The official magazine of the Aircraft Owner and Pilots Association www.aopa.co.uk

AOPA UK

The latest Diamond gears up

It has been been more than ten years in development and now the first UK delivery is here, distributor **Henrik Burkal** took to the skies

CLEARING THE AIR
The CAA is facing a challenge with mounting airspace proposals and GA needs

TAKE THE HIGH ROAD
When pilot Andy Miller needed to build hours, he headed to the Highlands in his TB20

ELECTRIC DREAMS
Rolls-Royce test pilot reaches new milestone in race to find a greener future for aviation

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AND ANOTHER YEAR GOES BY

I WRITE THIS on the last day of the 2021 United Nations Climate Change Conference, held in Glasgow. The conference is the 26th Conference of the Parties, hence COP, to the United Nations Framework Convention on Climate Change. It is the third meeting of the parties to the Paris Agreement. This is the first time since COP 21 that the parties are expected to commit to greater ambition in mitigating climate change.

Most people who are concerned about such things are in agreement that replacing fossil fuels with renewable electricity, either directly or indirectly is the best way to decarbonise our industries, transport and the heating and cooling of buildings. However, this is easier said, than done in some areas, and aviation is one of them. The batteries needed are too heavy and hydrogen is too bulky to be made to do the job easily.

There has been a lot written about alternatives to fossil fuels this last two weeks so bearing in mind that alternatives in aviation aren't simple, when I came across the following, I thought it would be of interest to our members.

There is a ray of sunshine. Scientists are working on synthesising fuel from CO2 which is the exhaust of various industrial processes. They have found a way of combining atmospheric CO2 with water to make aircraft fuel, literally plucking it out of thin air. This involves some very clever science, the key process being the use of concentrated sunlight to heat a material called cerium oxide that when heated reacts with both CO2 and water. The reaction with the CO2 produces carbon monoxide and that with water hydrogen. The by-product of both is oxygen. The resulting mixture of carbon monoxide and hydrogen is familiar to industrial chemists; it called syngas and is already widely used in other processes.

The final part of the process is to turn the syngas into organic molecules. The team working on this chose to turn the syngas into methanol rather than hydrocarbons. They produced 32ml of pure methanol in a seven-hour day, not quite the volume required by the world's aviation industry but a clear proof of principle. It's not just around the corner, however, it would seem that the path to the corner has been found.

In the last magazine, we celebrated giving AOPA's awards to three exceptional people and organisations. I can report that we've once again had the opportunity to recognise exceptional effort. A small group found itself at London International (Oxford) airport to present Matt Lane and Steve Caryer, jointly, with the AOPA Instructor of the Year trophy. More about their outstanding achievements can be found in the following pages. I'd like to thank Oxford Airport for allowing us the use of their smart Vitesse Lounge for the presentation.

Finally, I'd like to thank all our members who sent in their questions for the CAA's Virtual Voyage and also those who joined in and watched the YouTube recordings live. The playback videos are now available on-line at *https://www.caa.co.uk/General-aviation/Safety-information/Virtual-Voyage/*. I also have answers to all the questions asked and will be making these available to all our members. ■

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Articles, photographs and news items from AOPA members and other readers are welcome. Please send to the Editor. Inclusion of material in AOPA Magazine cannot be guaranteed, however, and remains at the discretion of the Editor.
Material for consideration for the February issue should be received no later than January 2021.

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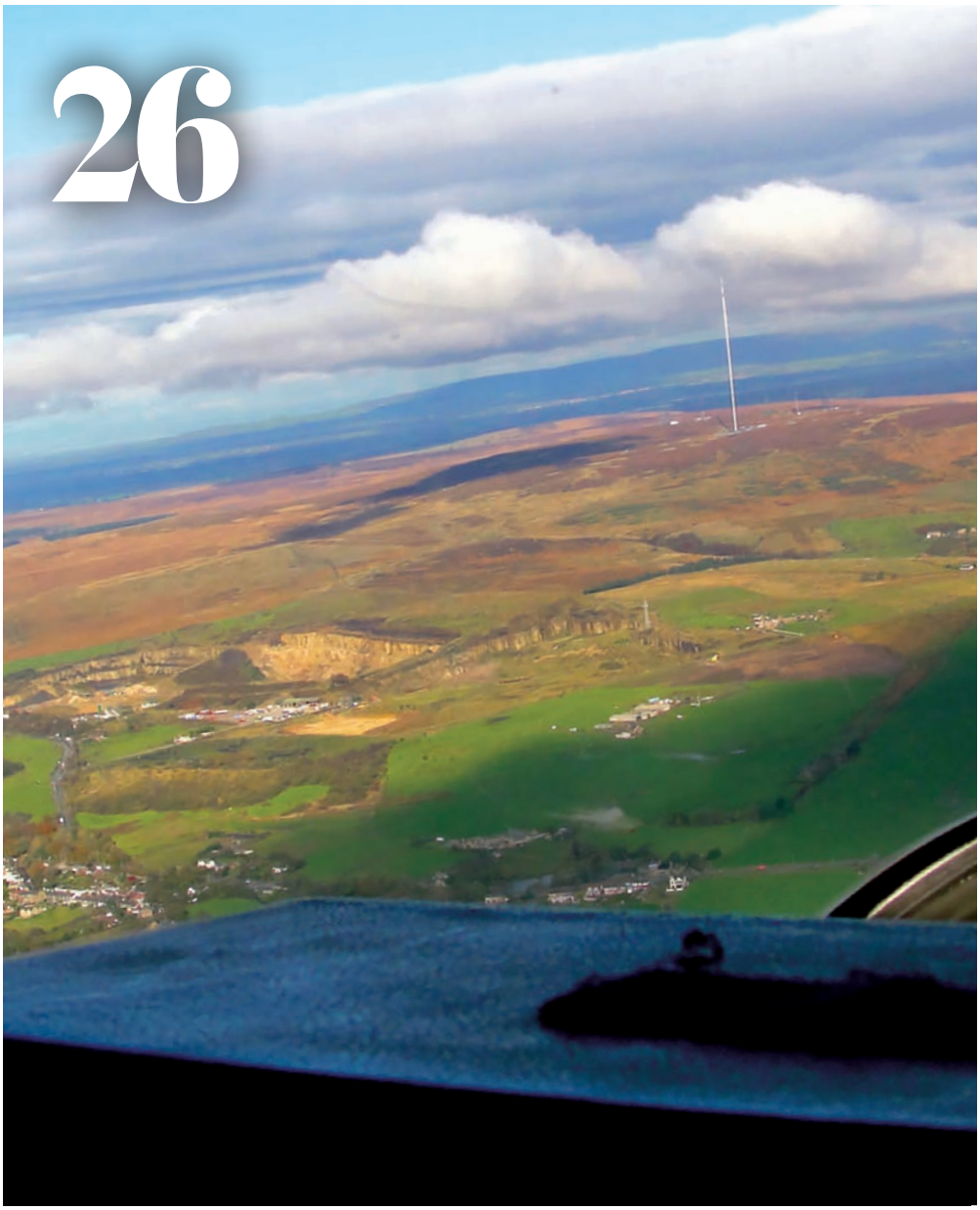

EDITOR'S COMMENT

Congratulations to Rolls-Royce test pilot Phill O'Dell who took electric power to new heights.

Piloting the Spirit of Innovation, he hit 387mph and is now heading for the record books.

The achievement comes at exciting time for aviation, particularly the pursuit of jet zero.

Mr O'Dell described his triumph as delivering the future of aviation. It's therefore fitting that the remarkable project was born in Gloucestershire, not far from the site of the former Gloster Aircraft Company.

It was here that classic aircraft – including the Gloster Meteor, Hawker Hurricane and Frank Whittle's turbines – roared into life.

Having ushered in the first and second aerospace propulsion ages, the county is aiding the third revolution

Part of my new role as editor will be to monitor innovation and keep AOPA members current. My thanks for the swift support and guidance from day one!

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LEADING FROM THE FRONT

THERE IS always enough work to be getting on with and as you know, the UK (since leaving the EU) is once again a third country and it's obvious that we are now trying to comprehend what these changes mean to our lives.

The CAA is an independent regulator which means it is no longer tied to rules developed by EASA; some may see this as a good thing whilst others may view the situation differently.

However, the UK has made it clear that as an ICAO contracting state, we will continue to comply with the ICAO standards and recommended practices (SARPS) and the CAA has committed itself to not gold plating the SARPs, which we understand means that they will not go beyond what ICAO sets unless there is a valid safety reason to do so.

I am not sure how the CAA will demonstrate that it doesn't gold plate ICAO standards and I don't think the CAA has thought that far ahead yet.

This means that the UK now has a certain degree of flexibility, principally around how it deals with national flights that remain within the UK's airspace. The CAA will be continuing to look at where changes can be made and what the benefits are to the UK.

Safety will always remain a priority, so we may see changes to the pilot training requirements and maintenance standards at some future point, however this may impact on your ability to 'pop' over to Le Touquet for a spot of lunch as international flights generally require ICAO compliance unless agreed beforehand with the state you intend to visit.

TECHNOLOGY

There is a lot of work going on with airspace and, in case you missed it, COP26 is bringing forward new environmental standards, so the focus on airspace will not just be on capacity but the environment as well. One way in which the environmental impact can be improved is through greater efficiency of the airspace, with better routings for airlines, fewer delays and therefore when combined with biofuels, the overall impact can be reduced. All these changes have the ability to reduce the airspace available for GA even though the CAA has made a commitment to claw back airspace that is no longer used by the airlines and in making minor structural changes may not improve access to airspace overall.

Drones (I use drones to describe all unmanned aircraft) want access to airspace as well, at present, there are no clear rules.

The Government is investing millions of pounds in the development of drones and therefore we cannot ignore this activity. There are 116 Airspace Change Proposals (ACPs) on the board currently and whilst many of these aim to support drone operations through the establishment of TDAs, it is highly likely that these TDAs may become TMZs.

Whilst I personally support Electronic Conspicuity devices, they are not collision avoidance systems and I am concerned about the potential increased operational risks in Golf airspace.

This point I have made directly to the CAA. What we want is a system that integrates safely all airspace users but achieving this is many years away.

The drone community wants to start Beyond Visual Line of Sight (BVLOS) operations much sooner, some are already happening today.

As these operations grow, they will change the way we look at traffic information and traffic avoidance and when technology is proven to work, this will also play a part.

But before that the rules will have to be updated such as the right of way rule and who gives way to who, as small cargo drones are different to an autonomous aircraft which could be the size of a Cessna Caravan, you would not know from a distance whether aircraft had a pilot on board or not!

It's also interesting when you look at the work being done to establish Urban Air Mobility (UAM), the passenger-carrying pilotless aircraft where the aim is to operate these flying machines inside cities yet at the same time current helicopter operations do not have the same privileges – even though they are highly certificated aircraft and flown by well-trained pilots.

UAMs want to land and take off next to bus and rail terminals using vertiports or city centre roof tops! So, when you hear the CAA talking about airspace modernisation, they will need to capture the needs of the airline community as well as the future needs of the UAMs and somehow they have to meet the legitimate needs of GA.

The CAA airspace policy people really have a huge task in front of them, which we are more than willing to engage in.

We finally managed to conduct the flights in support of Project GRIMASSE. The device, pictured, performed well and the initial results look promising.

This project is about the next generation of ELT beacons and GRIMASSE is the acronym for General Aviation capacity IMprovement for worldwide Adoption of a Safe Solution based on European GNSS.

This means that when the beacon is triggered, the response times, through improved coordination with SAR systems, more lives should be saved and at lower cost.

The scenarios that we flew in order to trigger the beacon all worked well, including the simulated ditching where we removed the gadget from the aircraft, simulating drift in the sea for example.

I would like to thank the teams in Thales and Pildo (France and Spain), Elstree Aerodrome and Elstree Engineering, Tureweston Aerodrome, GASCo and the DfT who all came along to view the flight tests. Last but not least our pilot Tony Ryan and Emad Adridar (the Pildo flight test engineer). ■

Martin Robinson
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WORDS & IMAGES Malcom Bird

EASIER ACCESS TO VITAL INFORMATION

AOPA Maintenance Working Group welcomes CAA adoption of guide on maintenance and engineering regulations for light aircraft

ANOTHER valuable meeting of the AOPA Maintenance Working Group was held on 20 October and although we were still using Zoom we were able to discuss many topics and have valuable inputs from the CAA, the LAA and several maintenance organisations.

One common thread emerges from surveys post Brexit; things have got too complicated and need to be simplified and clarified. This message has been taken on board by the CAA who now have a project underway to rationalise and harmonise but they do warn this could take a significant time. In the meantime, one project that was originally proposed by this working group has been picked up by the CAA and should see light of day next year. This is a guide on maintenance and engineering regulations that will enable aircraft owners more easily to understand the current rules, namely Part ML, the airworthiness requirements for light aircraft. It will be the equivalent of the Skyway Code which is designed to provide private pilots with easy and quick access to the key information they need. Many owners rely completely on their maintainers for ensuring compliance with the rules, and this guide will enable a more appreciative and rewarding liaison. We look forward to participating in the review and refinement of this document.

Many aircraft in Europe are already running on unleaded aviation fuel and many more could

On the fuel front, GAMI have announced an unleaded aviation fuel for piston engine aircraft. This will be restricted to certain aircraft and is for the US only at this stage. How applicable it is for Europe is less clear but we will monitor the situation. Then Textron, who own both Cessna and Lycoming, issued a statement to clarify that several of their popular models are able to run on unleaded aviation fuel including UL91. This latter announcement is useful as UL91 is available in the UK. However, this highlights an important difference between FAA land in which the aircraft design authority is the final word in authorising which fuels can be used in their aircraft whereas in EASA land (and the UK as we are currently running under their rules until informed otherwise) it is the engine manufacturer who can clear the use of certain unleaded aviation fuels. By this mechanism, many aircraft in Europe are already running on unleaded aviation fuel and many more could. ■

AOPA CONTINUES TO PUSH FOR THE WIDER USE OF UNLEADED AVIATION FUELS

- Make unleaded aviation fuel more generally available and at an attractive price. Gain DfT support to encourage airfield installations, reliable national fuel distribution and a temporary tax break.
- Make it easy for pilots to know whether their aircraft can use unleaded aviation fuel. eg placards by fuel filler caps and new information added to G-INFO to facilitate lookup.
- Encourage people buying new aircraft to only consider models that are clearly capable of running on unleaded fuel.
- Pursue the authorisation of a higher octane unleaded fuel for those aircraft not able to run on the current unleaded variants. A leading European contender is under trials and should be prioritised.
- Encourage the introduction of electric aircraft charging facilities widely at airfields.

We continue to work with the CAA, DfT, LAA and others.

WORDS Keith Taylor

BE PREPARED FOR SATNAV SHUTDOWN

FOLLOWING our feature on the CAA's concerns that tablets and smartphones are overheating and shutting down, AOPA member Keith Taylor describes the problem losing your electronic navigation.

Having experienced this occurence over the past two years fortunately at home planning flights, not airborne, I am aware of the problem and believe the cause is due to regular charging before the device is adequately discharged.

I have noticed the shutdown most often occurs when the device is between 50 to 60 percent of full charge. I have a plan B, C and D ready if it occurred in flight.

While qualified piots are trained in preflight planning to mark up a chart, many do not and rely on the device and route planning in SkyDemon.

Therefore, I have written about the dangers of this approach which not only includes power failure of the device, but also the often GPS jamming tests conducted by the Government.

I was trained and qualified in the 90s before the widespread use of satnavs fitted or portable, so always aware of risks, ensure Plan B, C, D, and maybe E during preflight planning.

The problem with the devices shutting down is battery exhaustion or excessive charging which causes shut down at about 50 percent. Although I ensure my device is fully charged, I operate in flight with a fully charged 12-hour power bank connected it.

Plan B: I carry a second tablet with my route ready loaded and spare solar powered power bank, accessible from P1.

Plan C: I carry a Garmin 495 again with my route already set up and accessible.

Plan D: I prepared my route on Skydemon, and print the enroute charts, plog and airfield plates which I have attached to my kneeboard. On the charts I have written all relevant frequencies likely to be required together with VOR/DME/ADF frequencies (most of the ancillary frequencies are in the margins to avoid chart clutter).

Plan E: Mark up the CAA chart with the route.

This may regarded by some as excessive, but I am prepared and the weight of the items is not heavy. Pilots are expected to carry relevant current CAA charts, so mark them up as Plan E.

Plan C can be omitted if Plan B is used and batteries are connected or readily accessible.

The SkyDemon printouts and easy to write on with pen during planning, rather than the CAA glossy charts with felt tip (which can easily be rubbed off in flight. ■

Nick Wilcock, chairman of the AOPA Training and Education Committee, with joint winners Matt Lane and Steve Caryer

WORDS Pauline Vahey **IMAGES** AOPA

INSTRUCTOR OF THE YEAR JOINT AWARD

IN RECENT times, due to COVID-19 restrictions it has been difficult for many pilots to revalidate their qualifications as they normally would. So in Spring 2020, the CAA introduced alleviations to allow pilots to extend their ratings, subject to certain conditions which included briefings and licence endorsements.

Matt Lane, who has been a regular member of our Training and Education Committee as well as running our instructor refresher seminars, together with Steve Caryer of UKFlying.com quickly set up and offered an on-line remote rating extension service.

They initially thought that there would only be a handful of pilots requiring their help, but to their total amazement they ended up assisting around 430 pilots between them.

However, rather than charging for their services, Matt and Steve suggested that pilots might instead like to make voluntary donations to charity.

As a result, they were able to raise almost £7,500 for the NHS and Wings4Warriors, a UK registered charity which gives wounded, injured or sick members of the armed forces a future worth fighting for, by training them to become professional pilots.

Underwater escape training, engine-off landings, night navigation and hours of study are all part of the process of gaining civilian qualifications.

In recognition of the tremendous contribution they have both made in such difficult times and in acknowledging their outstanding charitable efforts, AOPA UK is pleased and honoured to award the Instructor of the Year Award jointly to Matt and Steve. ■

WORDS Nick Wilcock

CAA CONFIRMS LICENCE CONDITIONS

IMC rating is termed Instrument Rating (Restricted)

THE WELL-KNOWN IMC rating, when included in a Part-FCL pilot licence, is termed the Instrument Rating (Restricted).

This is because, although a national rating cannot be included in a Part-FCL licence, under Article 4(8) of the UK Aircrew Regulation:

"The CAA may issue an authorisation to a pilot to exercise specified limited privileges to fly aeroplanes under instrument flight rules before the pilot complies with all of the requirements necessary for the issue of an instrument rating in accordance with this Regulation."

This is subject to certain conditions. One of these conditions is that "the authorisation shall be issued to applicants having completed appropriate training with qualified instructors and demonstrated the required competencies to a qualified examiner, as determined by the CAA".

In order to comply with this condition, the CAA published requirements for IR(R) instructors in CAP 804, which remains the definitive reference. These can be found in Part I, section 5, part E page 6 and include the requirements for FIs providing instruction for the IR(R) to hold either an IR or IR(R) themselves in a Part-FCL pilot licence.

Unless they also provide instruction for the IR, the licence must be endorsed '(h) (IR(R))' in the Remarks and Restriction column against the entry for the FI(A) in Section XII of the licence.

Pilots who hold valid national ATPL(A) and CPL(A) licences issued under the Air Navigation Order have embedded IMC rating privileges included in those licences.

However, the CAA has confirmed that, if an instructor with such a licence intends to provide flight instruction for the IR(R), he/she also needs to hold a Part-FCL pilot licence with a suitably endorsed FI certificate and a valid IR(R) (or IR), as the national professional licence privileges do not meet Article 4(8) requirements. ■

AOPA IN PICTURES

Pipistrel

Based at Blackbushe Airport, SEMET Aviation is rolling out the Pipistrel Velis Electro, with the aim of becoming the first and only pilot training organisation in the United Kingdom to operate a fully electric aircraft and the target of net-zero operations in the UK.

WORDS AOPA

CAA REACTS TO CONCERNS ON PARTS IN STOCK

AOPA has followed up with the CAA about a post on a well-known forum.

"Any EASA approved spare parts stocked in their stores, obtained after the start of 2020 that are not also FAA approved, will have to be examined by a CAA approved organisation and re certified before use. Massive disruption and large fees of course for a part previously deemed safe now unsafe."

RESPONSE FROM THE CAA TO FORUM

"The EASA Form 1 is currently a very hot topic, we recently held a industry briefing session as the recognition of the Form 1 ceased on 31 December 2021. Due to the comments we took it away and have now extended the recognition until 31 March 2022.

This was briefed to industry yesterday afternoon as an update to the first session. There is the ability to go beyond that date but it is dependant on the organisation issuing the Form 1 having made an application for CAA approval (exemptions ORS4 #1515 and #1516).

The EASA Form 1s issued prior to 31 March 2022 are protected, i.e. they will be acceptable post that date, so covers those parts on the shelf.

For used components:
EASA Form 1 dated prior to 31 Dec 2020 – protected by the Aviation Safety SI:
EASA Form 1 dated prior to 31 March 2022 – protected by the two exemptions
For new components:
The UK/EU Trade and co-operation agreement specifically recognises new components from the EU with an EASA Form 1 coming into the UK (and new components from the UK with a CAA Form 1 going into the EU), no action is required by the receiving individual or organisation, they can be used on a G registered aircraft.

We are aware that we need to make sure that the message continues past 2022 as it will take time to work the components out of the system. That is something that we are working on."

Since our contact with the CAA the following has been issued:
Deadline extension:
Recognition of EASA Form 1

Update to the CAA website to change the deadline date for accepting EASA Form 1.

From 1 April 2022, UK owners/operators can only accept an EASA Form 1 from an EU/EASA approved maintenance organisation that has applied for a UK approval by 31 March 2022. ■

AOPA INSTRUCTOR REFRESHER COURSES

For revalidation of an FI certificate, the holder shall fulfil two of the following three requirements:

1 At least 50 hours of flight instruction during certificate validity as FI, TRI, CTI, IRI, MI or Examiner;
2 Attend a Flight Instructor Refresher Seminar within the validity of the certificate; and
3 Pass an Assessment of Competence within the 12 months preceding the expiry of the certificate.

For at least each alternate subsequent revalidation, an assessment of competence must be undertaken. In the case of a renewal you should, within 12 months before renewal, attend a Flight Instructor Refresher Course and pass an assessment of competence.

NEXT DATES

The next dates for the course are

January 11-12, 2022

Approval has now been obtained from the CAA to run these courses using Zoom during the current pandemic. It is therefore imperative that any candidate is up to speed on using Zoom prior to commencing the course. Further information can be obtained from the Course Administrator, Mandy Nelson, on 020 7834 5631. Please book the course online at www.aopa.co.uk

To register for a place on any of the seminars please call the AOPA office on 020 7834 5631 or join online at WWW.AOPA.CO.UK.
The courses start at 0930 and end at 1700 each day.

WORDS David Chambers

POST-BREXIT DELAYS ARE NOT GOING AWAY

Medicals and licence hold-ups are a political problem and will continue

I CAN imagine that members may be torn (or not?) between going flying on a sunny summer's day versus sitting inside on yet another Zoom meeting. So perhaps the autumn weather helped increase attendance to 26 for our October meeting.

The working group links ordinary members and the AOPA Executive, enabling a two-way information flow, allowing AOPA to ensure it is in touch with the concerns of its root-and-branch members.

So it was not surprising that several members expressed their disappointment that Martin Robinson had neither been able to attend nor arrange for a substitute to deputise, although answers on previously advised topics were relayed via AOPA UK chair Pauline Vahey.

Members continue to be frustrated by the poor performance of the CAA Shared Service Centre which handles licence transactions. This has been further exacerbated by the introduction of the Cellma medical system which has had serious teething troubles. We were assured that the CAA is very well aware of the problems and is doing what it can to resolve them. Many of the initial problems with Cellma have been resolved, and once the extra one-off workload of re-issuing UK licences to those who changed their state of licence issue to another EASA country (SOLI) has been completed, service turnaround times should fall.

MEDICALS

Several members raised the issue that those with LAPL licences and/or medicals have not been able to fly abroad post-Brexit because EASA no longer recognises them.

This is very much a political issue rather than a technical one, and it does appear that there is little will to resolve this from either UK or EU, so any resolution will be in terms of months or years rather than weeks and months.

Nick Wilcock has taken over as chair of the Training and Education Committee (T&EC), circulating a report and announcing that three new members had been recruited.

There have been some issues with the introduction and operation of the PPL eExam system, which they have been investigating.

Simon Atkins has joined the T&EC and will supervise AOPA's Flight Instructor Courses. It is hoped to run them in the new AOPA offices near Sevenoaks at some point in 2022, possibly in a hybrid format that also allows for remote participation.

In answer to a member's question, Nick indicated that there is a need for a suitable training module for the GPS navigation component for the PPL syllabus, which could involve review and approval of a third-party product.

Pauline Vahey reported that she joined a CAA Virtual Voyage webinar, asking questions of the GA unit. AOPA has been present at recent Private Flyer events and has presented a number of annual awards. The new office at Kemsing has been acquired but requires substantial refitting and refurbishment before being fit for purpose. Work has already started, with completion estimated in spring 2022.

UNLEADED

John Walker provided a comprehensive round-up of airfields under threat, leading to discussion of the situation at Coventry, where plans for a Gigafactory are afoot.

Malcolm Bird provided an update on Project TEL; AOPA is strongly recommending a holistic approach to promoting wider use of unleaded fuels.

Other topics raised included an update on Electronic Conspicuity, increasing abuse of the NOTAM system and the growing number of temporary airspace applications (especially for drones).

Dates for our 2022 meetings were published: 29 January, 2 April, 18 June and 22 October.

The chairman advised that the next meeting will be his last in that role, and asked all members attending to consider taking over in the New Year. ■

SOLAR POWER SUCCESS

THE AIRBUS Zephyr S solar-powered high altitude UAV has completed its successful 2021 test flight campaign in the United States.

The final HAPS (High Altitude Platform System) flight touched down on 13 September in Arizona, concluding the 'most ambitious and effective' Zephyr flight campaign to date.

The flight test programme was intended to demonstrate how the Zephyr could be used for future operations, including flying outside restricted airspace and within airspace shared with commercial air traffic. Carrying an optical advanced Earth observation system as payload, it proved its operational value to provide 'instant, persistent and improved situational awareness'.

The campaign consisted of six flights in total, four at low-level and two in the stratosphere. The high-altitude flights each lasted around 18 days, totalling more than 36 days of stratospheric flight.

This adds a further 887 flight hours to the 2,435 total accumulated by the Zephyr to date. ■

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WORDS AOPA **IMAGES**

OVERHAUL OF FLIGHT CREW LICENSING REPLACES PAPER VERSIONS BY ONLINE FORM

SRG3108 is live and can be used for class, type and instrument rating applications

PDF VERSIONS of the following six Flight Crew Licensing rating application forms will be withdrawn on 13 January 2022 and replaced with a single online form:

• SRG1119A: Aeroplanes – Application for Issue of a Single or Multi-Pilot Class or Type Rating Including Powered Lift Aircraft
• SRG1119B: Aeroplanes – Application for Revalidation of a Single or Multi-Pilot Class or Type Rating Including Powered Lift Aircraft
• SRG1119C: Aeroplanes – Application for Renewal of a Single or Multi-Pilot Class or Type Rating Including Powered Lift Aircraft
• SRG1119E: Aeroplanes – Notification of Revalidation of a Single Engine Piston (SEP) and/or Touring Motor Glider (TMG) only by Experience in Accordance with Part-FCL
• SRG1173: Helicopter – Application for the Issue/Revalidation/Renewal for a Single and Multi Pilot Type Rating
• SRG1161: Aeroplane/Helicopter/Airship - Application for Inclusion of an Instrument Rating in a Part-FCL Pilots Licence

The following course/landing completion certificates have been updated:

• SRG1107: Course Completion Certificate - for Issue or Renewal of a Single or Multi-Pilot Type/Class or Instrument Rating
• SRG1112: Certificate of Landing Completion
• SRG5011: IR Course Completion Certificate - Aeroplane/Helicopter/Airship Instrument Rating in a Part-FCL Pilot's

The old PDF (paper) forms will not be accepted from 13 January, 2022

The online application form SRG3108 is now live and can be used for class, type and instrument rating applications, including ratings for microlights and airships.

The old PDF (paper) forms will not be accepted from 13 January 2022. ■

FLIGHTAWARE CHANGES HANDS

THE LEADING flight tracking website FlightAware is to be sold to Collins Aerospace for an undisclosed amount after the Raytheon Technologies-owned company signed a definitive agreement to purchase the privately-owned business.

FlightAware has been a market leader since it was created in 2005 and its flight tracking technology is used by business and personal users worldwide. Based in Houston, Texas, the company employs around 130 people and has a worldwide network of ADS-B receivers in over 200 countries feeding its flight tracking system. Creator Daniel Baker wanted a way for his family to track his private flights. ■

WORDS John Walker

THE LATEST NEWS ON UK AIRFIELDS

THERE ARE airfields across the UK currently under threat from developers and local councils. Here are the latest developments, updated 4 November.

CAMBRIDGE

Marshall Aerospace and Defence Group will be vacating the aerodrome by 2030 and have signed an option to lease land at Cranfield. A final decision on a new location has not been made but it is expected that a planning application for the new facility will be submitted in autumn 2022. The aerodrome site has been put forward for a major housing development in the First Proposals for the new Greater Cambridge Local Plan issued for public consultation ending on 13 December 2021.

FAIROAKS

Land owner of part of the site has given notices to vacate by February 2022 to some hangar and aerodrome building tenants which action does not affect the operation of the taxiways and runway which are in separate ownership. Public consultation ended on 30 July 2018 on Surrey Heath Borough Council's draft Local Plan options document which states that for Chobham "Employment and Retail - Sets out that development at Fairoaks Airport should be guided by a development brief / masterplan."

BOURN

Site earmarked for some 3,500 homes in 2031 Local Plan adopted by South Cambridgeshire District Council on 27 September 2018. The Council approved a planning application for the development on 19 February 2021 subject to the completion of prior conditions.

CHALGROVE

Site included in South Oxfordshire District Council 2034 Local Plan adopted on 10 December 2020 for a 3,000-home development with a new runway for Martin Baker Aircraft operations for which development a planning application was submitted by Homes England (HE) the land owner. The application was withdrawn on 21 May 21 pending a review of the plans after the CAA recommended that the proposed development be discontinued. HE has stated that they will use their CPO powers if negotiations about the development with MBA (their tenant) fail.

COVENTRY

Site nominated by the West Midlands Combined Authority for a Gigafactory for the production of electric vehicle batteries. Public consultation on proposals ended on 6 June 2021 with a planning application being submitted on 15 July 2021.

SCAMPTON

The Red Arrows display team will relocate to RAF Waddington with the airspace above Scampton expected to be retained for team practice and training next year. ■

ELECTRIC R-R RACES INTO WORLD RECORD BOOKS

Thrilled test pilot celebrates hitting 387mph milestone in the pursuit of jet zero

ROLLS-ROYCE test pilot Phill O'Dell is celebrating a record-breaking flight in the world's fastest all-electric aircraft after reaching 387.4mph in the Spirit of Innovation aircraft.

It is thought that the trials at Boscombe Down produced new world records over three distances and the results have been sent to the World Air Sports Federation for verification.

Mr O'Dell, who is the Rolls-Royce director of flight operations, said: "This is the highlight of my career and is an incredible achievement for the whole team.

"The opportunity to be at the forefront of another pioneering chapter of Rolls-Royce's story as we look to deliver the future of aviation is what dreams are made of."

Rolls-Royce said that Spirit of Innovation was more than 132mph faster than the previous record set by the Siemens eAircraft powered Extra 330 LE Aerobatic aircraft in 2017.

"To deliver the future of aviation is what dreams are made of"

The aircraft reached a top speed of 555.9 km/h (345.4 mph) over 3 kilometres and achieved 532.1 km/h (330 mph) over 15 kilometres. During its record-breaking runs, the aircraft clocked up 623 km/h (387.4 mph).

It is also thought to have broken the fastest time to climb to 9,842.52ft by 60 seconds with a time of 202 seconds.

Rolls-Royce CEO Warren East said: "Following the world's focus on the need for action at COP26, this is another milestone that will help make 'jet zero' a reality."

Spirit of Innovation is part of the ACCEL or Accelerating the Electrification of Flight project. It was propelled by a 400kW (500+hp) powertrain. ■

Spirit of Innovation was built by Electroflight based at Gloucestershire Airport

SYNTHENTIC FUEL IS A FIRST

AN IKARUS C42 microlight has completed the world's first flight powered by synthetic fuel and picked up a Guinness World Record for the achievement.

Group Captain Peter 'Willy' Hackett took off from Cotswold Airport and flew on Zero Petroleum's synthetic UL19 fuel, which is made by extracting hydrogen from water and carbon from atmospheric carbon dioxide.

Using energy generated from renewable sources such as wind or solar, these are combined to create the synthetic fuel.

The successful trial, part of the RAF's Project MARTIN, is believed to have the potential to save 80-90 per cent of carbon per flight. The RAF aims to start replacing petroleum-based fuels on aircraft later this decade. The replacement of 90 piston-powered Grob Aircraft T1 Tutor elementary flying trainers could be one of the first aircraft to be carbon-emission free. ■

The microlight flight was powered by Zero Petroleum's UL19

CAA SEEKS PUBLIC FEEDBACK OVER FUTURE OF UK AIRSPACE

THE CAA has sought views from members of the public as part of a review into the process it uses to make decisions on proposals to change the design of the UK's airspace, known as CAP1616.

This process invited all stakeholders to share their views and experiences of the process and its guidance through an online survey to help inform any proposed improvements.

The process was first launched in January 2018 and, after three years, the CAA is required to undertake a review of how it is working. This will enable the regulator to make stakeholder-driven improvements to the process including efficiency and effectiveness.

This latest stage follows a series of workshops throughout September where input was received from a wide variety of stakeholders, including representatives from airports, air navigation service providers, the general aviation community, and representatives of communities impacted by aviation noise.

"Our review provides a chance to identify any lessons learned"

The feedback received through this public engagement, as well as the earlier stages in the review, will be collated and considered by the CAA. Any proposals to amend the airspace change process will be subject to a formal public consultation process, which is currently planned for summer 2022.

Jon Round, Head of Airspace, Air Traffic Management and Aerodromes at the UK Civil Aviation Authority, said: "Our review provides a chance to identify any lessons learned since its original implementation three years ago. Whilst we believe that the process provides a fair and transparent approach, we are keen to engage with all stakeholders, including the public, to help make any further improvements.

"It is really important that as many people as possible take part and we would encourage anyone who has recently been involved in airspace change to complete our online survey. We look forward to hearing your views." ■

AOPA NEWS HIGHLIGHTS

Tickets for the world's biggest fly-in and aviation event, the EAA AirVenture Oshkosh, have gone on sale for the 2022 event.

This year's AirVenture was deemed a huge success by many who attended, but Covid restrictions made it difficult for Europeans to travel to the USA.

Recent announcements by President Biden suggest the USA will be easier to access soon.

Next year's Oshkosh, at Wittman Regional Airport in Oshkosh, Wisconsin, will be held over the week of 25 to 31 July.

Blackbushe Airport will be celebrating its 80th anniversary next year with a fly-in on June 22. The day will include a small static display, fun & games for all ages and music entertainment.

The newly refurbished Pathfinder Café will be hosting a barbecue on the patio.

There will also be a raffle to benefit our home-based charity, Aerobility. All aircraft visiting for the Fly-In will be benefit from a free landing fee.

The CAA has appointed a Non-Executive Director leading on people, change and business excellence.

Manny Lewis will provide independent counsel to the Civil Aviation Authority's executive team and will hold the post for three years.

"I am delighted to be joining the Civil Aviation Authority Board at a time of rapid technological change," said Mr Lewis.

SAFETY UNDER SCRUTINY

eVTOL industry leaders create consortium to focus on strictest standards

WITH ELECTRIC vertical take-off and landing aircraft expected to launch commercial operations in the UK within five years, eVTOL industry leaders have joined the CAA in a consortium to tackle safety challenges.

The eVTOL Safety Leadership Group (eVSLG) consortium includes potential operators, existing rotorcraft experts and aviation companies, including the Bristow Helicopters and Virgin Atlantic, as well as eVTOL manufacturers such as Joby and Vertical Aerospace.

While eVTOL aircraft are not yet in operation, these vehicles have the potential to launch commercially in the UK within the next five years.

In order to begin operations and receive regulatory approval, any aircraft needs to stand up to the strictest standards of aviation safety.

The group is co-chaired by the Head of the UK Civil Aviation Authority's Rapid Capabilities Office, Rick Newson, and Matt Rhodes from Bristow Helicopters who is also co-Chair of the Offshore Helicopter Safety Leadership Group.

Christian Keller

The CityAirbus NextGen is an all-electric, four-seat multicopter concept featuring a wing

"It is vital that a strong safety culture is built into the heart of eVTOL ops"

Mr Newson said: "The formation of the eVSLG consortium is a significant milestone toward a future of eVTOL aircraft and drone taxis becoming a reality in UK airspace.

"With commercial operations potentially starting in the next five years, it is vital that a strong safety culture is built into the heart of eVTOL operations." ■

ISLANDS SHUTTLE TURNS TO HYDROGEN

THE ISLES of Scilly Steamship Group is working with Britten-Norman and Cranfield Aerospace Solutions (CAeS) to introduce zero-carbon travel to the islands.

Ahead of the United Nations COP26 Climate Change Conference in Glasgow, three companies jointly signed a Letter of Intent to confirm their commitment to bringing hydrogen-powered flights to the islands.

The Isles of Scilly, which lie just off the coast of Cornwall in the south west, attract more than 100,000 visitors a year to the protected landscape.

The islands have been designated a Conservation Area, an Area of Outstanding Natural Beauty, a Heritage Coast and a Special Protection Area.

Developing the hydrogen-electric powered Islander is seen as a progressive way to protect the landscape.

Stuart Reid, Chief Executive of the Isles of Scilly Steamship Group (ISSG) which operates the airline Skybus, announced: "This is an exciting development in the project, and one which we are proud to be a part of. The Letter of Intent for hydrogen aircraft really shows our commitment towards a zero-emission aviation industry and to becoming an early adopter of this cutting-edge technology."

Green hydrogen can be produced locally using renewable energy. It can also be stored at an operating base with relative ease and without the need to provide complex charging networks.

Britten-Norman brings its expertise as the manufacturer of the STOL, short-sector Islander. The ISSG, which has operated Islanders for many years, has sold one of its aircraft to CAeS for retrofitting. ■

TRAINING SAVED PILOT'S LIFE

A PILOT'S underwater escape has led the Australian Transportation Safety Bureau to recommend equipping all crew members on overwater flights with emergency breathing systems.

The ATSB is already on record as a strong advocate of helicopter underwater escape training (HUET), which the accident pilot had most recently completed about eight months earlier, but noted that the time required to wait for the helicopter to stop moving, release restraints, free any snagged clothing, and find an escape route can easily exceed an individual's breath-hold capacity.

Despite the increasing prevalence of HUET training, drowning remains the most common cause of death in helicopter ditchings.

While conducting water drops on a bush fire using a 1,400-litre bucket on a 100ft line, the pilot established a hover over the Ben Boyd Reservoir. Hearing a grinding noise, he immediately jettisoned the bucket and applied forward cyclic, but the helicopter lost all power and descended straight into the water. The helicopter filled with water, rolled inverted, and sank.

The pilot waited for all motion to stop before punching out the right sliding door's rear window to escape, inflated his lifejacket, and swam to shore.

Despite his difficulty egressing, he told investigators that he "would have been dead without HUET".■

TASKFORCE TACKLES FUTURE OF EC IN EXPANDING TRAFFIC

THE UK HAS some of the busiest airspace in the world. With the evolution of innovative technologies and the expansion of new and emerging operations, it is critical to make airspace safer, more integrated and deliver growth in the sector.

The Department for Transport and the CAA will convene a taskforce to work with the manufacturing industry to develop and publish electronic conspicuity (EC) specifications to enable interoperability between airspace users.

The jointly developed specifications will take into account future requirements for all aviation including unmanned aerial vehicles (drones) and not be an unintended barrier to innovation in future electronic conspicuity functionality.

These specifications will provide clear guidance to all airspace users and service providers to achieve interoperability between systems, enabling information to be shared accurately and reliably and promoting safe integration and growth. The adoption of EC specifications will not be mandated UK-wide. Users of other systems can continue to benefit from the functionality that those products offer.

However, compliance with the established EC specifications will be required in mandatory airspace to ensure interoperability between airspace users.

This will mean some users of airspace may need to adopt new equipment or adapt existing devices to meet the new specifications.

We will set out more details in due course about support to help manufacturers and airspace users make those changes.

The EC rebate scheme, launched in October 2020, will remain open to applications until 31 March 2022. Those meeting the requirements can claim a 50 percent rebate of the purchase cost of an EC device to a maximum of £250 (including VAT) per applicant. ■

New specifications will provide guidance to all airspace users

AOPA NEWS HIGHLIGHTS

The businessman behind footballer Emiliano Sala's fatal flight has been sentenced to 18 months in prison for endangering the safety of an aircraft.

David Henderson, 67, of East Riding of Yorkshire, also tried to arrange a flight for a passenger without permission or authorisation.

Pilot David Ibbotson and his passenger were on an evening flight from Nantes to Cardiff when the Piper Malibu crashed into the English Channel.

Mr Ibbotson did not have a commercial licence and was not operating under the provisions of an Air Operator's Certificate. He was also flying with an expired SEP rating, very little IMC experience and without a night rating.

The Land's End Transit Corridor has been reclassified as a RMZ as the CAA sought to increase protection for the aircraft using the route, in particular, scheduled transport services, some of which may be conducting IFR RNP approaches

A study found that air traffic using the LETC become funnelled within a very narrow lateral and vertical area of airspace.

There are now four airports/heliports in the LETC – Land's End Airport, St. Mary's Airport, Penzance Heliport and Tresco Heliport. The 15-minute flight between Land's End and St Mary's has been revealed as the UK's busiest flight route for April 2021.

HEROINE PILOT HELPS WOMEN IN AVIATION

Legacy scholarship in honour of wartime flyer Molly Rose will provide PPL training

THE INCREDIBLE service of wartime pilot Molly Rose with the Air Transport Auxiliary has inspired a lasting legacy aimed at encouraging young women to forge a career in aviation.

The scholarship awards a full PPL to an individual who has demonstrated an interest in flying as a career.

The scholarship is named after Molly Rose (neé Marshall), the heroine aviatrix whose incredible life story inspired the book and film Attagirls, based on her time in the ATA during World War Two.

During the war the ATA flew 415,000 hours and delivered more than 309,000 aircraft of 147 types, including Spitfires, Hawker Hurricanes, Mosquitoes, Mustangs, Lancasters, Halifaxes, Fairey Swordfish, Fairey Barracudas and Flying Fortresses.

Cambridge Aero Club will provide the PPL training for the person awarded the scholarship and the British Women Pilots' Association (BWPA) will supply the £2,500 accommodation, subsistence and travel package.

HANGARS

RAF Squadron Leader (rtd) Andy Rawcliffe, Chairman of the Attagirls Molly Rose Pilot Scholarship Board of Trustees, said: "We are delighted to have an association with the BWPA given that their raison d'être is synonymous with our own; that being to encourage women to consider a career in aviation and particularly as a pilot."

Applications are invited from young women from all backgrounds aged between 17 and 24. The winning applicant will receive full pilot training next year.

Molly Rose was a British aviator who flew for the Air Transport Auxiliary in World War II and later served as a magistrate in Oxfordshire.

Her father David Marshall formed Marshall Motor Holdings and Marshall Aerospace and Defence Group.

Having enjoyed flying as a passenger in her brother Arthur's de Havilland Gipsy Moth, she passed her pilot's licence in 1937.

Her father had developed the Marshall Motors business he set up in 1909 and her brother set up the Cambridge Flying School.

On her return from schooling in Paris, Molly's father suggested she became an apprentice engineer and she worked in the hangars of the family business until called up by the Air Transport Auxiliary, on 16th September 1942.

During her time with the ATA, Molly delivered 486 aircraft; among the 38 different types, 276 were Spitfires.

The Air Transport Auxiliary, founded at the outbreak of World War II, was a civilian organisation which made an enormous contribution to the war effort by taking over from service pilots the task of ferrying RAF and Royal Navy warplanes between factories, maintenance units and front line squadrons, but not to naval aircraft carriers.

It also flew service personnel on urgent duty, and performed some air ambulance work.

Notably, many of its pilots were women, and from 1943 they received equal pay to their male co-workers, a first for the British Government. During the war, 1,245 men and women from 25 countries ferried a total of 309,000 aircraft of 147 different types, without radios or guns, with no instrument flying instruction and at the mercy of the British weather. Often they were presented with a type of aircraft they had never seen before.

Molly Rose delivered 486 aircraft during her remarkable service

"Without the ATA, the days and nights of the Battle of Britain would have been conducted under conditions quite different from the actual events"

The Air Transport Auxiliary's headquarters was at White Waltham airfield near Maidenhead from February 1940 until 30 November 1945.

The idea of using civilian pilots as a kind of Territorial Air Force was put forward in 1938, when the Civil Air Guard was formed to offer subsidised flying training to people up to 50 years old.

There were also many pilots who had learned to fly in the 1920s and 1930s who were either too old or unfit for RAF service but wanted to use their flying skills in some way in the impending conflict.

So in September 1939, just days after the outbreak of the war the Air Transport Auxiliary came into being.

Once cleared to fly one class of aircraft, pilots could be asked to ferry any type in that class.

To do so they had Ferry Pilot Notes, a two ring book of small cards with the critical statistics and notations necessary to ferry each aircraft.

In 1945, Lord Beaverbrook said: "Without the ATA, the days and nights of the Battle of Britain would have been conducted under conditions quite different from the actual events. They were soldiers fighting in the struggle just as completely as if they had been engaged on the battlefront." ■

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WORDs AND IMAGES MoD

RAF'S HIGH FLYERS ARE CAPTURED ON CAMERA

Best of the service's photographers go head to head in competition that reveals life in the air from pandemic relief to missions over Europe

THE VITAL role of the RAF during the pandemic has been captured on camera in a photographic competition that demonstrates the highly honed skills in the service from Brize Norton to Akrotiri.

Nearly 1,500 images and over 50 videos were submitted across the competition's categories, with the best nine images chosen by the judges going head-to-

head in the Peoples' Choice category where the general public had the chance via the Royal Air Force's official Facebook page for their favourite image to win the Peoples' Choice category.

This year's judges were WO2 Jamie Peters, British Army Photographer, LPhot Dan Shepherd Royal Navy Photographer, Hilary Roberts the Senior Curator of Photography IWM, Mrs Pam Mallett, Thomas Newdick an editor at The Warzone, Matthew Fearn, Picture Editor of The Telegraph and head of the RAF Photographic Trade, WO Andy Malthouse.

Hilary Roberts said: "This year's entries reflect the RAF's huge contribution to British life as well as its core role of keeping our skies safe."

Fellow judge WO2 Jamie Peters said: "Picking the top images from the many submitted was a real challenge, the standard of entries were as technically excellent as they were varied, showing the diverse range of tasks the RAF and its photographers do all over the world.

"Entries reflect the RAF's huge contribution to British life as well as its core role of keeping our skies safe."

"From support with the COVID pandemic at home to operations abroad, the photographers have captured it all.

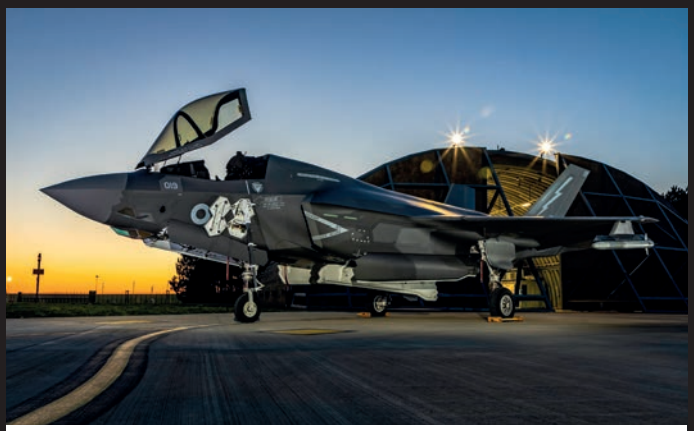
"As a fellow military photographer I looked for images that made me wish I had taken them. There were many that fell into that bracket which made my job all the more difficult."

Categories included Personnel, Current RAF Equipment and Operations.■

TITLE Griffin
PHOTOGRAPHER Matty Matthews
DATE January 2020
PLACE Raf Akrotiri

TITLE Feathered Arrow
PHOTOGRAPHER Adam Fletcher
DATE April 2021
PLACE Greece

TITLE Mind Over Matter **PHOTOGRAPHER** Lee Matthews **DATE** May 2021 **PLACE** Middle East



TITLE 0-Mach 1.6 **PHOTOGRAPHER** Ben Mayfield **DATE** March 2021 **PLACE** RAF Marham

TITLE Where To Next? **PHOTOGRAPHER** Tomas Barnard **DATE** January 20 **PLACE** RAF Cosford

TITLE Flying Home **PHOTOGRAPHER** Iwan Lewis **DATE** September 21 **PLACE** English Channel

TITLE View To A Kill **PHOTOGRAPHER** Samantha Holden **DATE** December 2020 **PLACE** Eastern Europe

TITLE Master Of The Sea **PHOTOGRAPHER** Ryan Murray **DATE** September 2021 **LOCATION**

TITLE Port In A Storm **PHOTOGRAPHER** Megan Wodhouse **DATE** December 2020 **PLACE** UK

TITLE Noctem Warrior **PHOTOGRAPHER** Tim Laurence **DATE** July 2021 **PLACE** California

Facing the demands of hour-building? Choose a beautiful destination such as Loch Oich

WORD AND IMAGES Andy Miller

THREE COUNTRIES IN ONE DAY...

Andy Miller needed to hours-build for his new TB20's insurance, so what better way than to visit Scotland and Wales via Manchester, Inverness, the Great Glen, Oban and Llandudno...

I STARTED flying in 2018 when I was approaching 40. Like many, I trained in a PA-28 and as soon as I had my licence I started looking for a cost-effective way to continue my hobby. Being an engineer at heart, I was also interested in maintenance and everything that goes along with ownership, so a syndicate seemed the obvious way ahead.

I frantically set about amassing the 100 hours experience many groups require, and once I had 101 in the logbook I was fortunate to buy into a very well run PA-28 syndicate which offered me aircraft familiarity and 16 members to lessen the financial risk. It also gave me the opportunity to mix, befriend and fly with different pilots from varying backgrounds.

One hundred and fifty hours later I had a night rating, IMC rating, had conducted my first international flight (ever heard of the little known Le Touquet...) and had completed my complex differences training in an Arrow.

So now it was time for something a bit more capable — a complex aircraft. Call me shallow but I just find it 'really cool' to be raising a gear lever at the end of the runway and feeling the gear lock into place, although that 'coolness' does come with the worry about a wheels-up landing, so I find myself checking for three greens at least a dozen or so times during my approach — It goes something like this UUU BUMUFUFUFUIUCUHUHU and then a few more UUUU at the end! That aside, the extra lever in the throttle quadrant makes me feel like a pro, so it's worth the risk.

An Arrow would have been an obvious choice but none of the syndicates at my local airfield had any vacancies. Quite by chance I then heard of a 1/6th share in a TB20 that would soon be coming available.

Forty-eight hours of internet research later I had convinced myself that a TB20 was for me, despite not having actually been close to one, and a week later following a very slick transaction I found myself with the keys to my new toy.

I'd like to think that vanity didn't play a role and that my enthusiasm had nothing to do with the fact the last three letters of the callsign are also my initials...

So at this point I have 250 hours in my logbook, ten percent of which were on a complex aircraft. I've read the POH forward and backwards,

"I had a night rating and an IMC rating. Now it was time for something more capable, a complex aircraft"

and have the keys to a TB20 and so off I go into the sunset? Wrong – insurance.

I wouldn't, of course, have just taken to the skies in an unfamiliar aircraft without an instructor, but the insurance company wanted to make sure of it and required a 'type check' with an instructor and then fly for a further ten hours with an instructor or other syndicate member before being allowed solo.

Determined not to allow that to slow me up, I set about harassing my favourite flight instructor, Phil Mathews of Cotswold Aero Club.

Phil has a vast amount of experience and a relaxed style – I'll never forget a lesson when he just said the words "well... this will be interesting..." with no further prompts, thus giving me the space to make, figure out and correct my own mistakes.

So he was the one I wanted to spend the next 14 hours of my flying life with. He was probably less keen on the idea of being cooped up with me though, but he didn't really have a choice in the matter.

However, I didn't want to spend 14 hours in the local area. I'd bought this aircraft to enable me to tour further afield, so once we'd completed all the required general handling and I'd demonstrated I could keep the aircraft the right way up – and put the gear down before landing – we decided the best thing to do would be to go somewhere far.

Before now, the furthest north I had flown was Blackpool and most of my flights had been less than 90 minutes. Covid restrictions made it difficult to go abroad so we settled on Inverness.

From Gloucester this meant a three-hour journey of 386nm — encompassing multiple challenges such as busy airspace, zone transits, IMC, high ground, COP26 restricted zones and speaking to many different ATC units. A challenging route that would best equip me for my future solo touring and give me the chance to become familiar with the avionics that were foreign to me — a touch-screen Avidyne IFD540 and a Bendix King KAP150 autopilot.

We chose a route northbound to Manchester, then across the Pennines to

route up over Northumberland and to the east of the COP26 restrictions before crossing the Cairngorms and descending into Inverness.

The idea for the return was to go along the Great Glen to Oban then down the west coast between Prestwick and Arran (west of COP26) then across the Galloway peninsula and over the Irish Sea just outside the Isle of Man CTR, crossing the Welsh coast near Llandudno and on to Gloucester.

Not many years ago a route like this would have needed three 1:500,000 charts and several hand-crafted plogs, which would have taken some time to put together. Now all can be done on the likes of SkyDemon with a few button and screen taps in a matter of minutes. A very useful advantage of the SkyDemon IFD540 combination is to plan on SkyDemon and download direct to the IFD540, a real time-saving bonus.

So, off we set. Plan A was to attempt to persuade Manchester to give us an overhead transit. That didn't work so Plan B was a look at the Manchester Low Level Corridor. A few adjustments on the IFD gave us all the track info we needed to change our routing and end up in the middle of the corridor.

Just after the Manchester Ship Canal we were informed by Manchester of opposite direction conflicting traffic and sure enough there was a Skyranger at the same altitude a couple of miles ahead, so we made a suitable heading change.

After the corridor, cloud was significant over the Pennines so scenery was in short supply. Durham Tees Valley and Newcastle gave us coverage until it was time to talk to Scottish Information. The IFD proved useful for another temporary track change to get us around an active danger area at Otterburn.

"Not many years ago a route like this would have needed three 1:500,000 charts and several plogs, which would have taken some time to put together"

In Scottish airspace there wasn't much to do apart from count down the miles to Inverness. Climbing to 5,000ft to clear some 'rather large' hills put us in sub-zero temperatures for a few minutes and we picked up a trace of ice. This was interesting as I hadn't seen ice on an airframe before and it was comforting to have Phil alongside to explain what was happening and what to do if we needed to beat a hasty retreat from the conditions. A lucky break in the cloud gave us a good view of Balmoral Castle.

A radar-vectored ILS completed the flight into Inverness. Highland Aviation looked after us well during our short stay and the airport café was sampled for a quick, quite reasonable lunch.

After just over an hour on the ground we left Inverness and headed off along the Great Glen. At 1,000ft the scenery was spectacular with high ground either side and the sun glowing through the cloud in front.

There were a few a boats but, strangely, Nessie kept out of sight. At our cruising height comms with Inverness ran out after about 15nm and it wasn't worth speaking to Scottish as they wouldn't be able to hear us.

Approaching Oban and aware of COP26, a left turn put us on a track to the west of its airspace which meant cruising over the water

1: COP26 restrictions and temporary track changes around an active danger area couldn't spoil the Highland exhilaration
2: The transition to the TB20 worked out well ... and the personalised registration had nothing to do with the choice
3: The furthest north pilot Andy Miller had flown was Blackpool, now he was counting down the miles to Inverness

The series of locks at Fort Augustus provide an unmissable waypoint at south-west end of Loch Ness

I learned a lot about operating the aircraft and its avionics

between Prestwick and Arran. By now we'd climbed to around 2,500ft which provided great views of the coast and islands. Prestwick and Scottish supplied a Basic Service almost to the end of the Galloway peninsula after which Ronaldsway gave us a service as we crossed the Irish Sea just outside the eastern edge of the IOM CTR/A.

Approaching the Welsh coast, it was over to London Information for a while before, passing Welshpool – suddenly after such a long trip it was time to monitor Gloucester ATIS and prepare for arrival. Touching down just before official night we been in the air for some 6.5 hours and had broken the back of the ten hours supervised flying the insurers required.

Prior to this Scottish adventure I had done the formal checkout on the TB20 and had some of the required supervised hours. After a logbook check, I needed another hour for the insurance requirements. Phil (who else...) was available a couple of days later but early in the morning, like just after sunrise!

This time we hatched a plan for a local flight from Gloucester out to mid-Wales and back starting at 0730 (not sure how awake we are at that time of day). The aim was to explore the Elan Valley where there is a series of beautiful lakes.

Heading past Hay-on-Wye the cloud was building and it was looking as if we might not find the Elan Valley as we were now on top. However, there was a lucky break at the west end of the valley and we were able to go under and enjoy Dambuster run over the dams and lakes at low level. This brought us out near Rhayader and from there we followed the river Wye and eventually the Usk out of Wales and back to Gloucester, all at low level. A very exhilarating flight.

That was it! All the required flying completed and signed off. I learned a lot about

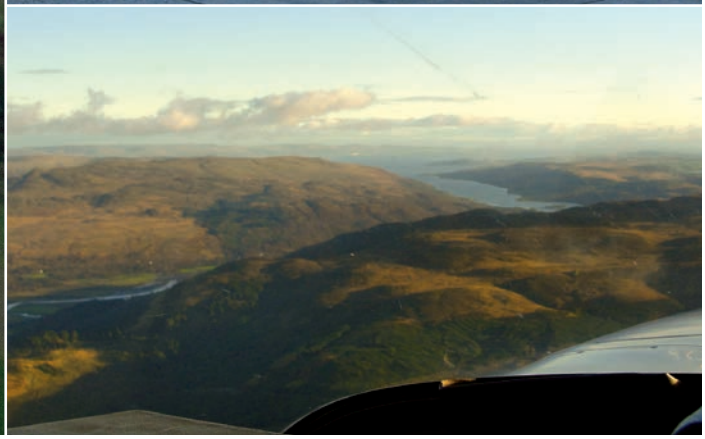
"Suddenly after such a long trip it was time to monitor Gloucester ATIS and prepare for arrival, touching down before official night"

operating the aircraft and its avionics and was now comfortable and ready to enjoy my new acquisition.

Three weeks later I'm beginning to feel comfortable with the aircraft and so with clear skies off I set with my wife to Aberporth. At this point I must give credit to her, she's so trusting of my judgment to happily sit alongside me on my first solo in the TB20, but inside I know she's nervous. This was probably not helped by the fact that on our very first flight together three years ago, which was also my very first flight post PPL issue, we spent the entire flight in stony silence as all of my mental bandwidth was focused on keeping us alive leaving no capacity for small talk.

Approaching Aberporth, I broke the silence by calmly saying "the airfield should be over there somewhere, can you keep a good look out and let me know if you can see it" to which she less calmly replied "*&@!# are you saying you don't know where we're landing"... Anyway, all in all, this time I had no problem finding our destination and we were able to enjoy the beautiful bay of Aberporth before heading back at dusk and spotting the Guy Fawkes Night bonfires.

Right now, I'm just at the start of this new journey with the TB20 and very much looking forward to seeing where it will take me next... ■



1: Scenery over the Pennines was in short supply so the Inverness runway was a welcome view from the cockpit
2: Highland Aviation was on hand for a short stay and lunch before the return leg and more hours in the logbook
3: Heading back to Gloucester would take in the Great Glen and Oban before heading for the Welsh coast for home

The latest Diamond gears up

The DA50RG had to be different in a tough aviation market... with retractable landing gear, a six-cylinder Continental turbodiesel engine and a cockpit packed with technology

WORDS Henrik Burkal **IMAGES** Diamond Aircraft

IT'S NOT every year that a new GA design gets certified and brought to market! Diamond has now introduced the modern DA50RG and I have been one of the lucky ones to try out this machine that is, on one hand, simple and on the other packed with technology.

THE AIRCRAFT AND ITS DEVELOPMENT

Diamond's DA50RG had a pretty long gestation period — it started more than ten years ago, but was never completed, partially due to other projects taking priority, but also due to the lack of a suitable engine.

It was originally conceived as a fixed landing gear, five-seater with an avgas-fuelled, turbocharged Continental. This, though, didn't sit well with the company's philosophy of using JET A-1-fuelled engines with low fuel burn and associated low emissions. It's a philosophy that drove development of the AUSTRO engines that power the DA40NG, DA42-VI and DA62 models.

The most powerful of the AUSTRO four-cylinder, turbodiesel engines was tested in a DA50 prototype, but it wasn't enough to give the desired performance. A turboprop engine was also tried out and that certainly gave the performance, but due to turbine inefficiency below 18,000ft, the fuel burn was too high. So time for a rethink while the twin-engined DA62 entered service. Diamond wanted to offer something different in the market, a comfortable five-seater with plenty of interior space, good performance, good useful load ability and burning JET A-1. So, it had to have a retractable landing gear and a turbodiesel engine.

The DA50RG has the cabin of the DA62 but limited to five seats and with good baggage space; with a MTOM of 1999kg, IFR flying avoids the Eurocontrol airways charges. It also has the retractable landing gear from the DA62 and uses the six-cylinder Continental CD300 turbodiesel. The wing,

however, is different from the DA62 and uses slotted Fowler flaps — but more on that later.

It is, of course, compliant with all the latest CS23 safety requirements and all of Diamond's experience with active and passive safety concepts have been included in the DA50RG.

It was Phase 1 certified by EASA in the autumn 2020 and the first delivery took place in July 2021, with UK and Ireland Diamond distributor Gemstone Aviation taking delivery of s/n 008 in the beginning of August.

EXTERIOR

The DA50R stands tall on the landing gear. The wingspan is long compared with other similar singles, reflecting on the low drag and aerodynamic efficiency of any Diamond aircraft. Engine oil servicing point and dipstick is easily accessible as well as the filling point on the RH side of the fuselage behind the cabin. The pre-flight is straightforward on the carbon fibre composite aircraft with three fuel drain points easily accessible. The optional de-icing system is with TKS panels on all leading edges. All external lighting is with LEDs for long life and low consumption. Notably, the DA50RG has cowl flaps, a first for a Diamond aircraft.

This aids with maintaining the optimum engine temperature during all phases of flight and on the ground. The cowl flap is electrically operated with a switch in the cockpit. The exterior finish on the aircraft I have seen has been fully up to the typical new Diamond standard whether the choice is standard white with vinyl striping or the optional metallic colours. The retractable landing gear is operated by hydraulics for retraction and gravity for extension aided by hydraulics. There is a handle in the cockpit for emergency extension by gravity. The nose landing gear has a traditional oleo strut and the main landing gear is of the trailing link type which will flatter most landings.

"If you know the DA62, there are no surprises in the cabin. It is big and airy with an all-round view"

INTERIOR

There are three access doors to the cabin, one either side for the two pilot seats and one door on the left for passenger access. The rear RH window also serves as an emergency exit.

If you are familiar with the DA62, there are no big surprises in the cabin, it is big and airy with good all-round view. One difference from the DA62 is a slim strut in the centre of the front windshield, needed for the structural integrity of the fuselage with the engine installed in the nose. Seats are thinly padded but comfortable on longer flights with both pilot seats having adjustment for the backrest and variable lumbar support. The front seats are fixed to the airframe and the rudder pedals are adjustable for-aft powered by an electric motor operated by a switch on the instrument panel. The adjustment range will satisfy the tallest and shortest pilots. There is a modern type of Environmental Control Panel to adjust heating and ventilation with a fan to assist with airflow. The heating is generated in a coolant to air matrix/heat exchanger, exactly like in a car, so the risk of carbon monoxide in the cabin is minimal. Airconditioning is optional. There is also a water bottle holder and a standard cup holder on each side in the front along with pockets for

1: The DA50RG gives a substantial and solid impression when you walk up to it, standing tall on the landing gear.
2: The wingspan is long, compared with other similar single engine aircraft, with low drag and aerodynamic efficiency.
3: The aircraft handling is intuitive and predictive, and it feels exactly like any other Diamond aircraft, said Henrik.

The ESP system will try to force you to reduce the bank angle when exceeding 30 degrees but this can be achieved by holding the autopilot disconnect button


DA50 RG

After setting up in the cruise configuration it is time to really try the handling

The retractable landing gear comes from the DA62 but the wings differ, using slotted Fowler flaps

checklists, maps etc. as well as a sturdy attachment each side for a RAM type cradle for your tablet.

The rear seats have backrests that can be folded forward in any combination of 33 percent or 66 percent or 100 percent just like a modern car. There are attachment points to strap down baggage/cargo as well. There is ample legroom – even for tall people in the back. The baggage area behind the rear seats has a flat floor and an adjustable cargo net. The cabin lighting is also all LED and dimmable. There are ample USB ports for charging devices, two each side in the front and two in the back.

The instrument panel is dominated by the two Garmin G1000NXi screens with the electronic standby instruments and audio panel between them. The autopilot comes as standard and is the excellent digital Garmin GFC 700 system with Flight Director and Yaw Damper. Everything falls easily to hand and it is simple to reach any of the controls, switches and handles. There are quite some optional avionics that can be selected to suit the owner and operation. A nice feature is that headset plugs are duplicated so you can use the old two jack plugs or LEMO plugs as you prefer. The LEMO plugs have the advantage of power supply so you don't need batteries for BOSE A20 headsets.

"There are a few things to manage before take-off with the cowl flaps and fuel pump"

FLYING THE DA50RG

After strapping into the DA50RG, adjusting the rudder pedals and closing up, it is time to continue with the detailed checklist. There is a natural flow to the checks before engine start and the engine start hot or cold is simple and as easy as starting a car. The six-cylinder engine has a nice rumble to it and extremely low vibration. The rumble disappears when the engine is warmed up. This takes a little while when cold, just like the AUSTRO engined Diamonds, but it is testament to the engine efficiency that it develops very little heat (waste!). The time can be utilised to enter your flight plan and setting up the G1000NXi. Synthetic Vision is optional and Terrain Awareness is standard. The two independent GPS systems are WAAS compliant and approved for all the performance-based navigation and approaches you will need. Jeppesen Chart View is standard but require subscription for coverage of your operational area. The situational awareness is superb! Taxiing the DA50RG takes a little getting used to. The nose wheel is actually castoring but needs a firm push on the rudder to initiate the turn on the ground, but as soon as the turn starts it is easily controllable with a combination of rudder input and differential braking. After warming up, the engine run-up and ECU tests are also straight forward and simple, and as on other FADEC controlled diesel engine powered aircraft, the run up itself also cycles the FADEC controlled propeller.

There are a few things to manage before take-off with the cowl flaps and fuel pump, but now it is part of the natural flow, made easy by the single engine power lever.

The MTOM is 1,999 kg as is the MLM, so no need to worry about having to burn up fuel before landing after taking off at MTOM.

After setting the flaps, pitch trim and rudder trim to the take-off position, the take-off is

1: The power management is simple with the single power lever, there's no propeller and no mixture to manage,
2: The DA50 RG's roll rate is deliberately moderate to keeep the ride comfortable for the pilot and passengers
3: There are three access doors to the cabin, one either side for the two pilot seats and one for passenger access.

straightforward, and minimum right rudder input required with a rotate speed of 65KIAS. The aircraft handling is intuitive and predictive, and it feels exactly like any other Diamond with perfectly balanced and weighted flight controls. Gear retraction and flap retraction does not require trim changes and I settle for a cruise climb at 95KIAS.

The power management is simple with the single power lever, and the engine power is managed by selecting the percent power you desire with the single power lever. No propeller and no mixture to manage, that is automatic.

After setting up in the cruise configuration it is time to really try the handling. Turns are easy to maintain and coordinate.

I personally think the DA50RG is the easiest ever in which to maintain stable altitude in the turns. It is of course "disturbed" by the ESP system trying to force you to reduce the bank angle when exceeding 30 degrees of bank but can be achieved by holding the autopilot disconnect button down in the steep turn. The roll rate is deliberately moderate for comfort purposes of course.

"The slotted Fowler flaps play a big role in the docile behaviour in take-off and landing poisitions"

Time to try the glide performance. Engine to idle and 94KIAS is the best glide speed with gear up and flaps up, giving a decent glide ratio of 1:10 with windmilling propeller, so you go 1,6NM/1000 ft.

The most impressive characteristic is the stall, actually the lack of drama around the stall. Stall speed varies of course with configuration and mass, but at mid weight clean the Vs is 66KIAS, and in landing configuration Vso is 52KIAS. The stall in all configurations gives first a loud beep from the stall warning system and closer to the actual stall you can feel a vibration in the control stick, indicating the wing is about finished flying and a bit of buffet is felt, but the actual stall is so gentle with a slightly natural nose down pitch tendency while sink sets in. There is full aileron control even when stalled. It is basically the same in all configurations, no drama at all and wings stay level.

The slotted Fowler flaps play a big role in the docile behaviour with the flaps in the take-off and landing positions respectively. I tried to stall in landing configuration and wound the pitch trim fully back and held the stick against the back stop.

The DA50RG settled into a 700 ft/min stable sink with a forward speed of 40-45KTS. I could still control direction and turn using rudder and aileron. I actually think the sink rate is lower than a BRS parachute equipped aircraft at with a similar mass, which is claimed to be between 1000 and 1800 ft/min.

Off up to FL120 to try the cruise performance. It turned out to be an ISA+10C day and at 75 percent power the air data computer showed a true airspeed of 165 KTAS with a fuel flow of 12,4 USG (47 litres) of JET A1 per hour or about £33/hour at the current average UK fuel price.

The familiar standard digital Garmin GFC700 autopilot with yaw damper is superb in all its functions.

I selected a descent rate of 600 ft/min and programmed a transition to the initial approach fix for a RNP approach, which was flown accurately and smoothly to decision altitude with just the aircraft configuration and the single power lever to manage.

I stuck with the recommended approach speed in landing configuration 75KIAS and my first landing was spot on.

After a couple of touch and goes, I realised this was not down to luck or skill, this aircraft is easy to judge and land.

And this is also the conclusion I and others made after the first DA50RG flight. A safe, stable, comfortable easy to fly aircraft with no vices! ■

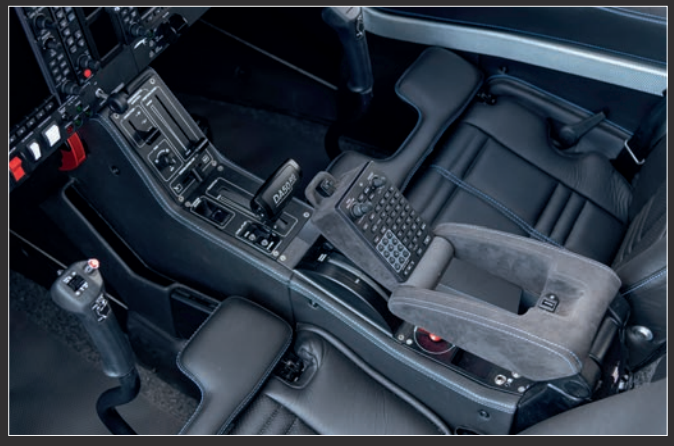
TECH SPEC Diamond DA50RG

WEIGHTS
Empty Weight 3,175lbs 1,440kg
MTOW: 4,407lbs 1,999kg

DIMENSIONS
Wingspan: 13.4m
Length/Height: 9.2m/2.9m

POWERPLANT
Engine: Continental CD-300 turbocharged with 300hp TOP/270hp
Propeller: MT MTV-12-D/210-56

PERFORMANCE
Max Speed : 181kts 335km/h TAS
Stall speed : 57kts 106km/h
Max Climb Rate: 5.3m/s 1,050 ft/min
Endurance: 750nm 1,389km
Take-Off Run: 1,250ft 381m
Service Ceiling: 20,000ft
Max Load Factor: 4,407lbs 1,999kg



The instrument panel is dominated by the two Garmin G1000NXi screens with the electronic standby instruments and audio panel between them

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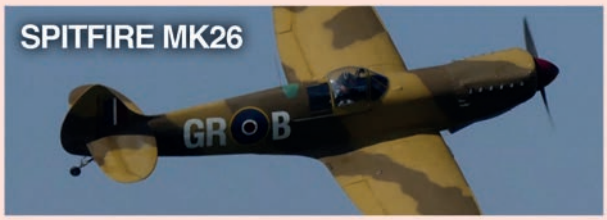

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