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

AOPA UK

All ready for flying

Sometimes you simply have to give in. **World tour plans have to change** when the world changes but nothing was going to stop **John Hunter's epic trip**

BATTLE STATIONS
CEO Martin Robinson casts a critical eye on the state of the aviation environment

HELP CAREERS TAKE OFF
Flying charity reaches out to help the next generation of aerospace industry recruits

CHANGE FOR THE BETTER
Health and economic challenges are forcing the transition from Avgas 100LL but questions remain

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HERITAGE MUST BE PROTECTED

IT'S TURNING out to be a busy summer, helped enormously by the weather. I hope that by the time you read this I will have renewed my SEP rating, lost due to Covid restrictions combined with renewal dates. However, in the meantime I took the opportunity to join what had previously been an annual trip of like-minded individuals to RNAS Yeovilton where we were the guests of 815 Naval Air Squadron. 815 Squadron fly Wildcat helicopters, billed as the latest generation of multi-role helicopter. The squadron is made up of around 240 people in 15 flights. They carry out multi functions, whether it is humanitarian aid in Haiti, or counter gun and drug running in the Gulf.

We're privileged to be allowed to fly in and park on the apron next to the tower. From there refreshments awaited us in the Navy Wings hangar. Given it had been two years since we lasted visited it was "Wow, how many aircraft have they now got?" The CEO of the Navy Wings Heritage Trust and former Station Commander of Yeovilton, Jock Alexander greeted us. Covid had been kind to the Trust, giving them the opportunity to rethink the future. As a result, a benefactor had been found to fund the continuing restoration of the core heritage fleet to flying and also an associate group maintaining and flying naval aviation aircraft giving them a huge resource to display naval aviation through the years. The Heritage Trust has now transitioned from being funded by the Navy to a self-financing charitable trust with a secure future. Their mission, 'inspire and remember'.

Also, as I write this the Royal International Air Tattoo at Fairford has just finished and Farnborough has started. Many of you will have taken the opportunity to attend one or both, for the first time in a while.

I was also at a three-day event, where on day two a BBMF Spitfire entertained the crowds and the following day the Lancaster flew over low to everyone's delight. It used to be that air shows and displays in aggregate in the UK attracted the largest number of spectators, although has it now overtaken by horse racing? Are we still an air minded nation? There was much speculation about the future of the funding of the BBMF since it is still funded by the RAF. However, I feel sure that, while perhaps not a publicly popular decision by any Minister of Defence to cease funding, a suitable funding stream will be found when that happens. However, what about heritage aviation outside the military, are young people still interested? Is heritage aviation important?

So, I ask the question, how were you inspired to fly? If any member of your family visiting an air show displaying any of these aircraft was inspired to fly, where would they go? The number of airfields in the UK is still diminishing, and airspace is still under pressure. I hope you all noticed the Skyway proposal announced this week at Farnborough International. A corridor for unmanned aviation connecting airspace above Reading, Oxford, Milton Keynes, Cambridge, Coventry and Rugby by mid-2024, which is to receive £12million in Government funding. If you feel that General Aviation is under pressure and that you want it to have a future, please consider getting involved. The Members Working Group is being reconstituted more details to come.■

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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 August issue should be received no later than June 2022.

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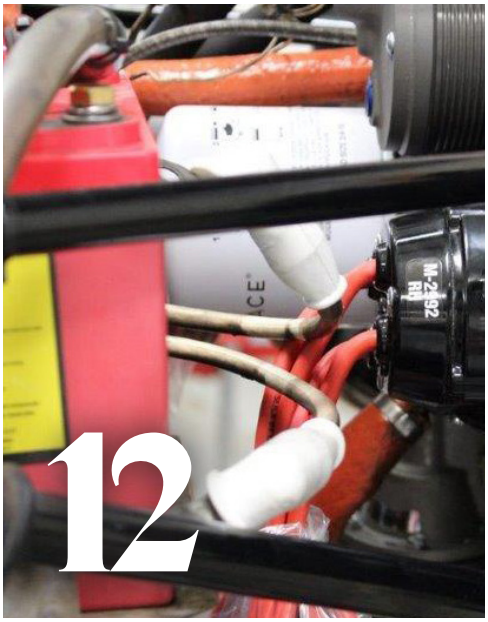

EDITOR'S COMMENT

During a fascinating debrief with cover story pilot John Hunter, it quickly became clear that he has pulled off the trip of a lifetime around Europe.

It also emerged that our neighbours have a far more friendly approach to aviation.

Yes, UK ATCOs was the best in John's book, but that won't come as news.

However, the welcome and hospitality from airfields and civvies abroad point to much-accepted industry.

Why are local strips so much part of the community across the Channel when ours are under threat from planners and developers?

It seems that runway 27s up and down the country are now being eyed for housing estates with on-street parking.

AOPA CEO Martin Robinson is bang on...it is now a battleground but our resolve is firm.

• Sorry for any delays in recent responses, Covid struck and left me feeling hypoxic and aching like I'd pulled 3Gs. There goes my fast-jet dream...

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(IN)VISIBLE PRESSURE

The battle is on and we will not accept any proposal that seeks to introduce a new charging mechanism that our members may need to contribute to

THROUGHOUT MY time in General Aviation/ flying I have seen the UK regulatory system move through the Joint Aviation Authorities, which was basically a club of European regulators, into what became the European Aviation Safety Agency. The difference being that EASA was created by a regulation whereas the JAA was based on states harmonising safety regulations.

During the time that the European Commission was establishing the regulation for the proposed safety agency I worked closely with one of the Commission's officials, Claude Probst. In fact he was the author of the regulation that gave life to EASA after it had been accepted by all European member states. Was it perfect? NO, but getting 28 (then) member states to agree a single rule book was a major achievement. Now we are transitioning back into a UK system which is based on a mix of national rules, some of which are sub-ICAO, existing European rules and ICAO Standards and Recommended Practices (SARPS), which often integrated into national legal frameworks, and part of being an ICAO contracting state means that the CAA is audited for compliance. Where a state files a difference with ICAO, they are required to remove any difference over time. Every time there is a change it costs the industry huge sums of money and these are passed on to the consumer. It should not be forgotten because without the business interest in General Aviation, private flying cannot take place. Higher costs, particularly when we are talking about discretionary income, being used to support people's flying interests impacts the amount of flight time and can affect safety if people try to cut costs. We are aware that the gap between the cost of flying and earnings has widened considerably over the past 20 years.

During the pandemic when GA was grounded because it was viewed as a non-essential activity kind of gives us a clue to where we sit in the mind of Government when it comes to priority. The Government will argue "We have published the GA Road Map", but nobody is speaking about it or how it will improve GA activity. We are still losing airports, the most recent announcement being Doncaster/ Sheffield and Coventry is set to go whilst Coventry City Council is talking about Vertiports that support Advanced Air Mobility (pilotless passenger air taxis) without understanding the importance of the existing airport.

The big "battleground" that is developing at a pace is our future access to the lower airspace? I am referring of course to the growth in unmanned aircraft that largely fall into two categories, cargo-carrying drones and pilotless air taxis.

AVOIDANCE

You may have seen the recent announcement relating to the skyway project where drones will use the 164 miles of airspace between Rugby Reading Coventry and Cambridge supporting drone deliveries for which the Government has backed funding of up to £273 million. It is interesting that the groups supporting these developments are setting out on a PR campaign to convince the "public" that this is a good thing. However, the public is still suspicious about the impact on privacy. In my opinion this airspace will need to be segregated in order to maintain safety, and although GA is being encouraged to equip with electronic conspicuity (EC), there is no common standard. Furthermore, electronic conspicuity devices are not detect and avoid or collision avoidance systems therefore there needs to be some other method of ensuring collisions do not happen. Thus far the UK has not begun to develop a traffic management system for the lower airspace. We are aware that current electronic conspicuity devices do not see all of the devices being used and I can say that the safety benefits we would like to see have not been delivered. Our surveillance policy needs to be one which is based on cooperation, and I am concerned that today we are lulling some pilots into a false sense of security. So, make sure you keep your external scan going as your EC device may not be alerting you to all traffic. I cannot envisage at this time how beyond visual line of sight (BVLOS) drone operations can take place in anything other than segregated or managed airspace. Therefore, traffic management of the lower airspace is the invisible challenge. There needs to be a rule that places the burden of collision avoidance on the drone operator because, for a GA pilot, you need to be able to see the object and work out whether you need to take collision avoidance action. EC may help you in which piece of the sky you need to look in, this can be difficult for manned-on-manned aircraft, and I think it will be even more of a problem in trying to visually acquire a drone in order to avoid it. Any reduction in safety of Class G will not be acceptable regardless of the opportunities from unmanned aerial activities.

A recent report published by PWC entitled 'Skies without Limits', the aim of which is to underpin the Government's drone ambition, explains why GA may get left behind if we are not careful.

The numbers that they quote are caveated against key enablers being in place but it says by 2030, 900,000 drones may be operating in UK skies, the benefits of which include a reduction of carbon emissions in the order of 2.4m tonnes and over 650,000 jobs leading to an economic benefit of £45bn to the UK economy (GA is valued at £3bn).

It is these kinds of numbers that inspire politicians to talk about 'levelling up' and innovation, making the UK the best place in the world to live and work and if you do not subscribe to these statements then you are being disloyal to the Motherland. So many of these jam tomorrow statements do little to inspire as the proof is always in the pudding. We need to be able to attract business. Promoting the idea of a career in aviation also means that you need to ensure that jobs are available, and this means establishing a framework for business to flourish.

The Government's view is about

Carbon Net Zero and new airline fuels and, although that is important from a GA perspective, it probably less important – yet again there is a view that GA will transition to electric power, which maybe the case but we need to survive today, tomorrow, next month, next year. The downside for GA is unless we work out how we can fit into the emerging picture, our future will be limited. We must be up for the challenge, and we must be prepared to drive forward the changes we want to see so that the introduction of this new aviation sector has a minimal impact on our activities, but it is not going to be easy.

ARGUMENT

The issue in respect of Galileo/EGNOS needs further consideration. I wrote to both the Department for Transport and the Civil Aviation Authority with a Freedom of Information request asking how the decision was reached in respect of cancelling our involvement in the European Geo-Stationary Navigation Overlay System (EGNOS), I received a helpful response eventually from the Department for Transport who were clearly not in favour of removing the UK from EGNOS. But they lost the argument. Unfortunately, the CAA were less helpful, and they refused to respond on the basis that to do so would cost them more than £470 and that the rules around Freedom of Information requests allow them not to respond. I will let you make your own mind up as to how you think the CAA should have or could have replied. It also took them 20 days to come to that decision. If you recall the Government decided that EGNOS would not provide a good return for the British taxpayer and therefore remove the UK from being involved. The EU would have allowed the UK to continue being involved, after all the UK has invested millions in the development of Galileo / EGNOS prior to leaving the EU, Lord Tony Berkeley and Lord Byron Davies (an AOPA a member of many years) commissioned a report through an Oxford-based consultancy called Oxera. It confirms that the value of EGNOS to the UK economy it is 2.6 times the cost.

Whilst the Government was looking at its options it decided to invest in a low earth orbit satellites system (LEO) known as OneWeb, and as the name suggests it is linked to the internet, the aim of which is to speed up global access. The Government invested £400m in purchasing OneWeb which is already in financial difficulties in the United States to the tune of around $3bn. The Government, in a discussion with an Indian businessman, convinced him to invest up to £500m, thereby becoming a majority shareholder in in OneWeb with the remainder being provided buy an existing Japanese bank. The concern I have is the way in which this deal was arranged, much of the detail is available from various news sources and reports. It was previously reported that the Business Secretary at the time (Alok Sharma) was informed by his permanent secretary, the most senior civil servant in the department, who is also the accounting officer for their department on how the department's money is spent. They have a duty to seek a ministerial directive if they think a spending proposal breaches four key criteria including feasibility and value for money. By issuing a ministerial directive the minister now assumes responsibility. The warning, I believe, was that the UK should not proceed with investing in OneWeb on grounds of value for money and that if he wanted to continue, he would need to issue a ministerial directive which I understand he did. Treasury officials were also concerned, and again I understand that the Chancellor was warned against providing the funds on the grounds that OneWeb was unlikely to provide a return for the UK taxpayer – needless to say the money was provided.

It has also been reported that the UK Government thought OneWeb would be a replacement for Galileo and I have heard that NASA wrote to the UK saying that OneWeb was not a navigation system and that it was not designed to provide navigation services. Recently the Indian businessman has said that there is a need for a further £2/2.5bn investment to get the system fully functional.

When the Prime Minister recently took questions, Angus MacNeil MP asked Boris Johnson about EGNOS and its importance to training pilots and aviation, to which Boris Johnson said: "We have a pioneering low orbit satellite system called OneWeb". It was clear that he had no idea of the difference between the two satellite systems.

What I want to know is on what basis did the Government decide that OneWeb would provide returns for the UK taxpayer whereas EGNOS would not. I fundamentally believe that it was a political decision that led to the demise of the UK's involvement in Galileo and that what the Government was looking for was a replacement that could be considered as being a British system.

I received a letter from the Aviation Minister stating that his officials in the Department for Transport were investigating the development of a UK only space-based augmentation (SBAS) service by the end of this decade. It is extremely difficult to uncover the truth behind these issues, but I do believe that the real experts were ignored.

These kinds of decisions cost British businesses millions of pounds of stranded investment but I want to make it clear this is not about Brexit or my own personal views. It's about the failure of leadership to make the right decisions at the right time and how we end up picking up the cost, delaying safety improvements and being the only G7 economy without an SBAS service.

Referring to the PWC report again, I think it is incredibly important that when officials are making decisions, they are fact based and do not use numbers primarily there for the benefit of investors. At a recent seminar about the future of smart mobility I asked the panel whether there is a need to fly human beings in pilotless aircraft? I can see some societal benefits attached to drones operating in remote regions or conducting task like pipeline inspections, BUT I am less convinced about last mile delivery. This question also applies to driverless cars too. I think it's important that we understand these issues as taxpayers' money is being used to support these innovative platforms, however the infrastructure that supports this new system has to be paid for and it is unlikely that is the current funding mechanism (airspace user fees) is going to be used or that the Government will use taxpayers money. So how will this system be funded and integrated alongside existing airspace users like GA? We will not accept any proposal that seeks to introduce a new charging mechanism that our members may need to contribute to. ■

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WORDS Micheal Erb AOPA Germany

QUESTIONS REMAIN OVER MOVE FROM AVGAS 100LL

It is clear that the transition to its unleaded successor must be managed in a trouble-free approach as soon as possible while accepting that for many health and economic reasons, it simply must be replaced with an alternative

ON APRIL 8, 2022 the European Commission issued Regulation 1272/2008 which addresses – among other things – the substance tetraethyl lead, which is contained in Avgas 100LL.

There is great fear among many that this regulation will ban Avgas 100LL in the short term.

First of all, we would like to make it clear that AOPA is critical of the continued use of Avgas 100LL. There is no question that the additive tetraethyl lead (TEL) is toxic. It is not for nothing that it was banned as an additive in automotive fuels over 40 years ago.

Our task now is to manage the transition from leaded Avgas to its unleaded successor in such a way that there is as trouble-free a transition as possible as soon as possible. Approximately 30 percent of the aircraft in the fleet still require Avgas 100LL and they would be hard hit by a ban on the fuel. Another critical factor is that TEL is now produced by only one manufacturer for the global market.

If it were to fail, for whatever reason, then suddenly the supply of Avgas 100LL would no longer be guaranteed. In summary: For health reasons and also for economic reasons, Avgas 100LL must indeed disappear.

Will TEL be banned as a substance in Europe?

Let's take a closer look at the regulatory situation. In the quoted regulation it says under (1): The substance tetraethyl lead meets the criteria (...) for classification as toxic for reproduction (category 1A) and therefore meets the criteria for inclusion in Annex XIV of Regulation (EC) No. 1907/2006 in accordance with Article 57(c) of the Regulation.

The annex to this regulation then goes on to set out two transitional arrangements with their cut-off dates: Application deadline November 1, 2023, and expiration date May 1, 2025. In fact, this regulation may mean the end of the import of (undiluted) TEL and its blending in aviation fuels by May 1, 2025. But that will only happen if the fuel industry does not exercise the option offered and does not submit a qualified application to continue using and distributing TEL in a safeguarded environment by November 1, 2023. However, we understand that discussions are already underway between the petroleum industry and regulators to submit an application for continued use of TEL by the application deadline of November 1, 2023. If these applications are rejected, then the production of Avgas 100LL within the EU is no longer guaranteed.

Can Avgas 100LL continue to be imported into the EU?

There is a critical concentration for TEL in the EU regulations, and it is 0.1 percent by weight. If the TEL admixture is below this limit, then the substance may continue to be imported, above that, it cannot. According to the specifications for Avgas 100LL, the TEL content is a maximum of 0.125 percent. Thus, the TEL content can easily be reduced below the critical value in the EU regulations of 0.1 percent (which is apparently already being done in practice, because TEL as an additive is expensive), so that imports of Avgas 100LL from other EU countries will continue to be possible. EASA has also confirmed this to us in writing in a background paper.

"First of all, we would like to make it clear that AOPA is critical of the continued use of Avgas 100LL. It is not for nothing that it was banned as an additive in automotive fuels over 40 years ago"

When will unleaded Avgas finally arrive?

At AERO in Friedrichshafen, we had the opportunity to talk in detail with Tim Roehl, the head of the US. company GAMI, the developer of the only lead-free 100 octane avgas approved in the US. GAMI is optimistic that it will very soon receive approval from the FAA for its Avgas 100 UL (=unleaded) for the entire aircraft fleet, which is currently approved for Avgas 100LL. After completion of a series of tests, the corresponding confirmation from the FAA approval body has apparently already been received, but this is still to be verified by FAA headquarters. However, the actual target date for approval in May 2022 has passed without result.

GAMI is also currently in talks to bring the unleaded G100UL to Europe. Other manufacturers in the U.S. and Europe are apparently also continuing to develop an Avgas 100UL, but we are not hearing any details about the current situation at this time.

What is happening in the US?

In the US, General Aviation associations have submitted a proposal to the authorities to stop using Avgas 100LL by 2030. In the US too, the authorities are taking action against TEL, and at some airports in California there are currently attempts to ban the sale of 100LL avgas completely. In the USA, it is considered realistic to permit the use of 100 octane unleaded Avgas by 2030 and to offer it on the market in sufficient quantities at reasonable prices.

There are still many unanswered questions but there are many good reasons to be cautiously optimistic that the transition to a 100UL unleaded Avgas will take place before bottlenecks occur. ■

WORDS Amy Whitewick **IMAGES** LAA Wessex Strut

STAY ON YOUR HEADING

Strut combines six aircraft – including Zenair Zodiac, Vans RV6 and a Beagle Pup flown by 12 crew members - with ingenious GPS plotting in Jubilee tribute

AMID THE pomp and parades to celebrate the Queen's Platinum Jubilee, six aircraft and 12 crew members from Henstridge, Somerset, teamed up to complete the world's first ever GPS portrait to be drawn by multiple aircraft – with over 365 unique headings and six sections combining across the South West of England.

Code-named Art Force 1, six individual club aircraft belonging to the Light Aircraft Association's Wessex Strut and 12 crew members were handed a secret GPS plotted path from team leader, Amy Whitewick.

"None of them had any idea what the final image would look like – each team was given a small, unrecognisable chunk which, when flown, recorded on SkyDemon and sent back would be stitched together digitally to form the final image."

Amy began illustrating images by air in 2020 between lockdowns, having since drawn a wide range of images in her 1972 Cessna 150 Aerobat including an award-winning and world-first GPS portrait of early aviator, John Stringfellow with her co-pilot, Mervyn White.

"It was a fun skill to try out when flying the local area. I was bored of bimbling and wanted to start something exciting and new. My fellow pilot friends at Henstridge showed a great and kind interest in my GPS scribbles, and then it clicked; it would be so much more fun to try one together as a united team with as many aircraft as possible."

The computer-based planning took over ten hours to plot out the full image of HM the Queen, carefully constructing it around surrounding airspace, then cutting into six, manageable sections and assigning them to team members and their aircraft – the full range of types including Zenair Zodiac, Just AirCraft SuperSTOL, Cessna 150 & 150 Aerobat, Vans RV6 and Beagle Pup.

The aim was to create the most complex GPS portrait ever to be drawn, and, for the first time in aviation history, to be drawn by multiple aircraft.

The only rules for each flight were to take a passenger (pilot or non-pilot) as lookout due to the intense workload involved, and above all, to have fun. The flight could be completed at the pilot's own leisure at a time and weather condition to suit them.

Amy said: "I carefully picked and assigned routes that I felt reflected that particular team member's skills and experience, hoping to challenge and gently push them and their aircraft, whilst keeping the journey times short and sweet enough for fun and enjoyment. I completely underestimated what an incredible learning experience this would become for all of us."

The six aircraft involved all had different traits, engines and characters – including a high-powered Vans RV6 which took a great deal of taming to get down to a low enough speed to corner sharply.

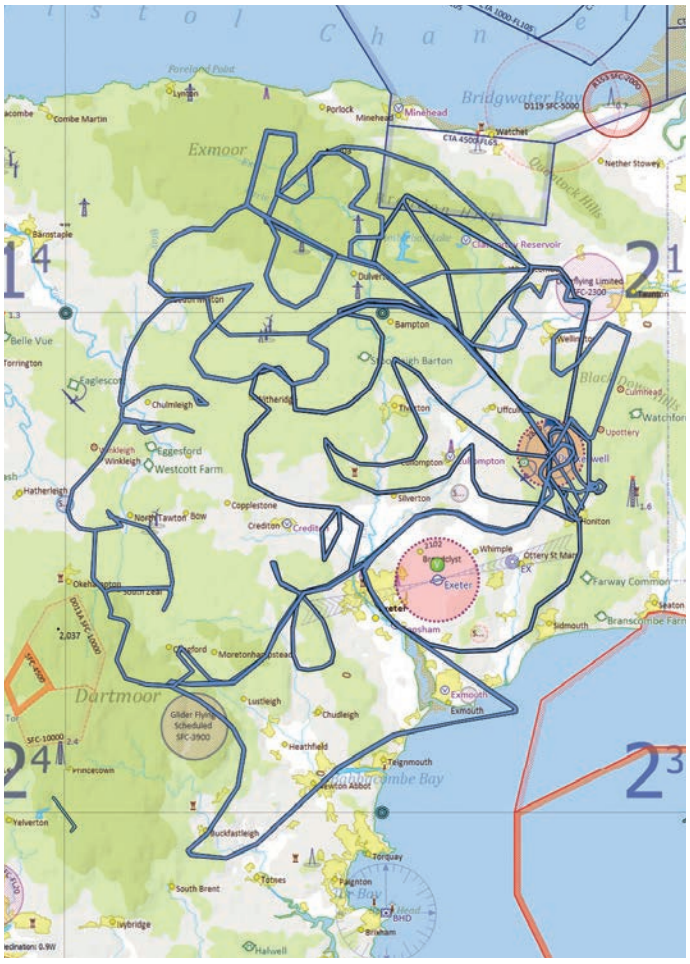
The team members themselves had a wide range of experience, including one member who completed his aircraft licence barely weeks prior, an absolutely incredible feat.

"The aim was to create the most complex GPS portrait ever drawn and for the first time in aviation history, by multiple aircraft"

At the other end of the scale were pilots who had flown military jets, commercial aircraft and vintage home-builds. Our one non-pilot member has passenger flown in over 157 aircraft types and was a valuable asset to the team as a co-pilot.

"We were able to share so much knowledge and I often caught team members huddled in the hangar corner around several cups of coffee discussing tactics with each other," said Amy.

There were many challenges involved, including planning



Fans of FlightRader24 looked twice as the portrait emerged

Pre-flight and post-flight briefings to create the tribute

The code named project had the motto *Painters of the Sky*

Coasting out over the South coast on another secret GPS path

around tricky weather conditions, a reflight undertaken due to co-pilot health and a carbon monoxide scare in one aircraft's cockpit; all of which the teams took in their stride with extraordinary courage, skill and determination to complete this image.

The workload involved was also a surprise to much of the team, some exclaiming afterwards that it was a three-person job, owing to lookout, radio and GPS line-following, all at the same time.

Overall the six aircraft and 12 team members flew an astonishing 365 headings (one for every day of 2022, the year of HM the Queen's Platinum Jubilee) to complete the portrait, which proudly reflects the unity and diversity of the Wessex Strut, and is believed to be the most complex GPS image ever drawn by air, as well as one of the first ever GPS images in aviation history to be drawn by multiple aircraft.

"I must thank the team members for their extraordinary courage to push the boundaries of aviation forward, to try something new to them and airsports as a whole" said Amy.

"Their unwa vering trust in following a somewhat crazy artist, and their unrivalled strength and tenacity of spirit is of considerable merit.

"The range and diversity of our members and fleet is truly demonstrated in this mind-blowing image that we are proud to present to HM the Queen and the United Kingdom – I'm so immensely proud of our whole team who are like a family to me." ■

WORDS & IMAGES Mike Powell

UP WITH PLACARDS

Part two on what maintenance an owner/pilot may carry out on their aircraft

The list is quite long but you should never take on any task unless you feel up to the job or, in the case of doubt, can refer to a friendly licensed engineer for guidance.

PLACARDS: All aircraft have operating limitations which are set out on cockpit placards stuck on the instrument panel, the instruments and around the cockpit. These display details such as the stalling speed of the aircraft, the VNE and so on. On certified aircraft these figures are generally marked on the instruments. On permit aircraft, the figures are frequently shown on printed labels (placards) stuck to the instrument panel or other locations around the cockpit. In the case of certified aircraft the information will be found in the aircraft operating manual. In the case of permit aircraft the information will be found either in the operating manual or in the Light Aircraft Association (LAA) TADS listing accessible on the LAA website. For aircraft administered by the British Microlight Aircraft Association (BMAA) the placard data is similarly available from either the pilot's operating manual or from the BMAA website.

It is essential that all placarded information and identification of switches and other controls is clearly visible and correct. Final stages of an approach to a short runway is not the time to misread the stalling speed or raise the undercarriage instead of lowering the flaps!

LUBRICATION. This is one of the tasks that is generally well within the capability of the owner/pilot and is an essential item in the list.

The oil filter can be cleaned in Avgas and checked for fragments

Firstly, it is recommended that engine oil is changed every 50 hours regardless of whether the aircraft is flown or not. All engines have crankcase breathers – usually a large tube running from the top of the engine to a point outside the engine bay. This prevents the crankcase becoming pressurised by gas passing the piston rings but it also allows external air, which will always contain a certain amount of moisture, to be drawn into the crankcase becoming mixed with the engine oil and forming an emulsion which will cause corrosion of the bearing surfaces within the engine.

Before draining the oil run the engine for two or three minutes to warm the oil. Cold oil will take all day to drain. Oil is easily drained (usually) by unscrewing a drain plug located at the underneath of the engine crankcase or (if you are lucky) by means of a 'quick-release' valve fitted in place of the original drain plug. Make sure you have a container ready to catch the oil and try to avoid dropping the drain plug into the container. When you have drained the engine it is time to take a look at the oil filters. There are usually two filters in most Lycoming and Continental engines and one in most Rotax and Jabiru engines. The easy one to spot on a Lycoming/Continental engine is a large (about 3 1/2ins dia) white container attached to the rear of the engine near the top. It will be wire-locked and removal calls for cutting the wire-locking and then unscrewing the filter. Make a note of where the locking point is on the back of the engine. Unscrewing the filter may take a bit of doing as these items are often over-tightened when being fitted. A large spanner may do the job (the filter has a large nut) or, if this fails, a chain-wrench. Be warned that the filter will be full of oil - be ready to catch it.

The other filter – generally found in Lycoming and Continental engines – is a scavenge filter located near the bottom of the crankcase at the rear of the engine and comprising a large brass nut. In some cases the nut will also provide a location for an oil temperature sensor bulb. This would have to be removed before the larger filter nut is unscrewed and you may find this rather too much of a challenge – call in a friendly licensed engineer.

If you are successful, the next task is to examine the filters to see if there are any signs of metal fragments that may indicate that a bearing is wearing or breaking up. The large cylindrical filter may be cut open using a tool rather like a tin-opener and if you don't happen to have such a tool to hand then either scrounge one from your friendly licensed engineer or grit your teeth and buy one from LAS. Be warned that it will cost you around £70 but you will be using it again and again. The filter material is like folded paper and you should stretch this out and look for small shiny fragments of metal.

The scavenge filter (Lycoming and Continental) simply calls for cleaning in avgas and a keen eye to see if there are any particles of metal present. If you find a significant number of fragments then this may indicate a bearing breaking up and you should consult your friendly licensed engineer. Remember to be nice to him!

Replacement of the filters is, not surprisingly, the reverse of removal. The large cylindrical filter (available from LAS) has a sealing gasket that should be lubricated with oil before screwing the filter back – firstly finger-tight and then three-quarters of a turn. Then wire-lock using one of the locking points on the filter and the locking point on the engine. ■

WORDS John Walker

THE LATEST NEWS ON UK AIRFIELDS

THERE ARE airfields across the UK currently under threat from developers and local councils.

CAMBRIDGE

Oxo 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 that ended on 13 December 2021.

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 (MBA) 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 as it was incompatible with MBA's current site operations. HE has stated that they will use their CPO powers if negotiations about the development with MBA (their tenant) are unsuccessful.

COVENTRY

Outline planning applications for an electric vehicle battery Gigafactory on the aerodrome site were conditionally approved by Warwick District and Coventry City Councils on 11 and 13 January 2022. The applications were referred to the Secretary of State at the Ministry of Levelling Up, Housing and Communities who has declined to call-in the applications.

FAIROAKS

Landowner of part of the site gave notices to vacant by February 2022 to some hangar and aerodrome building tenants which did not affect the operation of the taxiways and runway which are in separate ownership. Public consultation ended on 9 May 2022 on Surrey Heath Borough Council's draft 2038 Local Plan Preferred Options document which states that the aerodrome is earmarked as a locally important employment site and notes its established use as an aerodrome.

WYCOMBE AIR PARK

Site leaseholder has agreed new leases with the landowner, Wycombe District Council (now part of the new Buckinghamshire Council). The Council's adopted 2033 Local Plan provides for an industrial and warehousing complex on south-eastern part of the site requiring shortening of runway 35 and relocation of gliding activities to the north. ■

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

22/23 November

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 Nick Wilcock

REVISIONS PASS TEST

Following the introduction of the on-line LAPL/PPL e-Exam system, it emerged that a number of questions clearly hadn't been reviewed by industry members of the exam working group.

It was apparent that, although we had reviewed the original 600 questions and 2,400 answers, all of which were fine, it had been necessary for the CAA to provide around 90 more, so that the randomising exam software had an adequate database from which to extract sufficient questions for the lucky victims to sit.

However, over the last few months these 'unknown' extra questions have been reviewed. Several were rejected and others were amended, so that very shortly any problematic questions will have been replaced. This should mean that the first time exam pass rate, which is already very good, will improve yet further; over 23,000 exams have been sat since the e-Exam system came on-line, with well over 80 percent having been passed first time.

One aspect with which the industry members of the working group still have concerns, is the lack of a sound debriefing system. Currently, a Knowledge Deficiency Report (KDR) is generated for incorrect answers, but it merely reports 'insufficient knowledge' of a topic. But was the incorrect answer down to genuine lack of knowledge, failure to read the question correctly, or a simple arithmetical error such as using lb instead of kg? The CAA computer has no way of knowing, whereas a decent ground examiner could debrief the candidate to ensure that they knew why they didn't choose the correct answer. In an effort to improve the KDR system, we intend to increase the level of detail of the learning objectives in the coming months. Meanwhile, there's no reason why a ground examiner can't make a note of any errors he/she spots whilst the candidate is sitting the exam, provided that the examiner doesn't disturb the candidate and any such notes are subsequently destroyed; a second monitor screen connected to the e-Exam computer may be used.

As chairman of the AOPA Training and Education Working Group, I recently visited some AOPA Corporate Members to ask their opinions of the e-Exam system. What a delight it was to see such friendly, well run training organisations and I hope that they are typical of UK LAPL/PPL training organisations! The common view was that, although there had been some initial difficulties, the system has now bedded in pretty well. However, one administrative problem is that exemptions under ORS4 No.1488 may not be accepted by the e-Exam booking system software, because the 18 month expiry date cannot be amended on the system. Hence any ATO/DTO which needs to book an exam under the exemption should e-mail FCL-EExams@caa.co.uk so that the CAA Shared Services Centre exam team can complete the booking on the organisation's behalf. ■

WORDS Chris McGine **IMAGES** Shutterstock

HIGHLANDS ON A HIGH WITH FUNDS TO BACK ELECTRIC

A PLAN TO create a low-carbon aviation zone in the Highlands and Islands using drones and hybrid electric aircraft has secured almost £9m in funding.

Regional airports operator Highlands and Islands Airports Limited is leading the project.

In the future, the initiative could lead to passengers flying on scheduled routes in electric planes.

The project has secured the funding from UK Research and Innovation (UKRI).

The Sustainable Aviation Test Environment (SATE) project was launched in November 2020.

Since then, trial flights have been carried out on Orkney involving a small hybrid electric plane.

There have also been demonstrations of deliveries being made by drones – which could potentially help cut long road journeys in remote and rural locations.

The first phase of the sustainability project also saw a test centre established at Orkney's Kirkwall Airport.

The new funding will help with the next phase which will see the site expanded to become the UK Centre of Excellence for Sustainable Regional Aviation.

HIAL's chairwoman Lorna Jack said: "Phase two of the SATE project will allow all the partners to really drive forward a range of low-carbon services and technologies that will have a tangible benefit to communities in the Highlands and Islands and beyond."

Gary Cuts, of UKRI, said it was important the aviation industry could meet net zero energy targets.

Partners in SATE include aviation companies, Highlands and Islands Transport Partnership and Orkney Islands Council.

It is hoped that the new sustainable aviation system will create up to 2,500 jobs and improve mobility around the region.

Six new flightpaths could reduce reliance on road or rail transport and would connect Kirkwall, Wick, Inverness and Skye to city hubs of Aberdeen, Glasgow and Edinburgh. ■

Loganair operating at Barra Airport – the only runway in the world to be washed away twice daily by the tide

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AOPA NEWS

A Cessna 340, similar to the aircraft shown, narrowly avoided a collision with a Spitfire T9

LACK OF EC IN NEAR-MISS

Airprox Board reveals how Spitfire T9 and Cessna 340 pilots avoided a collision "purely by chance" in Risk Category A incident in challenging weather conditions

TWO AIRCRAFT that came within 607ft of each other were not equipped with any form of electronic conspicuity equipment, according to an Airprox Board report.

The Spitfire T9 and Cessna 340 were flying near Kettering, Northamptonshire, on 28 October 2021, relying on their lookouts to detect aircraft in the area.

Both pilots were operating under VFR in VMC, the Spitfire pilot listening-out on the Sywell Traffic frequency and the Cessna 340 pilot not in receipt of an ATS.

The Spitfire was in a right-hand, descending turn prior to the near-miss which meant the Cessna 340 "would have probably been obscured" from the pilot's view by the nose of their aircraft, said the report which assigned the a Risk Category A.

"This had led to the Spitfire pilot not sighting the C340 until it had been too late to take any meaningful action to increase separation," it added.

"The C340 pilot reported that the aircraft in question was not seen due to its very slim frontal profile"

The report said the Cessna 340 also "had not sighted the Spitfire until it had been too late to manoeuvre to increase separation".

The C340 pilot reported that the aircraft in question was not seen initially due to its very slim frontal profile.

The first indication was as it took avoiding action, presenting its underside. A good lookout was being maintained; however, because the weather that day was blustery, a lot of concentration was being taken up flying the aircraft accurately.

Data from NATS said the separation between the two aircraft was 0.1 nautical miles (185m) and there was no vertical separation.

The report said: "The board quickly agreed that a risk of collision had existed, but there followed a lengthy discussion on whether or not the aircraft had avoided a collision purely by chance or if the actions of one or both of the pilots had introduced a degree of separation."

The report added: "After further debate, the board agreed that neither pilot had had the time to materially affect the separation and that providence had played a major part in events." ■

H55 IS GIVEN EASA APPROVAL FOR GA POWERTRAIN DESIGN

SWISS COMPANY H55, a spin-off of the Solar Impulse project that has been developing an electric powertrain for General Aviation use, has been awarded a design organisation approval by EASA. The company is now seeking approval of its 100kW electric powertrain.

Specifically designed for CS23-type aircraft, this power system is expected to be certified by the end of 2023 –it already power Bristell's B23 Energic two-seater which was presented at AERO 2022 in April.

Flying schools will be the initial target market for H55, the B23 Energic being commercially available from 2024.

Pratt & Whitney Canada has also chosen H55 for a major project in hybrid electric aviation.

H55 has an 18-year track record in electric aviation.■

PA-28 HAS AN ELECTRIC FUTURE

CANADIAN training specialist CAE is joining forces with Piper Aircraft to develop a conversion kit for the Piper Archer PA-28-181 and bring an electric variant option of the trainer aircraft to market.

The company used Farnborough International Airshow as the platform for the announcement and revealed that it plans to convert two-thirds of its Piper Archer training fleet over the next three years and develop a curriculum for new pilots to train on the operation of electric aircraft.

"CAE is bringing together industry leaders from Canada, the United States, and Europe to develop an aircraft that will reduce carbon emissions and noise levels at its flight schools around the world while training future pilots to operate electric aircraft," the statement said.

"With 28,000 aircraft in global service, the PA-28 is the ideal platform for flight training"

"Piper Aircraft is excited to support CAE's development of an electric aircraft modification conversion kit for the Piper Archer", said Piper Aircraft President and CEO John Calcagno. "With 28,000 aircraft in global service, the PA-28 is the ideal platform for real-world flight training curriculums and professional pilot training programs like CAE's."

CAE and Piper Aircraft intend to work together on an electric conversion kit for third parties, along with training and support services.

The electric conversion kit will be developed via a Supplemental Type Certificate (STC) for in-service Piper Archer® (PA-28-181) aircraft and will make an electric variant option of the iconic aircraft available. ■

Two-thirds of the Piper Archer training fleet will be converted over the next three years

AOPA NEWS HIGHLIGHTS

IATA Director General Willie Walsh has slammed Heathrow Airport for its lack of preparedness amid the European travel chaos that has unfolded over recent months. He claimed that the airport had failed to gear up for the rebound in traffic, despite being given every opportunity to do so by the UK Civil Aviation Authority. Travel disruptions have set new records and have been blamed on staffing shortages.

Twenty-five female pilots, engineers, air traffic controllers and student pilots gathered at Brighton City Airport for an inaugural Transair Women In Aviation event on 1 July. Hosted by Transair director and PPL pilot Katherine Moloney, the new series of events is designed to facilitate networking and support, share experiences and improve understanding across different professions in the aviation industry.

The D-Day Squadron plans to return to Europe in 2024 for the 80th anniversary of D-Day in France and the 75th anniversary of the Berlin Airlift in Germany. In 2019, the D-Day Squadron took a fleet of 15 restored C-47 and DC-3 variant World War II military aircraft World War II-era DC-3s to England, France, and Germany. Following that mission, the D-Day Squadron has participated in multiple flyovers, aviation events, and warbird-themed airshows.

The Celera 500L claims to be most fuel-efficient and viable

REGIONAL FLEET SIGNALS A HELIUM-FILLED FUTURE

Air Nostrum orders ten Airlander 10 aircraft designed to carry 100 domestic and short-haul passengers and cut flight emissions by up to 90 percent

THE AIR Nostrum Group - one of the largest regional airlines in Europe - has reserved ten Airlander 10 aircraft for operations on regional routes, cutting flight emissions by up to 90 percent with operations set for 2026.

The UK-based Hybrid Air Vehicles produces the pioneering hybrid aircraft - the Airlander 10. The partnership sees Air Nostrum Group reserve ten 100-seat Airlander 10 aircraft for delivery from 2026 onwards, with a view to begin operations as launch airline.

While the Air Nostrum Airlander 10 fleet is set for initial operations across Spain, HAV plans to launch production of the aircraft in South Yorkshire later this year.

The reservation agreement follows six months of studies and by Air Nostrum Group and HAV into the operation of Airlander 10 on Spanish domestic aviation routes and the associated economics.

The helium-filled Airlander 10 aircraft are expected to diversify Air Nostrum Group's existing aircraft fleet currently operating on these routes, carrying 100 passengers while producing only around one tenth of carbon emissions.

Tom Grundy, CEO of Hybrid Air Vehicles, said: "Airlander is designed to deliver a better future for sustainable aviation services, enable new transport networks and provide rapid growth options for our customers.

"As countries like France, Denmark, Norway, Spain and the UK begin to put in place ambitious mandates for the decarbonisation of domestic and shorthaul flight, Hybrid Air Vehicles and Air Nostrum Group are demonstrating how we can get there – and get there soon."

● Otto Aviation has concluded the first phase of testing of its Celera 500L aircraft, after 55 total test flights and 51 hours of flight time.

According to its manufacturer, the Celera 500L is the most fuel-efficient, commercially viable business aircraft in the world.

The helium-filled Airlander 10 aircraft will carry 100 passengers

During the tests the team visualised the laminar flow state with a precision infrared camera mounted on a chase aircraft, quantifying extensive laminar flow capability on external surfaces.

The team also tested wing and fuselage surfaces for laminar flow robustness and gathered additional test data supporting the development work for the production vehicle.

According to Otto Aviation, the Celera 500L should be in production by 2025, offering substantially lower fuel consumption than comparable aircraft. During the test flights, the aircraft reached an airspeed of almost 220kt and an altitude of 15,000ft.■

IAOPA MONITORING NEW ELECTRIC TECHNOLOGY

THE July summary of IAOPA's recent activities at ICAO. Panel, Working Groups and Discussion Group:

Advanced Air Mobility (AAM) - Inter City Operations

The FLTOPS panel discussed suggestions and proposals for establishing AAM standards to ensure the safe integration of new electric technology aircraft. These operations will undoubtedly have an impact on all operations including GA and we will continue to monitor and provide input on this matter. These new players in aviation will require changes in airspace management, local and international agreements as well as many aviation standards.

Private Pilot License/Medical Standard

IAOPA's proposal to establish an ICAO medical standard for GA pilots has progressed through the FLTOPS panel. The proposal is being considered by the Pilot Training and Licensing Panel, PTLP. Once the medical questions from the Medical Provisional Study Group, MPSG, have been addressed, the PTLP Panel meeting is expected to approve the proposal.

Medical Provisions Study Group (MPSG)

Discussion is ongoing of possibly turning the Medical Study Group into a panel. The result would be regular meetings of the doctors but if formalised, the IAOPA proposal may be put on a Panel work agenda which might delay approval of the IAOPA proposal. The MPSG is suggesting a mental health standard for aviation personnel.

Airworthiness

Reduction of duplication of certification and surveillance activities of Approved Maintenance Organisations (AMO) are due in Q4 2026. The recommendations are aimed at commercial operations, but the impact on GA may also be beneficial.

Communications

Duplication in route and station identifiers is being addressed in the five character identifiers. Our Communication and Navigation Systems system, and its Spectrum – is considered to be under-utilised, partially because of older equipment on aircraft. There will be a growing need for GA to equip in order to exploit the flexibility of space-based navigation and airspace structure. Aviation is asked to update equipment and to share frequencies increasingly. ATC services for GA will be impacted if GA's CNS capability does not become more efficient. This may mean avionics updates for GA.

Detect and Avoid (DAA)

When discussions concerning drones started at ICAO over 10 years ago, IAOPA pushed hard that the ability and need for detecting and avoiding other aircraft should be the sole responsibility of the drone operator since that new industry's claim and agreement was that their operations would integrate into the then existing airspace management structure. The industry has yet met that requirement so various schemes are proposed to circumvent the need for drone operators to satisfy that ability. ■

YOUTH CHARITY JOINS CAA IN RED ARROWS PILOT TRIBUTE

YOUTH CHARITY the Jon Egging Trust (JET) has announced a partnership with the CAA which will allow an additional 4,000 vulnerable students to benefit from the charity's science, technology, engineering and maths (STEM) inspired confidence-building programmes over the next year.

In addition, the CAA has pledged to open up access to their network of inspiring STEM ambassadors, and help JET students navigate towards future employment opportunities through a careers workshop this December.

Hampshire schools will be some of the first to benefit from the partnership, being located in JET's closest region of operation to the CAA's headquarters at Gatwick Airport. JET has been supporting students in Hampshire since 2018 including in the towns of Odiham, Ringwood, Romsey and Gosport.

JET CEO Dr Emma Egging, says the partnership offers an important boost for the charity at a time when it is seeing heightened demand for its programmes across the UK.

"By empowering young people to develop their skills, confidence and self-belief they will grow to become inspirational in their own right, with bright futures ahead of them, said Dr Egging.

JET was founded in 2011 by Dr Egging following the death of her husband, Red Arrows pilot Flt Lt Jon Egging at Bournemouth Air Festival. ■

AOPA NEWS HIGHLIGHTS

The Light Aircraft Association (LAA) has appointed Lucy Wootton as its new Chief Inspector. Lucy will take over from Ken Craigie who is retiring after more than 31 years service. Ken has agreed to continue to work through the handover period. She has a wide experience of engineering and recreational flying. After gaining an Honours Degree in Aeronautical Engineering from Loughborough University, she has worked for Rolls-Royce and as an Aircraft Structural Repair Design Engineer. She is also a BGA Glider Inspector, a BGA Board Member, a PPL holder and is a key figure at Edgehill Gliding Centre.

The world's first regulations for the operation of drones, eVTOLs and air taxis have been published in draft form by EASA. The proposed new regulatory framework, NPA 2022-06, is open to public consultation until 30 September 2022, and covers airworthiness, air operations, flight crew licensing and rules of the air. At Farnborough International Airshow, the world's largest network of drone highways was revealed. Reading-based Altitude Angel has been given the go-ahead by the Government for Project Skyway to link cities and towns throughout the midlands to the southeast of the country. The 165-mile route will connect airspace above Reading, Oxford, Milton Keynes, Cambridge, Coventry, and Rugby.

AD HOC CHANGES MADE BEFORE FORCED LANDING

AAIB found crew lacked the necessary safety and flight test experience after modified Piper-46 lost power from hydrogen fuel cells to electric propulsion

A PIPER PA-46-350P carried out a forced landing following a loss of power from hydrogen fuel cells to the electrical propulsion system.

The landing close to Cranfield Airfield severely damaged the aircraft but the crew were unharmed.

The loss of power occurred during an interruption of the power supply when, as part of the test procedure, the battery was selected to OFF to leave the electrical motors solely powered by the hydrogen fuel cell. During this interruption, the windmilling propeller on the aircraft generated voltage that was high enough to operate the inverter protection system. This then locked out the power to the motors and the pilot and observer were unable to reset the system and restore electrical power.

Sufficient ground testing had not been carried out to determine the effect of the back voltage from a windmilling propellor on the inverter protection system.

The emergency procedure to clear an inverter lock out after the protection system operated was ineffective.

The crew walked away from the modified Piper-46 following the power failure near Cranfield

An investigation had not been carried out into a previous loss of power resulting from an inverter lock out, which occurred three flights prior to the accident flight.

The risk assessment had not been reviewed following the loss of propulsion on two previous flights. Ad hoc changes were made to the flight test plan, including the position where the electrical power source was switched, without the knowledge of the competent person, said an AAIB report.

The competent person's involvement was restricted in a number of areas due to issues within the organisational relationships, the fast tempo of the project, other work commitments and restrictions from the COVID-19 pandemic.

The operator's chief executive and the flight test director took on the day-to-day management responsibility for much of the programme. But neither individual had the necessary safety and flight test experience for that role and their focus was primarily on meeting key project targets. ■

THE NEXT BLAC AGM

THE DATE OF THE NEXT BLAC AGM WILL BE SEPTEMBER 20, AT 14:00

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WORDS Chris McGine **IMAGES** Fly2help

CLEARED TO TAKE OFF AND SUCCEED

Aviation charity Fly2help was founded in 2006 to change lives using the power and wonder of flight. Backed by enthusiastic fundraisers, it's success can be measured in smiles. Miles of smiles

ON A GLORIOUS afternoon at Gloucestershire Airport, the ATIS is announcing cavok and all the nines so it's no surprise that The Aviator cafe's lawns are heaving with spectators.

There's no sign of half-mill charts or handheld scanners to follow the busy circuit but rather families fascinated by flying. Children stop chomping on their chips and pensioners pause over their ploughman's as a PA-28 is firewalled for mag checks before heading for runway 27.

There is an anxious moment as the aircraft weathercocks into a slight crosswind but the pilot and his passengers are soon climbing out and turning towards their destination - much to the relief of the audience who get back to their meals.

It's clear that aviation continues to hold the general public in its thrall - from air shows and the Fairford Air Tattoo to weekend flyers joining the GA queue at Staverton's pumps.

Two minutes along the perimeter road is the modest headquarters of Fly2help, an aviation charity which not only taps into that fascination but actively promotes the industry with a passion and navigates the next generation towards landing their perfect job in aviation.

"It's clear that aviation continues to hold the general public in its thrall – from air shows and the Fairford Air Tattoo to weekend flyers"

Founded in 2006 by Phil O'Dell – POD to most – the charity's activities range from visits to schools with its travelling airport to careers programmes aimed at older students with a priority on sustainability and the latest technology in the aviation sector – with the laser-like focus seen at Aero22.

The charity's Aim High programme is run by Kim

Lewington, who logged 40 years in the industry in the tower. Last year she was awarded the MBE in the Queen's New Year Honours for her success in achieving Diversity in Aviation.

"We show children everything there is to do with a working airport, everything single thing you could possibly do. We have shown them you can be a baggage handler, a caterer or fix runway lights," she said.

The visit also includes a mock ATC service complete with a control board and runway views as well as mock interiors and cockpits. The aim is to spark a passion for aviation at a young age with a full insight and hands-on experience. Half-year figures show that the travelling airport has landed at venues from Bedfordshire to Oxfordshire and across the Pembrokeshire, reaching 3170 youngsters.

The charity has helped swell the ranks of RAF, airline first officers and helped the ambitions of an aspiring aircraft ground handler.

Kim left school at 16 and joined a Youth Opportunity Programme at the airport. She trained and worked as an air traffic controller before becoming the business development manager.

She joined the charity in 2014 and continues to roll out the Aim High programme to children across the country with the help of a small staff team and trustees. Behind the scenes is an army of pilots, aircraft owners, airfields and aviation companies.

The second strand within the charity is the Air Smiles programme which uses the thrill of flying to help improve the emotional wellbeing of children and adults coping with physical disabilities, distress, anxiety or isolation.

Quite simply, passionate volunteer pilots aim to change lives with flights from airports up and down the country. From Cessna 210s and Piper Cherokees to Eclipse and Gulfstream jets and the occasional helicopter, thousands of new flyers have benefited from the charity.

"The charity has helped swell the ranks of RAF, airline first officers and helped the ambitions of an aspiring aircraft ground handler"

Fundraising has included climbing Mount Kilimanjaro, skydiving, abseiling, marathon runs and wingwalking. The latest Stearman biplane challenge took off from Rendcomb Airfield and raised £5,000.

During her long and varied career, Kim suffered with a fear of flying, But after scrambling onto the wings and strapping in to join the fundraisers, that's a thing of the past and she has started flying lessons.■

Interested in helping? Are you a pilot with 500 hours (or 250 hours with an exemption from the Safety Committee)? Do you have access to an aircraft with four-plus seats? Contact www.fly2help.org

1. Brave volunteers celebrate the Stearman biplane challenge which took off from Rendcomb Airfield and raised £5,000
2. The Fly2help teams is small but boasts a huge reach and is backed by volunteers to promote the many benefits of aviation
3. Budding ATCOs are offered a glimpse of a working airport with a portable runway mock-up used in school demonstrations

Brave fundraisers took to the skies over Rendcomb Airfield to support the charity

WORDS John Hunter IMAGES Various

My adventure over europe

When Putin put paid to John Hunter's global challenge, it was time for a new route. With his Saab 91 Safir fitted with a ferry tank, what followed was the most challenging flying he had attempted in more than 30 years of having a pilot's licence

A BIT ABOUT ME

John Hunter joined the Royal Naval College in Dartmouth in 1977. After graduation in 1978, he spent time at sea on HMS Norfolk before joining the Royal Naval Engineering College in Plymouth. After gaining a degree in engineering, John went to sea on HMS Sheffield before going to Australia in December 1981. A few months later, in May 1982, HMS Sheffield was sunk during the Falklands campaign. On return from Australia, he attended the submarine school in Portsmouth before training as a diver. John spent several years as a submarine engineer and diver before being appointed to the Ministry of Defence as a Naval Officer.

After leaving the Royal Navy in 1988, John spent most of his career in high-tech sales and general management of high-tech companies. He started flying gliders in 1983. In 1989 he obtained his Single Engine Pilot's licence and added an instrument rating in 1991. John has more than 700 hours of flying experience gained in Europe and the USA.

MY first stop was to be Aero22 at Friedrichshafen in Germany. With my one-year-old and newly revalidated IR, I filed a flight plan across Heathrow, Gatwick and into Kent where I would cross the Channel at Dover before flying across Belgium to Germany.

My destination was Mengen, the closest airport to Friedrichshafen which had space and where some flying friends were staying. It wasn't long before my bravery started to dissipate. As expected, the airspace was very busy and I was manoeuvred around the sky and given instructions that sometimes appeared to conflict. "Remain clear of controlled airspace – go direct to..." when between me and the "direct to" point was Class A Airspace. Avoiding the controlled section as requested, I was then challenged on where I was going, so I followed the "direct to" command.

After Dover it calmed down considerably and the rest of the five-and-a-half-hour flight was much more relaxed.

After two days at Aero22, I was flying off to Austria before continuing east to Hungary and Romania, staying a day or two in each place. Apart from unexpected icing in Austria everything went smoothly. Romania has a border with the Ukraine, so this was as far East as I was prepared to go.

Setting off from Romania, en-route to Slovenia, the weather started to deteriorate. This wasn't in the forecast and I flew round several CBs. However, flying round the clouds became more difficult as they started to merge into an obscured mass. I had already discovered that, when flying VFR in Europe, controllers are much more prescriptive than in the UK. I had kept the controller abreast of what I was doing, each time I left my planned route.

By now they were clearly getting a little irritated with my constant requests to change height and course. However, I didn't want to go IFR and fly into a cloud with a thunderstorm hiding in it. Fortunately, after 40 minutes or so of dodging everything that looked unpleasant, it started to clear up.

By the time I was on the ground it was clear blue skies and sunny. Fuel was an exceptionally good price, so, like a true Scot, I refilled the ferry tank. I would learn to take advantage of good deals on fuel as I went, often filling every tank at one field to avoid refuelling at the next. The next leg of the journey would see some of the most exhilarating flying I had ever experienced, using all my skills but rewarding me with stunning scenery.

ITALY

I filed a VFR flight plan for a GAFOR route through the Alps to Trento. The route was far longer than flying directly but this was one of the special trips on my adventure. I had spent many hours planning and familiarising myself with the route as well as checking the minimum safe altitudes. I had also planned where my bail-out points were if it all went "pear shaped".

I had checked and double checked the specific weather forecast. As normal with a full ferry tank, Saffy was very sensitive in pitch but when I went to turn on the pump, to start using the fuel from the ferry tank, nothing happened. I looked at the power light for the pump and it was off.

I knew I had enough fuel in the wings to get to Trento but I didn't know what would happen to the mass and balance if I used the wing fuel and not the rear tank. I was contemplating my options when on re-checking, I realised the power plug had come loose. Once fixed the pump immediately started working. By now I had drifted a little off my heading and Portoroz asked me if I knew where I was going. I quickly corrected my track and told them I did know where I was going.

I was getting close to Ljubljana's FIS. Despite my flight plan, Ljubljana didn't seem to know about the

route. They wanted to know precisely when I was going to leave their airspace, to go to Italy and then Italian airspace to go into Austrian airspace and back again, as well as the time I was going to get to Trento.

THE ALPS

Trying to find this information, whilst concentrating on flying wasn't ideal. I had assumed they would know I was following a recognised route through the mountains. We eventually agreed on some details and they were satisfied. I flew past Trieste and then they passed me on to Udine in Italy. Udine were similarly clueless as to my plans. They had all the same questions, so we agreed on the same details. They asked for a 20-minute check-in, after I entered the Alps. I was now approaching the mountains. I was much lower than the peaks but still over 1,000 feet above the valley floor. The entrance valley looked small and narrow and I had my first moment of trepidation. What if I had got it wrong? What if I took a wrong turn and ended up in a valley with no exit? If this happened, I wouldn't be able to climb over the peaks and I may not be able to turn around either. I felt very small and insignificant in my little plane.

After a second, where I contemplated turning around and flying straight to Trento, I pressed on, my heart in my mouth. I went into the valley – no turning back now.

Wow. Immediately I was elated, enthralled and jubilant. The views were spectacular, the scenery both stark and beautiful. I was getting a view of these mountains that very few people ever get. I started to follow the planned route but very quickly I realised that, at 115 knots, it takes a lot of concentration. I almost missed turn two but one steepish turn and I was back on track.

I consciously told myself to calm down and whilst noting I had a bit of straight valley to follow, I checked everything – fuel good, engine good, position good, altitude good, outside air temperature – still in the 20s. The snow line was above me but I would soon climb up above it, whilst staying in the valleys. I climbed up over some wires that spanned the valley and back down again to 1,000ft above the valley floor.

"By now I was up above the snow line but the air temperature was still well above zero. I could see the ski lifts going up to the peaks above me"

Some of the valleys have a very distinct change from floor to side, angular from my viewpoint. Others have a much more "glaciated", rounded bottom with a smooth, curved transition from floor to sides. By now I was up above the snow line but the air temperature was still well above zero. I could see the ski lifts going up to the peaks above me. By the time I had been in the mountains for 15 minutes or so, I realised I could hear nothing on the radio. I called Udine, no reply. Ho hum, I couldn't call them as agreed, I hope they would realise why?

I got to an open area, where I was to make a sharp left turn to go back towards Italy. I realised it was much sharper than I thought and I was heading off down the wrong valley. I circled back and recovered my route. The area was quite open here, so nothing was lost. Once again, however, a reminder to be focused while enjoying the views and exhilaration.

GERMANY: Friedrichshafen was the first destination to take in Aero22 and meet fellow pilots at the return of the exhibition
ITALY: John filed a GAFOR route through the Alps to Trento and spent many hours learning the route and planning bailouts
THE ALPS: Flying over the incredible mountain range provided spectacular scenery but required most intense concentration

ITALY was one of my special trips; I spent many hours learning the route and checking minimum safe altitudes

I saw a glider, ridge soaring. He was much closer to the side than I would dare to go but he seemed to know what he was doing and kept on gaining altitude as he soared back and along the ridge.

I changed to Bolzano's frequency although I heard occasional calls on the radio it wasn't until I had a line of sight to the airfield that I could speak to them. They knew about me and my flight plan and cleared me straight over their field and down the valley. Whilst reassuring to know someone knew where I was, I had quite enjoyed the, nearly two hours of, radio silence – it added to the experience.

By now, the valleys had become wide and much less enclosing. I called Trento and they welcomed me to Italy. What a flight, with its spectacular views, fluffy cumulus clouds and sunny blue sky. It reminds me what a privilege it is to fly.

My next stop would be Cannes. The first part of my flight was still in the mountains, albeit with wider valleys but once out of the Alps the radio started jabbering again. Just south of Lake Garda, Verona told me I was flying straight towards a military area. Did I want to go to the south or the north of it? I scanned all three of my maps and nothing was marked. I pointed this out to no avail. Little did I know that north was a much shorter detour and the controller was not about to share this knowledge with me either, so the long south detour it was.

"The Bragança air strip is at 2,800ft ,my highest in more than 30 years of flying"

FRANCE

I routed over some of the southern Alps. There was still snow on these mountains, which were arguably more daunting than the full-sized Alps, as there were no flat valley floors to land on if I had a problem. After landing at Cannes, I walked off to the security gate, where they asked me to go through Customs. "What about Schengen" I asked, I had come from Italy.

It seems Schengen only applies if you are driving or flying commercially.

From Cannes I went to the other end of the aviation scale. Figeac, a rural mostly ULM, field. Still, it was over 700m long, tarmac and they had Avgas with no landing or parking fees. I found these kinds of smaller airfields were very common in Europe

SPAIN

Leaving Figeac, I set off south, skirting the Pyrenees towards Castellòn. My filed plan took me to the west of Barcelona but I always had a plan to ask Barcelona if I could just follow the coast south. Sadly, after an initial approval, this was hastily refused, so I did as I was told and followed their instructions, which took me inland instead and in a rather haphazard way to my destination.

PORTUGAL

From here it was on to Velez Malaga before setting off to Portimão in Portugal. Southern Europe was in the middle of a heatwave and it was well over 30 degrees on the ground.

My next stop was to be Bragança, this is pretty much as far northeast as you can go and still be in Portugal and was the real start of my long northwards trek that wouldn't finish until I reached northern Norway.

"The occasional big break in cloud allowed me to see Sweden and Norway not very far below."

Portugal was relatively quiet. Lisbon ATC left me to my own devices partly because there were very few other flights and partly because it was easy to plan a flight without going into controlled airspace.

As I approached Bragança the mountains appeared. The air strip is at 2,800 feet, my highest in over 30 years of flying. The tower spoke no English but a helpful flying instructor filled in the gaps.

Continuing to Arcachon, helped along by some very helpful ATC in Biarritz, I flew to La Rochelle and St Cyr and then stopped in Bad Pyrmont in Northern Germany with family.

SWEDEN

From here it was off to Saffy's hometown of Linköping in Sweden. A brief visit to a museum housing other Saabs of her generation, then across the Baltic to Seinäjoki in Finland. My phone despite having a European roaming bolt-on wouldn't connect to the network here. With minimal wifi, I used WhatsApp to call the Saffy Support Team at home in the UK. 15 minutes later I was relieved to be sitting in a taxi, heading for some hastily arranged accommodation.

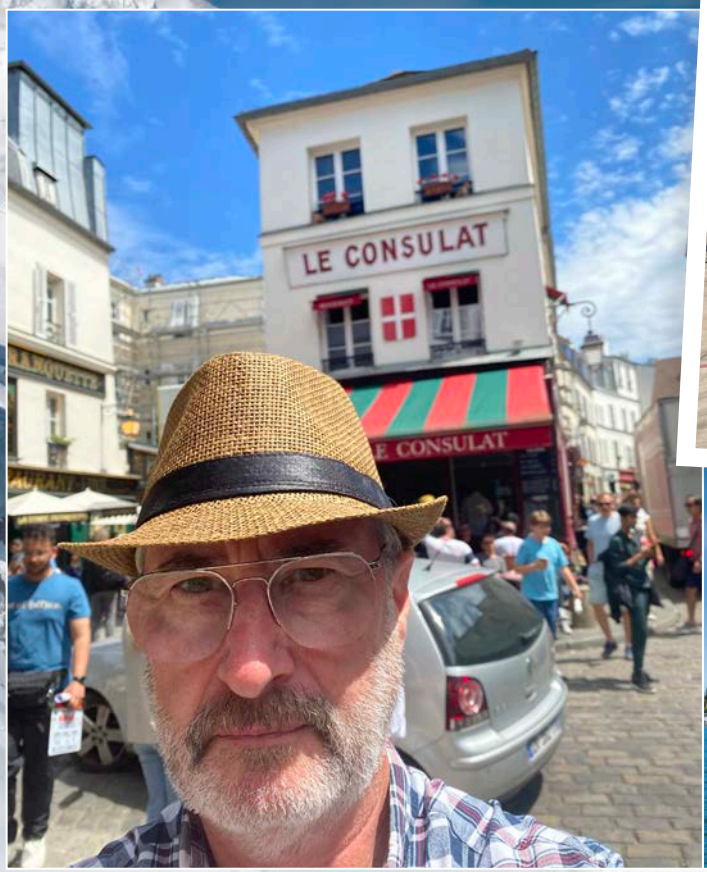
After Finland, I unfortunately had to abandon Tromsø, who were closed to GA. Instead, I went to Bardufoss just 20 miles short of my original "northernmost point".

THE BALTIC

For my Baltic recrossing, the weather steadily improved and I climbed to FL070. In Sweden there were a few isolated CBs which I flew around. As the weather slowly deteriorated again, I asked to go IFR and fly at FL100 and above the cloud but there was a thin mist and Saffy started to ice up. The MSA was 7,000ft so I was given the okay to descend to FL080 which was five degrees warmer and all the ice quickly melted.

The occasional big break in cloud allowed me to see Sweden and Norway not very far below. It was spectacular with snow, frozen lakes and waterfalls.

By now I was talking to Polaris FIS and I was in the Arctic Circle. Bardufoss agreed to an RNP to 28 with



FRANCE: Fans of detective Maigret will know where this is! Montmartre...the nearer to Paris I got, the less help I get from ATC
SPAIN: After leaving Castellon I wanted to follow to the coast south but after an initial approval my route was hastily refused
SLOVENIA: Portoroz ATC swiftly informed me that I had drifted from my heading – then asked me if I knew where I was going

light and variable winds. I broke cloud at 6,700ft with a great view of the runway.

Brønnøysund was the next planned stop. The day started well with good weather at Bardufoss but the long-term forecast looked less favourable with several Atlantic lows arriving in quick succession.

I planned to fly with two back-up options: turn back or stop at an airfield on the route. The scenery was beautiful with many fish farms, lakes, fjords and bridges but about an hour into my flight the weather closed in.

I ask for vectors to the ILS at Narvik, originally just to clear cloud but due to the weather, I continued the ILS to land. I decide to stay at the airport hotel which is too far to walk in the rain but not far enough for a taxi...guess who got wet.

The following day, the weather looked better but not brilliant. I stayed underneath the broken cloud for 30 minutes or so but the valleys I wanted to fly in are all full of cloud, so I climb through a hole to lovely VFR on top. Now I could see the mountains poking above clouds. Whilst beautiful, it was not the fjord run I wanted. I opedt for an RNP approach to Brønnnøy.

As it was quiet, the air ground radio operator is very "chatty" which makes it harder. I had to admit I didn't know what arsey meant. After a pause I was told "Romeo Charlie" means runway clear or land own discretion. I clear the clouds at about 1,500ft with a good view of the runway.

The weather was going to be okay for one day and then get worse, for at least a week. Not wishing to be stranded, I made plans to return to the airport in the morning and re-assess.

Arriving the next day, I saw that next to Saffy there was a Norwegian-registered Rallye, whose pilot has taken his helmet off. He clearly wanted to speak with me. Turns out, he was an ex-airforce pilot and had flown Saab 91s for much of his training.

"I was hit by carb icing, the first I had in eight years of flying Saffy. By the time I was ready to talk Bergen, I was down to 3,000ft"

The weather, now clearing, was better than the forecast. I was encouraged, so I filed a VFR flight plan.

Despite some confusion and insistence on my part regarding the existence of my flight plan, I finally took off southwards, towards Torghatten, the famous mountain with a hole in it. As I headed south the broken cloud base descends and I gave up and climb above it through a convenient hole. However, 30 minutes later all the cloud has dissipated. I am down to 2,000ft for two hours of superb views of fjords, whirlpools, maelstroms, lighthouses and bridges. This was the second highlight of my trip, up there with the flight through the Alps.

At Alesund, I needed to climb to avoid terrain but the cloud re-appeared and it was marginal VFR at 4,000'ft. Soon also, there was lots of low cloud, with hard rain and Saffy is started to leak. I

I was hit by carb icing, the first I had in eight years of flying Saffy. By the time I was ready to talk to Bergen, it was really marginal and I was down to 3,000ft and asking for an ILS approach.

The controller put me in an en route hold, slotted a few planes in in front of me, then cleared me to the ILS via a GPS waypoint. A few minutes later but before I got to the

ITALY: Udine controllers were clueless to my plans as I approached the mountains. I called them back ... but heard nothing
PORTUGAL: The gate guardian at Braganca also marks as far as you can go to the northeast and still be in Portugal
SWEDEN: The scenery around Bronnoysund was captivating...fish farms, lakes, fjords and bridges until the weather closed in


SWEDEN meant
a visit to Saffy's
hometown of
Linköping


HOME
SWEET
HOME...
where the
ATCOs are
calm, clear
and helpful
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waypoint, he asked me for my approach speed.

When I said 95 knots, he turned me away and cleared a commercial to the ILS via the same waypoint. He then vectored me around, at one point straight towards a mountain, gave me a 260-degree left turn and cleared me to the ILS again – no waypoint specified.

My Garmin wanted me to go back to the GPS waypoint but there was a mountain in the way. After a few seconds, I realised that I was on an intercept to the localiser so I can just switch to VLOC on the Garmin and follow the ILS. It was windy, turbulent and rainy with zero visibility. This was my first serious ILS approach, further complicated by having rain dripping all over my ILS plate and my iPad going to screensaver.

Now tense, I tried to follow the ILS, in bumpy conditions and confirm the decision height, off my very soggy plate, at the same time. I think the controller realised how hard this all was, without an autopilot, as he warned I was drifting towards the ILS right limit and started giving me information like "cloudbase reported at 800ft", "wind has dropped" and "rain has abated".

By the time I got to 800ft (DH is 450ft) I could see the runway and now, clear of the hills, it is thankfully, much less turbulent. Glad to be down at last, I put Saffy to bed and made my way to dinner and a well-earned beer.

I had a few days in Bergen, to break up my journey and rest. The forecast for Shetland was getting worse and with no relief in sight, I decided to revisit that route another time, returning via Denmark.

After take-off from Bergen, I was not allowed to climb and once again found myself flying straight towards hills and mountains. I was finally allowed to climb, to cross the southwestern corner of Norway. At 6,000' it was simply fabulous. I was just over 500ft above the flat top but as I flew over the fjords, I was suddenly 6,000ft over the narrow inlets of sea below. On the tops there was water, snow and deep-azure-blue lakes with icebergs. Spectacular.

"As I crossed the Channel, I was passed to London Info. I was thankful to hear an English controller. Calm, clear and helpful,"

I crossed the Danish bit of the Baltic in clear skies and then it was showers and small CBs, that I flew round. There was an F16 in the circuit ahead of me and two behind – this is a mixed-use airfield.

HOME SWEET HOME

I was nearing home now with Lydd as my next planned stop. After start-up, I discovered that my, increasingly erratic, phone wass playing up and had lost the flight plan. I have it on the iPad but it wouldn't transfer it to the Garmin. Plan C was the manual entry of the plan into the GNS430.

As I crossed the Channel, I was passed to London Info. I was thankful to hear an English controller. Although very busy too, he was calm, clear and helpful, a far cry from some of the frantic and confusing ATC directions from the past few months.

A one-hour flight and I arrived at Oaksey after 8,500 nautical miles, 26 airports and 14 countries over 56 days. My main challenges were the weather, the terrain and my own endurance. Saffy was my constant reliable companion. ■

NORWAY: When I was ready to talk to Bergen, it was really marginal and I was down to 3,000ft and asking for an ILS approach
SCOTLAND: Connel Airfield at Oban was used for the test flight, crossing Kintyre following the Crinan canal to Lochgilphead
HOME: My main challenges were the weather, the terrain and my own endurance. Saffy was my constant reliable companion


SAB10
Jet Pitts
AIRSHOW
12

WORDS Chris McGine **IMAGES** Rich Goodwin

SO WHAT DO *YOU* GET UP TO IN YOUR GARDEN SHED?

After a RAF tours as part of Operation Desert Storm in a Tornado and flying holidaymakers to the sun, what does an unstoppable pilot do next? Well, obviously build your own a muscle biplane

The Pitts S2S has proved to be a crowd pleaser during this year's season

THE TV and tools in my shed ensure that every visit is pure pleasure, switching off from it all with my favourite programme and a DIY project to complete makes for the perfect afternoon.

And emerging from my sanctuary hours later with the sawdust swept and a week's worth of cardboard ready for collection, it's been a good day.

My humble DIY is hardly rocket science but former RAF pilot Rich Goodwin is proof that time spent in the handyman's hideaway can be just that, as the daredevil aviator is behind the ultimate homebuilds – pimped-up biplanes designed to perform aerobatic stunts between 200ft and 1,800ft.

He wows crowds at airshows around the country and was recently on show at Cosford with his muscle biplane display in front of 50,000 fans. But there have been tears along the way.

"When I told my wife I had remortgaged the house to buy this biplane that I was going to take apart and rebuild, and she burst into tears in the bath," said Rich.

G-EWIZ is one of only 30 Pitts S2S ever built from a kit of parts in Australia in 1982. It has a flying weight of 700kg, a top speed of over 200mph and capable of pulling plus 6g and minus 5g. Over the past eight years G-EWIZ has been continually modified and improved.

G-JPIT has been built from scratch over four years. It is based on the Pitts S2S fuselage and incorporates all the modifications on G-EWIZ. One major difference is the wing design; bigger ailerons and more wing area give a phenomenal roll rate and better low speed handling.

Rich practises and displays in the summer months, while the winter months are taken up with improvements and maintaining his aircraft.

"Bigger ailerons and more wing area give a phenomenal roll rate and better low speed handling"

Rich trained on the Hawk and joined IX Squadron to fly Tornados. His experience includes 21 missions during Operation Desert Storm in the first Gulf War. He left the RAF air 1993 and started a new career flying holidaymakers before retiring.

"It was worth the thousands of hours I spent in the shed building the Pitts. Building a set of wooden wings is the same a building a model aircraft – the wooden parts are just a bit bigger, all the same principles apply. The aim is to design, build and fly an airshow aircraft with two sources of propulsion to giving it a unique capability for aerial entertainment at air shows," he said.

He added that G-JPIT is designed to have two jet engines attached to it which is purely for air show performances, but he is still waiting on approval to attach

1. Per ardua ad astra...Rich Goodwin heads for the heavens in his hugely powerful homebuild during his airshow display
2. Despite the Pitts' incredible performance, he he describes the project as the same a building a model aircraft – just bigger
3. The pilot trained on Hawks and Tornadoes before climbing into his muscle biplane and is testing jet engines as an addition

G-JPIT has been built from scratch in his shed over four years

It hasn't all been plain sailing...his wife burst into tears when he remortgaged the house

them. It would make it the first home-built airplane to have jet engines.

Rich said: "G-JPIT has completed test flying with the turbines mounted, but we are not authorised to run them during flight at the moment. All flight testing so far has presented no handling issues."

The next steps will be exploring flight with turbines running at various power settings including asymmetric handling characteristics.

"In our own small way, with the support from our sponsors, we are aiming to inspire others into the STEM world with the Jet Pitts Project," he said.

The turbines – designed and built by AMT-NL – have single radial compressors and axial flow turbine stages. The engine owes its excellent performance and superb power to weight ratio to a new type of diffuser stage.

John Wighton from Acroflight designed the containment solution for the turbines in order in order to comply with CS/FAR 23 regulation using jet turbines on aircraft.

"It's all been a big challenge and an interesting journey so far. We appreciate the support of all involved," added Rich.

Aviation is in Rich's DNA – his father, Commodore Ken Goodwin, was a Cold War fighter with a reputation for outstanding aerobatic displays. His skill at the stick of his Hawker Hunter with 118 Squadron won him the role as official aerobatic pilot for the whole of the Second Tactical Air Force in Germany.

He was later awarded the AFC in recognition of his achievements, and the widespread publicity for the RAF it had attracted across Europe.

Goodwin enlisted as an airman but with no necessity for new pilots, he trained as an airframe fitter, finally enlisting in 1949. His RAF career attracted plaudits from civvies and high-ranking officers alike.

Postings included the Central Fighter Establishment, Bangkok, Singapore, Cyprus and command at 74 Squadron at RAF Leuchers where the squadron's Lightnings regularly intercepted Russian aircraft flying near UK airspace.

In 1972 he was appointed to command RAF Wattisham where he remained fully current as a fighter pilot. Following appointments at RAF Strike Command and as Air Adviser in Ottawa, he became the Deputy Captain of the Queen's Flight.

His final appointment was as Air Officer Commanding Air Cadets.

After retiring in July 1982 he was the commander of the south-west region of the Air Training Corps. •■

"It's all been a big challenge and an interesting journey so far. We appreciate the support of all involved"

1. Rich said that his aim is to design, build and fly an airshow aircraft with two sources of propulsion for aerial entertainment
2.When fitted, the turbines will have single radial compressors and axial flow turbines with a superb power to weight ratio
3.Rich follows in his father's footsteps – Commodore Ken Goodwin was a Cold War fighter pilot with a glowing reputation

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