bring the emissions from aviation to net zero by 2050<sup>[1]</sup>. This will impact the shape of British aviation and affect pilot careers.

Prima facie, the Jet Zero future will look very much

*The Air Pilots advocates the sustainable growth of aviation operations that converge onto the net zero 2050 greenhouse gas emission pathway (including interim goals) so as to meet the Paris Climate Agreement goals. This is otherwise known as Green Aviation*



*Future aircraft concepts like the Airbus ZEROe use blended wing body (BWB) airframe design and hydrogen fuel to emit zero carbon dioxide. 2035 is the earliest possible date this technology will become available (Airbus)*



like the present day until 2035 when we might expect futuristic Blended-Wing-Body (BWB) zero emission airframes (ZEF), like the proposed hydrogen powered Airbus ZEROe, along with hybrid electric prop aircraft, to come into service. System efficiencies are the current focus for the UK: 88% of the global fleet is made up of old-generation aircraft, and the transition to currently available next generation technology would see a reduction of emission by 20-30% taking the sector well onto the net zero pathway. Furthermore, the spread of narrowbody long-haul services could cut emissions by a further 20% on routes up to 3,000nm.



*White energy efficient LED street lighting against yellow “old generation” inefficient sodium lights; a direct result of local climate policy. To do the same, aviation not only faces technological challenges but requires global political agreements*

Operators and Air Pilots sit at the tip of an ‘iceberg’ of global political agreements and green markets over which they have very little control or influence. The UK Government is seeking to use its COP26 presidency to exert global leadership at the ICAO assembly in 2022, with efforts largely focussed on Carbon Offset and Removal for International Aviation (CORSIA). The Air Pilots’ unique position in the City of London allows the Company to strongly advocate an international market approach to green aviation and some may ask why the UK is not pushing for some sort of global carbon market. In 2012, the European Union attempted to monetise carbon emissions through the introduction of a cap-and-trade market mechanism – the Emission Trading Scheme (ETS). With high ambition and commendable leadership there was an attempt to apply ETS to international aviation. The process risked a trade war with heavyweights like US and China which refused to allow their airlines to join the scheme. The ETS is now confined to the UK and EU, which are leading the world on promoting a move towards green aviation through market-based measures.

With the Paris agreement in place there is much hope this will eventually spread internationally.



*Same aircraft, greener powerplant: (Left) The International Aero Engines IAE V2500 Current Engine Option (Right) Pratt and Whitney PW1000G which produces 20-30% fewer emissions than the V2500*

The Lord Mayor himself is encouraging the translation of green finance into real-world applications, and the importance of the City in making green aviation happen right up to the refuelling stations cannot be overstated enough. New energy and infrastructure are a big deal past 2030 with hopes placed on hydrogen for regional air travel and Sustainable Aviation Fuels (SAF) for especially long haul. Any fuel must meet regulatory standards and pathways that are proven to reduce carbon emissions. SAF reduces emissions by up to 80% through a “bounded” fuel life-cycle involving a feedstock that absorbs CO<sub>2</sub> from the atmosphere and is turned directly or indirectly into fuel whose emissions are re-absorbed by that feedstock. Over 300,000 flights have used SAF since 2016 but the issue is scaling up production; there is nowhere near enough available for even the UK fleet, let alone globally. Long-haul flights over 3,000nm account for 10% of all flights from the UK but 60% of the aviation sector’s UK-based carbon emissions. Perhaps if international effort were made on promoting the transition of regional aviation to next-generation aircraft then scarce SAF resource could be directed to those long-haul flights.



*The City is keen to see real world applications of green finance and global markets are key to making low carbon energy sources for aviation commercially viable.*

Some climate action groups seek to ground aviation altogether and many scientific bodies advocate the need to curb growth significantly. There is a risk of “targetism” – focussing on one particular objective at the expense of everything else and without appreciation of important context. Aviation is a pillar of a free and open global society and economic prosperity: in many instances it provides an essential service that others cannot. The key challenge for our community is to take on board the high ambition for climate action whilst enabling post-Covid-19 sustainable growth. Economists might even argue that maximising growth of the sector could provide it with the much-needed funds to re-invest in green technology and energy sources at a rate that has never been seen before in history.

Promoting individual responsibility to reduce personal CO<sub>2</sub> emissions through choice is the approach of western democracy, and a whole pillar of proposed policy effort has been focussed on enabling customers to view their exact carbon emissions at time of purchase. To the untrained eye, the progress that aviation has made in reducing emissions over the past 30 years remains hidden - aircraft look the same and the CO<sub>2</sub> they produce is generally overestimated.

I am writing this article having just flown an Airbus A321 New Engine Option (NEO) from Pristina to London.

**Carbon calculators: CO<sub>2</sub> emission for economy travel and the actual emissions for the route using an Airbus A321 NEO flown on using “green operating procedures”.**

Actual	Carbon Calculators (CO <sub>2</sub> e Tonnes) London - Pristina				
	ICAO	Calc(1)	Calc(2)	Calc(3)	Calc(4)
24	35	73	77	64	56

Calculator(1) CO<sub>2</sub> Census. Calculator(2) MyClimate.  
Calculator(3) Carbon Footprint. Calculator(4) Atmosfair.

Even with an urgent medical diversion to Nuremberg the fuel used was less than on a direct flight using a similar but previous-generation A321 Current Engine Option (CEO): had we not diverted the NEO would have produced 20-30% less emissions. A quick survey of CO<sub>2</sub> calculators<sup>[2,3,4,5,6]</sup> available for the travelling public shows an overestimation of emissions for that one-way trip, on average by 44t. The ICAO calculator produces a far more realistic estimate but uses an older-generation Airbus as its basis. This is not an idle discussion: inaccurate representations will cost responsible people seeking to mitigate their climate impact money<sup>[7]</sup> and affect demand. This is why the Air Pilots’ partnership with the Scientific Instrument Makers is so vital as accurate measurement, data collection and analysis of flight-specific carbon

emissions will underpin individual choice. How we fly is important, and green operating procedures like continuous descents and single-engine taxiing can help flight crew carefully balance emission reduction within safety margins. Some estimates suggest that well-motivated flight crew can safely reduce fuel consumption by up to 1% which is comparable with the UK government proposition of 0.5% from use of SAF from 2025 to 2030. Globally, the role of pilots is understated in the move to net zero; SAF is up to eight times more expensive than normal jet fuel, which means the efficiency efforts of pilots will become even more important. A global collaborative effort by air pilots to consolidate green operational knowledge in synergy with modernised air traffic management could catalyse the sector’s move to net zero well before new technology and energy sources come online.



*Whatever technology is used (this is Project Fresson’s electric Britten Norman Islander proposal), the CO<sub>2</sub> reductions achieved will still depend on pilot skills*

**Footnotes**

- [1] Net zero emissions: are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period. Where multiple greenhouse gases are involved, the quantification of net zero emissions depends on the climate metric chosen to compare emissions of different gases (such as global warming potential, global temperature change potential, and others, as well as the chosen time horizon)
- [2] ICAO Carbon Emissions Calculator
- [3] Calc(1): Carbon Offset Calculator | Flight Offset (co2nsensus.com)
- [4] Calc(2): myclimate
- [5] Calc(3) Carbon Footprint Calculator
- [6] Calc(4) Offset your flight - atmosfair
- [7] Atmosfair’s calculator leads to a payment page and charges €1296 to offset these emissions - an overcharge of €745 by its own standards bearing in mind the actual emissions.

# AVIATION FINANCE IN THE GREEN ENVIRONMENT 2020 – 2050

*By Alderman and Sheriff Alison Gowman and Liveryman Colin Sach*



## Airlines and aviation must step up their pursuit of an environmental agenda

The airline and aviation industry has for a variety of reasons, some economic, some environmental pursued an agenda of consuming less to fly. The enormous growth predicted for air travel, and broadly worldwide acceptance of the Paris Accord means that much more must be achieved.

At the start of the jet age fuel was \$2 - \$3/barrel and in recent years topped \$100 (around £72)/barrel. As fuel burn and CO<sub>2</sub> emissions have always been a major cost, reducing fuel consumption has always been an industry essential.

During the same period the price of air travel, both financial and in time, has fallen in real terms. For example, a flight from Boston to Los Angeles in 1950 took 15 hours, and cost in today's money about \$5,000 (£3,600). Today the flight time is under six hours and several airlines offer ticket prices under \$300.

Noise is another significant environmental issue and the first where environmental concerns drove the advancement. Any such benefits are, however, confounded by the huge success of air travel.

It took from the birth of the aviation world to 1987 for annual passenger numbers per annum to reach 1 billion: today [pre-Covid – Ed] there are 4.5 billion, and that number is expected to reach 16 billion by 2050.

Traditionally, debt providers have a liking for the aviation industry. It has good cash flow, constant growth, predictable technology, a strong and successful culture of safety, a high degree of common international regulation and government involvement.

## NEW REGULATORY FRAMEWORK

Before moving forward with environmental drivers in mind and discussing what will be the relationship between private and government finance, we need to mention briefly the new regulatory framework that will drive the reduction in CO<sub>2</sub> forward.

The overriding document is the legally binding treaty known as the Paris Accord which has been ratified by about 196 parties, including China and the USA in 2015/2016. The goal is to limit global warming to less than 2°C against a pre-industrial revolution base line, and target climate neutrality by 2050. Reports are to be made five-yearly, and COP26 in Glasgow in November is the next major reporting point.

Aviation is a significant contributor and, unless the reliance on carbon can be reduced, there will continue to be a need to offset until such time as a solution is found. Aviation is making some progress: for example, during the last 20 years aviation grew at about 4.5% per annum, while its carbon emissions only increased by 2% per annum. Currently, aviation accounts for about 2.8% of the CO<sub>2</sub> produced globally by the use of fossil fuels and if that is not addressed it will increase rapidly in view of the forecast growth.

The two other important documents are the CORSIA (carbon offset and reduction scheme) created by ICAO and the EU's 'Fit for 55': both focus on creating a cost for producing CO<sub>2</sub>, CORSIA by carbon offset, and 'Fit for 55' by suggesting carbon taxes. CORSIA is aimed at aviation on a global basis, as it is incorporated in the Chicago Convention as an Annex, while the EU document is focused on the EU and the creation of carbon taxes, across not just aviation, but most sectors, potentially raising €100 billion (around £86 billion) by 2030. It is easy to see conflicts arising between these two approaches, and it is hoped that, where an airline suffers both costs, one can be offset against the other, similar to the approach taken by international taxation.

## FUNDING CATEGORIES

There are three principal funding areas to consider:

1) funding for incremental improvements in existing technology; 2) funding for fundamental changes in aircraft design and propulsion; and (3) finance for



non-aviation assets such as buildings, airports, facilities, and infrastructure.

In the last category, there are few reasons why the facilities needed to handle aircraft and passengers should not be designed and built to the highest standards. The issue is one of providing renewal, renovation, adaption, and new facilities to accommodate growth, and the timeframe for that largely will be controlled by regulation - either local regulation or via airlines having to meet global requirements.

A survey of recent ‘green’ aviation related bonds confirms that currently most are not aircraft or aircraft technology-related but to support the surrounding infrastructure.

There is little reason that aviation infrastructure cannot

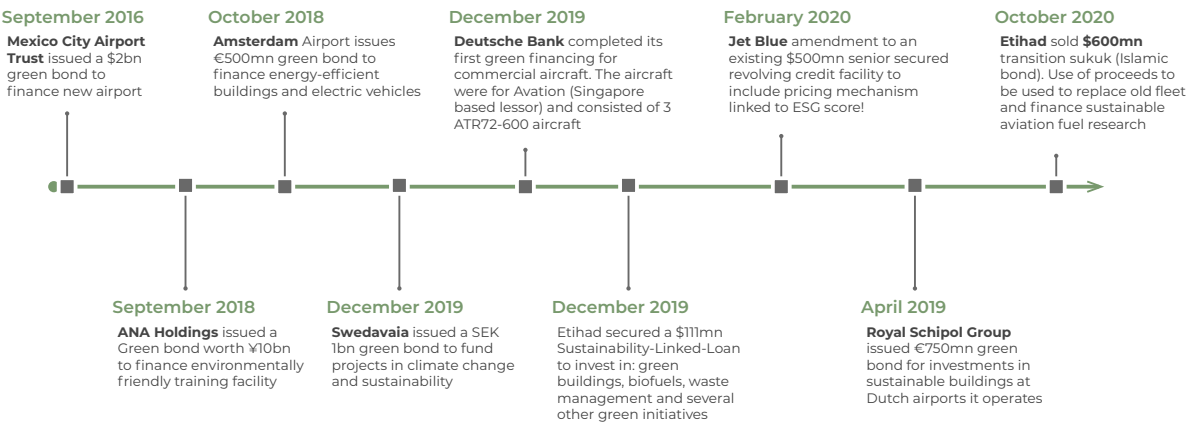
about by legislation, an example being the replacement of fossil fuels with the equivalent fuel derived from agricultural product or waste. This takes time to have a major impact due to testing, safety and regulatory issues which delay their introduction. Attention to these areas by regulatory authorities could speed up progress.

If there was no material growth forecast for aviation in the future, these technology gains, coupled with the introduction of biofuels, and environmental offset may go a long way to driving down CO<sub>2</sub> emissions, although not to zero. As stated above this area can be funded by existing sources of debt.

The big technology change that is a fundamental requirement if aviation is to grow as predicted is the

## A timeline of the recent green aviation financing deals

### Recent green bonds and sustainability-linked loan aviation deals



Recent green aviation finance deals (© ICF International Inc)

be financed with normal private debt products, pushed by the regulatory stick to enhance/replace the old asset base, and reduce CO<sub>2</sub>. It can meet green standards if verifiable benefits to the environment are proved in accordance with a relevant taxonomy. In the other two areas, however, the sums above pale into insignificance.

Within the current cost/income envelope most airlines/manufacturers are continuing to improve current engine/aircraft design efficiencies which probably reduce emissions at the rate of 1 - 3% per annum. These are realised as part of the normal aircraft replacement/maintenance cycle, and as such will be financed by a mixture of government (where it owns/supports typically a national carrier) and private debt. Substantial benefits are realised but insufficient to offset the anticipated growth.

An additional part of this normal cycle can be brought

development of a fuel/propulsion system for aircraft that does not depend on fossil fuels, and the associated CO<sub>2</sub> emissions. While the aviation industry may advance and develop existing technology, such fundamental progress is beyond its resources to finance. Currently most research is to investigate if hydrogen can replace fossil fuels. A “green” fuel needs to deliver the same or better levels of energy as fossil fuels, if it is to power aircraft in a similar fashion as today.

There is probably a three-stage process and different elements of the process are at different stages. Basic research is largely carried out by government bodies, universities, or the like. Little of significance is privately funded, even if privately delivered. Currently it appears that hydrogen fuel driving electric motors is a viable route forward, although only small “one-off” prototypes exist.

A second stage exists to develop a workable prototype and

resolve engineering issues, finally leading to a third stage where a product is approved by the regulatory bodies and enters large scale commercial production.

### THE 'SPORTY' GAME

How much will this cost? To put this in perspective, to develop a new aircraft such as the Airbus A380 would cost maybe \$US25 billion. For such developments government loans are available, combined with commercially available corporate debt. The corporate debt is based on the credit of the borrower and the cashflow of the business. It is not without cause that within the industry the launch of a new aircraft is known as "The Sporty Game". Building an aircraft that fails may bankrupt its company.

However, what would be the cost of an entirely new propulsion system - \$1 trillion? And over what time scale might it be developed - five years or 20 years? The jet engine existed in 1939/41 in Germany and UK, entering commercial service in 1952, and some of the initial failures were due to unforeseen airframe stress rather than to the jet engine itself. Jet aircraft mass travel started from around 1960 - 20 years from the first viable aircraft.

A fundamentally new approach to aircraft propulsion, considering the development, testing, and achieving international safety acceptance, being realised much before 2030 - 2040 seems unlikely to our untrained eyes, although Airbus believes that it will have a 100-seat aircraft under test by 2030. The timeframe alone would suggest that commercial debt on its own would be insufficient, even without the wider risk of failure or of an alternative competitor stealing the market.

### EQUITY FUNDING

Some aspects of a new flight propulsion system could be funded by equity and corporate debt: for example, the means to avoid storing hydrogen under pressure - thus eliminating the weight and risk of a pressure vessel - is currently being privately funded by a major company.

The exciting issue is to develop new structures that share both risk and reward appropriately between governments and commercial parties, superior to the present day. Governments are already working with private finance in other areas to see how such programmes can be funded and to create a risk appropriate environment.

For example, as part of the Covid-19-induced contraction of the airline industry Rolls Royce, a major OEM, has reduced its work force by over 9,000, many of them highly skilled. Rather than them taking unfulfilling roles or part time work, surely a scheme to use these people in developing technology should be developed by the Government, even if managed by Rolls Royce.

A major international effort supported by maybe four or five countries to fund a major new business to develop a new air propulsion system would undoubtedly push matters forward more rapidly. Whether this could be achieved by merging several currently independent businesses or by starting afresh would be the subject of much discussion.

### GOVERNMENT INVESTMENT VITAL

Airbus itself is a good example: without the vision of the French and Germans to take forward and invest very material sums as governments, a number of sub-scale companies would have been acquired or ceased to trade,



*A totally new propulsion technology could cost 40 times that of putting an airliner like the Airbus A380 into production (Airbus)*

and the competition massively reduced. It is inconceivable that commercial interests could have developed the company, but it took 30 - 40 years. By comparison, the UK which had a major aircraft manufacturing base, did not directly invest, and has witnessed the exit from full aircraft manufacturing, and a substantial decline in first-tier contractors.

With the drivers of COP26 and a rise in public opinion, now is the time for a revolution in finance for aviation to build this coalition. We must allocate the skill, time, and money to get it right, so that benefits accrue to us all and to a renewed aviation sector that meets the future needs.

**Alison Gowman is a solicitor and leads the City of London's Livery Climate Action Group.**

**Colin Sach is a Chartered Accountant, a liveryman of HCAP, and is devoted to aviation finance**

# HYDROGEN – COULD IT BE THE FIRST FRONTIER OF DECARBONISATION?

*By Bridget Donaldson, Freeman of the Worshipful Company of Scientific Instrument Makers*



Since its inception in the 1920s, commercial air travel has been dominated by aircraft that are reliant on fossil fuels and internal combustion engines. However, globally we are now becoming increasingly more conscientious of our

impact on climate change, and slowly but steadily moving towards global decarbonisation goals.

Already we have seen great advances across the transport sector which includes road, rail and water; air transport actually only comprises around 2% of global CO<sub>2</sub> emissions, and 12% of global transport sector emissions. That said, with road and rail transport emissions reducing, aviation's contribution to the overall transport sector emissions figure is only set to rise in the coming years. Therefore, it is in the interest of all in the industry to seek out new technologies in a bid not to be left behind.

Such a rapid transition in technology comes with many challenges spanning an array of financial, political and societal intricacies. Many alternatives are under development with the three frontrunners being: SAFs (Sustainable Aviation Fuels); Electric power; and hydrogen fuel. It is hydrogen specifically which I feel is the most commercially viable and scalable. Despite its huge production costs, hydrogen is a fuel which can be used with current aircraft infrastructure and internal combustion engines, although future engines will likely take a new form to allow the most efficient combustion.

For my recent Master's thesis with the University of Oxford, I have been looking into the prospect of hydrogen as a substitute for kerosene. The key question I needed to answer concerned, to what extent a retrofitted aircraft could use hydrogen as a transition fuel and what role this process can play in the decarbonisation of UK air transport. The aircraft chosen for study was the Airbus A350-1000, arguably one of the most sustainable and efficient long-range aircraft on the market.

The study incorporated a life-cycle analysis of hydrogen, looking at the raw production, infrastructure required to support its use in the aviation sector and then fuelling and storage on-board the aircraft.

Hydrogen has several physical and chemical characteristics that make it well-suited as an aviation fuel. Most



*Is there hydrogen on the horizon for the Airbus A350-1000?*  
(S Ramadier/Airbus)

significantly, hydrogen has a considerably higher energy density by mass than kerosene, but a considerably lower energy density by volume because it is a gas at normal atmospheric temperatures and pressures. For it to work in an internal combustion engine, or as a fuel source in general, the hydrogen needs to be liquified by either compressing or by cooling it to extremely low cryogenic temperatures (-253°C), and therefore also allowing it to be stored in sufficient quantities. The energy density of liquid hydrogen is approximately one quarter of that of kerosene, so for the same amount of energy, hydrogen needs a storage tank four times the size.

Overall, my study indicated that, from a purely technical perspective, liquified hydrogen would prove successful as a fuel source. The difficulty comes with storage. The internal layout of a retrofitted aircraft would need to change significantly, with a number of passenger seats being removed to accommodate cryogenic storage equipment and extra fuel tanks. This poses a question of commercial viability. The next cause for concern is the infrastructure and rate of development. You may be able to fuel your A350 with hydrogen at Heathrow, but will you be able to refuel in Bangalore, for example.

It is in the interests of global government to work alongside organisations like ICAO, IATA and EASA to develop key directives, inevitably paving the way for global collaboration. Furthermore, the adoption of the fuel will certainly be heavily dependent on pricing, which is directly affected by government financing and private investors.

No matter the route to decarbonisation of the aviation sector, hydrogen is likely to play a meaningful role, whether that be through retrofitting existing aircraft seeing or new concepts. The future looks bright, but it is in all of our interest to keep an open mind on new concepts and support this transition wholeheartedly.



# HOW GREEN IS YOUR AIRFIELD?

*By Liveryman Steve Slater*

The whole of the transportation sector is coming under increasing scrutiny in terms of its environmental performance. While some of this may be driven more by political rhetoric than fact, the simple fact is that the aviation sector offers a high-profile target for activists. Yet we have some very positive stories to tell. I'll leave it to those who are better qualified to demonstrate the huge technological advances in airframes and engines that enable aircraft today to operate with unprecedented reductions in noise, emissions and fuel usage in comparison with their predecessors. We've also got future developments in fuel chemistry and in airspace design and management that will further reduce our environmental impact in future years.

I will though, focus on a more fundamental area. Have you ever thought that the aviation community is the custodian of some of the largest environmental sanctuaries in the UK - our airfields themselves?

Even apparent concrete jungles like Heathrow or major military bases have large areas of grass, or other open spaces. While they have to minimise wildlife and bird conflict with aircraft, there is increasing evidence from local nature and environmental surveys that all airfields are important as low-insecticide, low-herbicide, sanctuaries for plants, insects and associated wildlife. Civil or military, large or small, I would hazard a guess that whichever airfield you call in on, it is the largest open green space you will visit that day.

It is not surprising therefore that the curtilage of many airfields - the areas away from hangars, aprons, clubhouses and workshops - is increasingly recognised as important 'open green space'. Even when an airfield is surrounded by so-called "green" fields, the business

pressures on most farmers today mean that the surrounding land is likely to be subject of intensive agriculture. It is likely that just one or two crop species are being grown on ground which is regularly sprayed with fertilisers, herbicides

or insecticides to increase yields. Effectively they form a monoculture with far less biological diversity than on the neighbouring aerodrome.

In contrast, there is no incentive for an airfield operator to make the grass grow faster! Airfields offer a wide range of sustainable and diverse wildlife habitats, both in their margins and, with grass airfields,

on the runways themselves. I wonder how many of us have taxied out to the sight of hares on the aerodrome, sometimes scuttling away or pressing themselves into the longer grass for cover? Or between aircraft movements, you have been serenaded by skylarks somewhere in the blue skies above. They're all proof of an airfield's ecological credentials.

The mixture of close-mown runways and longer grass margins with wildflowers is a perfect wildlife sanctuary, with the airfield's perimeter and infield providing nesting cover for birds such as skylarks and lapwings, and animals such as hares and voles. At the resurrected former World War One grass airfield at Stow Maries in Essex, an English Nature survey listed no fewer than 105 species of plants and flowers. They in turn create an eco-system with other protected species such as sparrowhawks and owls taking advantage of the food chain.

More recently, Bodmin Airfield in Cornwall was recognised as an exciting new 'donor' site for repopulating other meadow areas after it was found that the airfield is one of the largest remaining traditional hay meadows in the southwest of England. It was an outcome completely arrived at by accident, rather than by design. The reason is that for the past few decades it has had no herbicides, pesticides or fertilisers spread across it, and unlike the runways and taxiways, the outfield is only cut once a year. The airfield is now providing ecologists with valuable green hay and yellow rattle seed - hand-collected this summer - which are now being used to re-establish traditional meadows.

The Light Aircraft Association has set up a working group, headed by Liveryman Steve Slater and Freeman Anne Hughes to identify other airfields that might offer similar benefits. So: "How green is YOUR airfield?"



*The mixture of meadow grasses and flowers at Popham makes it a natural haven for insects and small mammals.*



*Turweston Aerodrome in Northamptonshire has a mix of shrub planting and solar arrays, which make the airfield carbon neutral, more than offsetting emissions from aircraft operations.*

# ACADEMIC BURSARY AWARDS 2021

*By Liveryman Alisdair Beaton*

The Company annually offers a number of bursaries (usually three, occasionally four) to applicants studying at City University for MScs in Air Transport Management, Air Safety Management, Aircraft Maintenance Management or Airport Management.

This year, applications were invited in February with entries to be submitted towards the end of May. Candidates had to provide a CV and two essays of up to 500 words each on the following subjects:

(a) The Commercial Air Transport Industry has suffered probably more than any other from the restrictions imposed around the world to reduce the spread of Covid-19. The recovery, when it comes, will demand agile and skilful management. Candidates were asked to explain what positions they would seek to attain in aviation and how the knowledge, skills and attitudes they would develop through their MSc courses would help them meet those challenges in their preferred positions.

(b) The emphasis in air transport management today is on cost-reduction and control. How can this be reconciled with safety management?

## SELECTION PANEL

The selection panel consisted of: Clive Rose, Chairman; Master Elect Robin Keegan; Captain Rick Thomas and Assistants Elizabeth Walkinshaw and Samantha Waller. Seventeen valid applications were received and the authors of eight were invited for interview via Zoom, following which awards were made to Benjamin Ward, Kyla Fellner and Philip Bird.



**Philip Bird** served in the Royal Air Force from 2005 to 2018. He was variously a Tornado front-line pilot, a Hawk display pilot, Typhoon pilot and Head of flight operations in the Falkland Islands. He was an instructor and examiner on the Typhoon. Since 2018 he has been first officer on the Boeing 747-8 for a cargo line.

In 2019 Philip launched his own business Jet Pathway, an airline recruitment business with an emphasis on supporting and developing British pilots through selection procedures. His ambition, which will be enhanced

by successful completion of his MSc in Air Transport Management, is to transfer his flying and management skills acquired in the RAF to become a Director of Flight Operations or Head of Training at a major airline.



**Kyla Fellner** gained her ATPL between 2008 and 2011, and her instructor rating in 2011. She currently works for Etihad Aviation Training in the UAE, providing instruction from ab initio to ATPL level. She has amassed almost 5,000 hours in single and multi-engine training aircraft.

Kyla is taking the MSc course in Air Safety Management which she intends will enable her to instil in trainee pilots the habit of prioritising safety in every aspect of flight and planning. In her essay on cost reduction versus safety she identified several less obvious areas where safety could be compromised. For example, sending crew to cheaper hotels further from the airport increases travel time and reduces rest time. Reducing turnaround time increases stress and makes mistakes more likely.



**Benjamin Ward** is a captain with easyJet based in Majorca and flying to many European destinations.

He is taking the MSc in Air Safety Management and aspires to join his airline's Safety Management Team. He feels that job insecurity in the industry may make employees

less likely to report problems such as sickness or fatigue, and when the volumes start to re-build, additional stresses will be felt. It will be up to the Safety Management team to anticipate these potential problems and take appropriate measures. In addition to flying, Ben is a keen scuba diver and, unusually, a pyrotechnician responsible for operating professional firework displays.

# YOUTH IN AVIATION PROGRAMME

*By Liveryman Alisdair Beaton*

Nearly two years ago, a Youth in Aviation programme, proposed by myself and then-DAA John Turner, was sanctioned by the Court. It is well understood and appreciated that there are many young people whose circumstances make it almost inconceivable that they will ever get the chance to experience the fun of flying. To those of us who have enjoyed a career in aviation, military or civil, or even for those able to pursue what is a genuinely expensive ambition and hobby, the exhilaration that the total freedom of flying brings is almost a disease for which there is no cure. However, a common aspect of aviation that we all recognise is a wish to share the enjoyment, pleasure and thrill we all get from flying. To share that privileged experience with those who are perhaps less fortunate, is the aim of the Company's Youth in Aviation project.



*Alisdair Beaton (centre) briefs the young fliers*

Thus, a number of Declared Training Organisations have been approached to seek their interest and willingness to take part in such a programme. The aim would be for each DTO to identify its own candidates, knowing the most deserving cases or groups in their local area. Establishing names of 10 to 12 youngsters to fly in a four-seater PA28 or Cessna 172 type aircraft, on one-hour flights from four or five DTOs around the UK, would eventually give up to 60 deserving youngsters a simple, but hopefully memorable, flight experience. The Company has allocated £5,000 towards the programme.

After nearly two years of Covid-19 restrictions which prevented the project from beginning, on 3rd August, at Highland Aviation, Inverness/Dalcross, the first of 12 deserving youngsters were taken up on 4 local area flights. What was especially important was that the group were all young carers aged between 10 and 15 years. Throughout the UK, young carers live day-to-day with



*Participants get up close to a microlight*

significant social, domestic and family responsibilities. It is a branch of our younger society that is not well publicised, often financially restricted but incredibly important and hardworking. The chance of a flight and an airport visit for the young carers from around Inverness was chosen by Highland Aviation: the choice was so deserving. As there will be young carer organisations close to any future DTOs taking part in this project, it was decided that the Highland Aviation model could well be used to link the Company with young carers for future aspects of this specific Youth in Aviation scheme.

The scheme will now open up to DTOs in other regions of the UK. Any DTO that would like to take part in the scheme should get in touch with Director of Aviation Affairs Paul Stone or Clerk, Paul Tacon. Equally, the model could well be considered internationally by the regions where the Company has representation. The fun of flying can and should be shared amongst as many young people as possible, but perhaps equally importantly, amongst those less fortunate but most deserving.



*Smiles and certificates at the end of a great day*



# PROFILE: THE JOYSTICK CLUB

*By Upper Freeman Mike Clews*



*The Joystick Club pedal plane fleet hard at work*



The Joystick Club was started in 2012 with the intention of enthusing youngsters about flying and aviation in general. We are a group of aviation 'nuts', mainly retired, but mostly members of the West London Aero Club at White Waltham Airfield. We started off meeting once a month on

a Monday evening during the winter, with visits by road and air to various aeronautical events through the year.

We've encouraged Scouts to come and camp at the airfield and take their Aviation Badges, culminating in flights around the local area, had visits by Beavers and Cubs to White Waltham and delivered talks to local schools.

Pedal Plane production started after meeting members of the LAA Youth Education Strut at meetings for the Schools Build-a-Plane project and LAA rallies. They had two pedal planes, and as a radio-controlled-model and Europa-kit-plane builder myself it was an interesting and seemingly straightforward project to me.

Not being content with the American plans for pedal planes that were available on the Experimental Aircraft Association (EAA) website, we diversified with Spitfires, Hurricane, Me 109, Red Arrows Hawk and Sea Fury, and now we have a Douglas Dakota and Hawker Typhoon in D-Day markings, to give a total of 12. We now make them with folding wings for easier transportation, and with

push-sticks for parental propulsion.

A phone call started us thinking of something larger for bigger children when a real disused aircraft - a Piper Tomahawk - became available, buyer collects! We arrived mob-handed at Little Staunton airfield one Sunday morning and in three hours had the cockpit sawn off and lashed to a boat trailer. A camping trailer became ours and the two were mated together. Dummy folding wings and tail were made and connected to the cockpit controls. Apart from the paint, everything was free, but then simulation came to mind!

One of our group was into electronics, and in a year we had three screens erected in front of the windscreen and a PC installed under the cowling. Costs began climbing!



*Mike Clews in the simulator at RAF Odiham*

We were lucky to be at Bicester Heritage supporting its Flywheel event some years ago when a member of the



*The Joystick Club trailer was part-funded by a donation from the Air Pilots Flying Club*

public came by and asked if we could use some more flight instruments. A business card was proffered, and a trip to CAE Oxford ensued.

A well-used, but outdated, Piper Seneca flight simulator became available and lots of heaving saw it in the back of a white van on its way to White Waltham. Then two more individuals stepped in to help: one was aviation film-maker



*Is this the new Red 11? [Ed: or should that be Red Ten and a Half?]*

Simon O'Connell from Shoot Aviation, who gave us somewhere to hangar the Seneca as well as possible use in the film world; and the other was Peter Dobson, met at an Air Pilots fly in at Popham, who is an electronics genius.

A plot to mobilise and update the cockpit to run Windows XPlane 11, displayed via a projector, was devised. Peter has worked tirelessly and worked miracles with the instrument panel and hand-built digital displays to rival almost anything in GA flying. After 18 months' work the Seneca was returned to White Waltham for final finishing and thanks to the Air Pilots, we're still solvent!

We have enjoyed a busy 2021 with appearances at RAF Families Days, events at Yeovilton and Middle Wallop, the Traditional Boat Festival at Henley and all of the Shuttleworth Collection airshows which take place at Old Warden on the first Sunday of each month during the 'season'.



*A pedal Dakota is probably rarer than the full-size one!*



# INTO THE OVERSHOOT

*A round-up of less-formal items which have caught the Editor's eye*

## IVAN'S SEEKER

Among the star attractions at the 2021 Light Aircraft Association (LAA) Rally at Sywell in September was Ivan Shaw's prototype ISA 180 Seeker G-SEKR. (Shaw designed the Europa - Britain's most successful post-war civil aircraft - and its certified Liberty XL-2 variant.) The Seeker is a 'personal aircraft', designed to meet Shaw's own transport requirements to accommodate a 6ft 5in/1.96m tall pilot (weighing up to 17 stone/108kg), a full-size folding bicycle, a tent and baggage. Using a 100hp Rotax 912iS powerplant it will cruise at 120kt but is claimed to burn Mogas at just 6l/h at a cruise speed of 105kt.



(Steve Bridgewater)



## TOM'S RETIREMENT TRIBUTE

This year's Duxford Battle of Britain airshow was the last for Liveryman Tom Eeles as a highly respected member of the Flying Control Committee (FCC). PM Rick Peacock-Edwards originally appointed him to the FCC in 2003, since when he has been involved in many displays and pre-show briefings. Tom's enthusiasm and skill as a pilot made him an ideal member of the team.

Current FCC chair Upper Freeman Al Lockwood says: "Tom is a brilliant bloke, well mannered, humorous and a good friend. He has a great love of flying and excellent company. He has been a tower of strength and support, and will be missed." A model of Tom's beloved Buccaneer was presented to him after the show. [Tom also retired earlier this year from the editorial team on *Air Pilot*, having served seven years as Hon Editor and a further five as a proof-reader, and is equally missed here! Ed]

## ROLLS-ROYCE'S SPIRIT SOARS

Spirit of Innovation, the electric airspeed-record contender built by Rolls-Royce in conjunction with ElectroFLIGHT and battery-maker YASA, made its first flight on 15<sup>th</sup> September. The 15min flight of the 400kW (690hp) Spirit, from QinetiQ's Boscombe Down airfield in Hampshire, marks the first step towards an ultimate attempt on the airspeed record for electric aircraft, with the aim being to exceed 300mph. The aircraft is claimed to have the most power-dense battery pack ever assembled for an aircraft and forms part of Rolls-Royce's development programme aimed at creating powerplants for eVTOL urban air mobility vehicles.



(Rolls-Royce)