Support network
Why pilots need help from peers

Testing times
New pilot drugs and alcohol checks

Storm force
Learning from Iceland’s volcano

Finding a spot
Could parking affect your report time?

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SPRING 2020
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The days are getting longer and the weather warmer. That can mean only one thing: the spring edition of The Log is here. Based on last year’s positive reader feedback, we have revisited the topic of health and safety, with a focus on the upcoming drug and alcohol testing, and how pilot peer-support networks can help. We’ve also got a piece on how airline management can work better to follow safer practices.

After a long delay, the United Kingdom formally left the European Union at the end of January – and now the work begins. In The Log, we move from political to physical turbulence, and explore a new technological solution to help manage clear air turbulence aloft. Robin Evans also delves into volcanoes. Not literally, but in his article on page 39 he focuses on volcanic ash, and the methods to predict and avoid it. If this makes you yearn to visit the land of Eyjafjallajökull, our travel feature is on Iceland. The volcano is hard work to climb and see close up, and equally difficult to spell – so it’s a good job it’s not one of our crossword answers!

We hope you enjoy this edition as much as we enjoyed putting it together. As always, your feedback is welcome. Don’t forget to download The Log app, to read your favourite magazine anytime on your tablet or phone. You can also boost your green credentials (just as we have with our new compostable wrap) by visiting thelog.balpa.org and unsubscribing from the paper version.

Matthew Martin
Jeremy Feldman

On a sad note, this is the last issue to be coordinated by Charlotte Branson, our esteemed Media and Communications Officer, who is leaving BALPA for a new role. She has been a key member of the comms team at BALPA for several years and has made an enormous contribution during that time – she will be very sorely missed. On behalf of The Log board and all of BALPA, we wish her the best of luck for the future.
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Executive President's welcome

We’re full swing into a new decade, and BALPA is already hectic, with significant industrial upheaval. The collapse of Flybe has been a body blow to pilots in that company. The thoughts of the BALPA community are firmly with our Flybe colleagues and, as usual in these situations, we’ve pulled out the stops to give as much assistance to our members as possible. We really thought the Government’s promises of support would keep the airline alive, and we didn’t bank on such a distasteful U-turn. Surely there is room in the market for a profitable, successful UK regional carrier?

There’s no doubt that coronavirus played a part in the collapse of Flybe. One thing’s for sure: this is going to be a tough time for the aviation industry. Many members are already feeling the pinch as airlines take action to reduce costs. Let’s hope UK aviation can get through this difficult period as intact as possible.

In this edition, The Log looks at the forthcoming changes to drug and alcohol testing. We have been busy in recent years ensuring all UK pilots have access to a robust peer-support programme to address members who have ongoing issues relating to addiction or mental health. Keep an eye on Company Council newsletters for more information about updated drug and alcohol policies. We’re also looking at how health and safety regulations could help us tackle fatigue. easyJet pilot James Burnell has been instrumental in BALPA’s work on this, and has been working with our flight safety team. Read more on page 30.

Safe flying,

Paul Naylor, BALPA NEC Executive President and easyJet captain
ARE DRONES GETTING WORSE?

New research by Eurocontrol, which involved comprehensive monitoring of airspace around the Latvian airport of Riga, shows that the number of drones in manned airspace could be much higher than the Airprox reports suggest. In a 37-day period, the study recorded 171 drone flights, of which 159 (or 91%) were considered illegal because they broke national regulations such as height limits or rules about how close to an airport you can fly. Worryingly, 71 drone flights were detected closer than 5km to the runway during the monitoring period, and 75 were detected above 400ft.

Latvian airspace has similar restrictions on drone operations to the UK, and Riga has a similar number of movements to Gatwick airport, with the same single-runway configuration. While Airprox reports that drone sightings dropped in 2019, BALPA believes these results are worrying, and we’d like to see similar research in the UK to reveal the true scale of the threat.

GET HEATHROW DONE

BALPA has urged the Government to do all it can to get airport expansion plans back on track after campaigners won a Court of Appeal ruling over plans for a third runway at Heathrow on environmental grounds. While we understand the challenge that the aviation industry faces when it comes to climate change, we also want it recognised that aviation makes a vital contribution to the UK economy. Without expansion at Heathrow and in the rest of the UK, we will see further congestion, stagnation in the sector, and we will struggle to keep pace with global competitors.

End of the line for troubled Flybe

It is with great sadness that we’ve had to replace the Flybe story that had been sitting here, saying how pleased we were that the government had decided to rescue the airline. Unfortunately, just before going to print, we heard the devastating news that Flybe had gone into administration, and all 2,000 employees left without a job. BALPA is angry at the U-turn by the government, which had been a glimmer of hope for Flybe pilots after a long period of uncertainty.

We immediately stepped in to offer support to our Flybe members in helping them find new job opportunities, and will continue to update members. We will look more closely at the situation in the next edition of The Log.
Unmanned aircraft bill

Pre-General Election, BALPA was involved in providing evidence to the unmanned aircraft bill. However, when the election was announced, this was put on hold as expected. We’re pleased to say that, since the election, there has been a renewed focus in the corridors of power to get moving on this issue.

BALPA has been heavily involved in shaping the bill, welcoming the increased police powers and changes in regulation, but also calling for improvements as well as the introduction of drone-detection software at UK airports.

Industry snapshots

- **2.4%** Total amount of CO₂ emissions worldwide that come from aviation
- **7%** Percentage of UK carbon emissions that come from UK aviation
- **40%** Amount by which CO₂ from UK domestic aviation has declined since 2005

SUSTAINABLE AVIATION – NOT JUST HOT AIR

Aviation groups have announced a commitment by the aviation industry to cut carbon emissions to zero by 2050.

The plans, laid out in a new Decarbonisation Road Map and published by the UK Sustainable Aviation coalition, point towards smarter flight operations, new aircraft and engine technology, modernising UK airspace, the use of sustainable aviation fuels, and high-quality, market-based policy measures to make the aviation industry greener.

The plan would allow the UK to grow passenger numbers by 70%, in line with current projections, while reducing net emissions from 30 million tonnes of CO₂ per year today down to zero.

While BALPA recognises the part the aviation industry has to play in reducing carbon emissions, we know that aviation is vital to the UK economy, so we hope this plan will allow the sector to thrive while controlling the impact it has on the environment.

Questions around the sustainability of aviation are only likely to grow and, as a sector, we need to be prepared for change. We’ll take a closer look at sustainable aviation in future editions of The Log.

ONE TO WATCH

News of an outbreak of coronavirus in China (and, subsequently, much of the rest of the world) has been the subject of many headlines. BALPA has been keeping a close eye on the developments, and whether or not there needs to be any special advice for pilots. BALPA will continue to monitor the situation and update via our various member communications channels as needed.
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Following on from the aftershocks of the tragic Germanwings disaster in 2016, EASA mandated that all operators must implement “company-based procedures for the prevention and detection of alcohol and drug misuse”. In addition, “state authorities must implement mandatory random alcohol testing under the EU Ramp Inspection programme.” In other words, we may expect to be tested for the presence of alcohol and psychoactive drugs when reporting for work, during a duty, or at sign-off from work.

The Railways and Transport Safety Act 2003 clearly defines the maximum concentrations of alcohol for pilots and cabin crew as:

- 9µg of alcohol in 100ml (breath)
- 20mg of alcohol in 100ml (blood)
- 27mg of alcohol in 100ml (urine)

This contrasts with the maximum alcohol concentrations for driving, which are approximately four times higher than the above values. In other words, pilots are allowed a tolerance of blood-alcohol concentration about one quarter of that allowed for driving.

If a pilot gives a positive reading for alcohol or narcotics, the outcome can be up to two years in prison and a financial penalty. However, the wider fallout of the new rules in terms of how pilots feel they are treated during these inspections – and how robust they will be – is something BALPA is working hard to influence. The mechanics of testing and related procedures – such as where the inspections will take place and what sort of breathalysers will be used – are still being decided in consultation with the ECA, including BALPA reps, and BALPA wants to ensure the highest level of respect and professionalism for pilots if called on for a random inspection.

The public is likely to be fairly unsympathetic to how the new rules will affect a pilot’s day-to-day working life. Indeed, many may be surprised random testing for pilots isn’t already in place. And people will be even less sympathetic to anyone who gets caught giving a positive reading. If a pilot turns up for work under the influence of alcohol or drugs, surely they deserve what they get?

From August 2020, EASA regulation 2018/1042 will come into force.
Not many pilots will have heard of this, but the impact will affect us all.

By Captain Jeremy Feldman, Log Board member
While BALPA acknowledges the danger of having a pilot flying under the influence, it also recognises that pilots are human and subject to the same mental health issues that can affect everyone – including addiction.

Adopting a culture that encourages pilots to face their problems head on before they pose a flight safety risk is key. This is why the introduction of peer support programmes is crucial. More on this later, but first it is perhaps worth exploring the definition of addiction, specifically for alcohol and drugs.

The medical term for a drug or alcohol addiction is known as chemical dependency. For a substance to induce a chemical dependency, it must be:

1. Mind altering or mood changing
2. Euphorogenic
3. Reinforcing – taking the drug stimulates the user to take more of the drug

If somebody continues to consume a drug with an associated loss of control, has strong compulsions to consume the substance, and the use of the substance results in undesirable or harmful consequences, we may be
able to say the user is in the chronic stage of addiction. This applies to both alcohol and other narcotics.

**Challenging misconceptions**

There are, unfortunately, many misconceptions relating to alcohol addiction – one being that alcoholics are easy to identify because they all exist in the chronic stage, and present themselves with a typical physical appearance (large weight loss or gain, flushed face, smell of alcohol on breath, and tremors). In fact, this applies to about 5% of alcoholics, and the physical attributes only manifest themselves, typically, in the latter stages of the disease.

With this in mind, we should be aware that around 95% of alcoholics may not display any physical signs that they are struggling with alcoholism. This is very noteworthy.

It is also worth bearing in mind that somebody suffering with a chemical dependency can be exhibiting strong signs of denial. It is important to consider this, because denial can prolong the disease. It is not ‘lying’ to oneself, but rather a cognitive dissonance of reality and a distortion of the facts.

**Counting the numbers**

We’ve defined chemical dependency and the basics of alcoholism, but how many pilots are actually suffering with a chemical dependency? The data for illegal drug addiction is scant for pilots, because not many national aviation authorities routinely test for this – but there is quite a lot of data for alcohol.

In the USA, alcohol and drug testing is compulsory in all safety-critical jobs. Around 25% of the workforce have to be randomly tested every year, and mandatory alcohol testing for pilots was established in 1995.

A study was carried out among major US carriers over a seven-year period, in which 108,407 random alcohol tests were conducted. Only 29 resulted in a positive violation, equal to about 0.03% of tests.

If we take the USA as a benchmark for the UK, we can extrapolate the data and apply it to our UK pilots. According to the CAA, there were 13,321 registered ATPL and CPL licence holders in 2018. Assuming 25% will be tested per year by the airline or company (although in Europe, it is expected to be much less than that – as an illustration, let’s say 2.5% each year in larger airlines), that leaves us with 3,300 tests per year. If we make the very generous assumption that all the licence holders are employed by a UK airline – and if we also assume that they are all working without medical restriction – then, by multiplying 3,300 by 0.03%, we would expect one positive alcohol violation over a similar seven-year period. This does not include the other licence holders working in the UK – which will increase the number of pilots tested – but, as a percentage, we can still expect the detection rate to remain very low.

Research suggests that the very presence of testing will discourage the intoxicated pilot from reporting for work when they might otherwise have done so; as a result, the detection
More focus should be on supporting pilots with addictions, to prevent further mental illness.

rate may not reflect the true percentage of pilots suffering with alcoholism. Equally, however, because the pilot has not reported for work, the cockpit is arguably a safer working environment.

Irrespective of the above, the data suggests that the number of UK pilots who will report for a flight-related duty in exceedance of the allowable breath, blood and urine concentrations is statistically insignificant.

The root of the problem
So what problem is EASA actually trying to solve here? Sure, the testing will catch the odd pilot who has reported for work ‘fresh’ from a night out, still intoxicated. Should this pilot have reported for work? Absolutely not. In these cases, the tests are arguably preventing an intoxicated pilot from operating a flight-related duty, and the potential consequences of what may occur.

The question is, will mandatory drug and alcohol testing prevent another Germanwings tragedy? The larger issue is with the remainder of the pilots who go through the testing method suffering from a chemical dependency, who are not apprehended before a flight duty. Creating a system whereby pilots experiencing mental health issues are able to seek help confidentially – and without judgement – is incredibly important.

While the chronic alcoholic may be easy to spot, it is not so easy to identify the pilot who is suffering with many of the problems of alcohol or chemical addiction, but who is not yet at the latter stages of the disease. They may be struggling with family problems at home, potentially leading to divorce. Their financial management can often suffer, and the user may end up in debt to pay for their addiction. Physical health will decline; poor sleep hygiene and a loss of sleep quality can be expected.

All this turmoil can be fatiguing, and can only result in a decline in performance and flight safety at work. This is, perhaps, the pilot who poses the greater risk to flight safety – the one who suffers from a chemical dependency, in a medium to later stage of the disease, and who is still in denial.

Putting a stop to suicide
If EASA, in the wake of the Germanwings tragedy, was trying to prevent suicide and improve the mental health of pilots, it needed to be focusing more on helping pilots who were mentally unwell – a point that BALPA made loud and clear when it was first announced there would be changes to drug and alcohol testing.

Mental illness can lead to suicide – and perhaps this is what the testing is trying to prevent. Although alcohol misuse was a factor in 45% to 63% of suicides in 2015 in the UK, only 9% of suicides were caused by someone clinically diagnosed as an alcoholic. A greater number of suicides were completed by people under the influence of alcohol, but who were not alcoholics.

In other words, if the aim of EASA is to prevent suicide, then BALPA said the focus must be to not only target people who are suffering with a chronic chemical dependency, but also to help those in the earlier stages of the illness – and, more importantly, those suffering with mental health issues. Pilots work in an environment that can be high-pressure, involve unsociable working hours, and be very lonely at times.

Training and education
And so the plus side of the upcoming mandatory company and state authority drug and alcohol testing. EASA has mandated that the company must establish a support programme in accordance with EASA CAT. GEN.MPA.215. This document establishes the foundations of any programme, which should educate flight crews about self-awareness of drug and alcohol addiction, and self-referral.
methods, to allow the pilot to seek help – including the availability of professional assistance – and the involvement of trained support peers.

Most companies should already have in place a BALPA-agreed pilot peer support programme (PPSP), which should be managed by healthcare professionals and, typically, supported by pilot volunteers (read more from a peer support volunteer on the following page). All volunteers will have had training in basic psychology and mental health first aid, and will be able to offer initial support to a pilot who requests help and assistance, including pathways and referral management if needed. The PPSP should be managed independently of company management, and all data is strictly confidential.

Upcoming testing means the likelihood of pilots who are suffering with a drug or alcohol addiction being identified will increase. If you – or anybody you know at work – is struggling, please ask for help.

This can be through your PPSP (your Company Council rep will have these details if you’re unsure), your AME, your GP, the CAA’s medical department or your local NHS healthcare professional. Adfam (adfam.org.uk/help-for-families/useful-organisations) is another organisation that supports families affected by drug and alcohol addiction.

Whatever your thoughts on mandatory drug and alcohol testing, from August 2020 it will be here to stay. The inconvenience of being tested, the potential stress of false-positive results, and the perceived benefits of catching a minority of pilots may seem frustrating at best. Will this testing really prevent another Germanwings tragedy? Perhaps time will tell.

The initial focus, especially for BALPA Company Councils and employers, must be on the set-up and establishment of proper support for pilots suffering with a chemical dependency. If we can use these upcoming regulations to encourage pilots who are struggling to seek help, when they otherwise would not have done so, we may make a difference to their lives, the lives of their families, the longevity of their careers and, ultimately, flight safety.

If you or anybody you know at work is struggling, please ask for help.
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We look at how peer support programmes work – and why they are so important for pilot mental health.

By Captain Andrew Forbes, British Airways peer support volunteer.
I am one of 17 trained volunteer peer support advisers for the British Airways peer support network (sometimes referred to as Speedbirdpan or PAN), that gives confidential mental health support to pilots. The service is available to pilots, colleagues or family members who make contact through a dedicated website. The world-renowned aviation psychologist, Professor Robert Bor, provides expert training and support for us. He and Dr Aedrian Bekker run Speedbirdpan from the Centre for Aviation Psychology. By using an independent healthcare provider, the programme ensures confidentiality and a healthy distance between it, the company and BALPA.

When contacting a peer support adviser, there is no requirement for service users to give their real name, although the vast majority do. The company cannot see who requests help and never has access to details of individual cases. Peer support volunteers, such as me, dedicate our free time to help hundreds of pilots with a wide variety of issues, including family and relationship problems, employment issues and gripes, failed simulator proficiency checks/command courses, physical symptoms (fatigue, appetite, headaches), stress, low mood and anxiety, alcohol and drugs, and concerns about a colleague.

It has long been recognised that professional aviators can be reluctant to seek help with mental health issues. Reasons include culture, fear of losing a medical certificate, uncertainty about the road to recovery, loss of self-esteem, shame, and stigma. In the beginning, we dealt with several critical cases but, as the programme has become more accepted within the community, we have found pilots more willing to contact us before a crisis develops. With peer support and psychological oversight, a pilot receives appropriate assistance to overcome the issue in a reassuring, encouraging and confidential environment. Without peer support, a pilot who seeks out psychotherapeutic assistance will likely encounter difficulty in practitioner selection, worry about medical certificate status and often waste time explaining the nuances of a career in commercial aviation to an unfamiliar counsellor.

Why pilots need peer support
I am often reminded how ill-prepared pilots sometimes are to solve some of life’s trickier problems. We have received training in interpersonal skills, and our decision making has been observed and tested more than we care to think. But decision-making models can sometimes work against us when faced with mental health issues because they were designed for time-critical situations.

In the aircraft, either the severity of the problem or the fuel quantity will demand that a decision be made in time to guarantee a successful outcome. The pilot competencies upon which we are continuously graded were designed for pilots flying aeroplanes. If we apply pilot logic to mental health problems, occasionally we go around in circles. Remember that we are people first, and pilots second.

How does it work?
When someone requests contact through the website, all volunteers receive a text that a request has been made for a conversation. The first peer adviser available logs into the Peer Portal and accepts the case. They are given the person’s details, and usually send a text to arrange a time to talk. If they already know the person, the case is returned and someone else picks it up. I have heard stories ranging from the straightforward to the harrowing. Maybe it will be a one-off conversation where a pilot just needs to talk to someone who understands, or maybe the call will initiate several months of listening, signposting and support on the road back to full health.

The conversation usually begins with the peer adviser re-emphasising confidentiality and asking questions to build rapport. The cornerstone of peer support is listening. The process of verbalising and clarifying problems helps people see those problems from a new perspective. It is often tempting to respond with suggestions but, if I pause, the caller often verbalises a viable way forward themselves. Frequently, pilots simply seek confirmation that they should not be flying, and wonder how to get help. I have

---

**PEER SUPPORT TO DATE**

- The current peer support programmes were developed by BALPA in conjunction with FOLG and CAA
- Future peer support programmes are likely to be influenced by the European EPPSI guide, written largely by key BALPA reps
- BALPA has been involved in current working group with FOLG and CAA to influence the introduction of new EASA rules in the UK
- BALPA and the ECA have also been involved in drawing up new EASA rules covering random alcohol testing as part of the ramp inspection programme
- BALPA organised an industry workshop on random testing at Westminster last year with the CAA, employers and BALPA reps.
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found pilots very receptive to suggestion, so it is important that I am careful before signposting anything. Sometimes, the adviser can immediately signpost possible avenues towards resolution and, in other cases, the adviser consults Professor Bor first. The adviser may be the only person who hears the entire story. In all cases, Professor Bor is updated and makes suggestions.

**Training**

After selection, advisers receive a week’s training and then recurrent training several times per year. Tuition includes active listening, signposting, paraphrasing, risk assessing, normalising, basic principles of psychology, counselling, awareness of mental illness, remedies, sympathy, empathy, limits and boundaries between pilot and peer, record keeping, and confidentiality.

Unsurprisingly, teaching a pilot to listen is no easy task. We have to unlearn some of our decision-making skills and really learn to listen. We are advised against taking new calls at night before an early report, as some are not conducive to a restful night’s sleep.

Advisers may only discuss cases with Professor Bor. Confidentiality is absolute, unless we are explicitly told that someone is in danger. Even then, it is only relaxed to the extent necessary to protect safety. Confidentiality is the foundation upon which this programme is built. We sign confidentiality agreements and will not even acknowledge contact without consent.

Speedbirdpan has a robust procedure for concerns about a pilot’s fitness. Just posing a few pertinent questions is often enough to encourage a pilot to seek help. If the questions prove insufficient, having consulted Professor Bor, we would state our concerns explicitly to the pilot. If the pilot resists assistance, Professor Bor would call the pilot directly to conduct an assessment. If necessary, he retains the option to discuss the case with British Airways Health Services (BAHS), which would subsequently invite the pilot in for an assessment, with normal medical confidentiality rules applying. If BAHS determines that there is a potential threat to flight safety, it can remove a pilot from the schedule and arrange treatment. BA management is only told that the pilot is sick. The pilot’s confidentiality would still be protected because nobody other than the peer, Professor Bor and the BAHS doctor would know the reason for the intervention.

**Confidentiality is absolute, unless we are explicitly told that someone is in danger**

**Caring for each other**

As mental health awareness in the general population increases, we are seeing increased usage of Speedbirdpan. However, we have seen little change in the willingness of pilots to seek assistance for their colleagues. As pilots, we have a tendency to ‘plough on’. This is in our make up and in our training, but we need to start looking out for each other. Pilots often confide in each other. This should be encouraged without fear that such exchanges will result in a PAN contact. However, if you experience that ‘gut feeling’ that things are bad for a colleague, contact PAN on their behalf. If someone contacts PAN on your behalf and you suspect you know who it was, accept this as an act of compassion and caring, rather than a breach of confidence. PAN has a procedure for protecting confidentiality of both the reporter and the pilot.

By August 2020, EASA will require all AOC holders to have a peer support programme in place for pilots. In Speedbirdpan, we have already gained valuable experience, and I encourage all pilots to embrace the concept. In peer support, we find that a pilot who returns to good health wants to forget about us, forget about Speedbirdpan, and just get on with life. We accept this, but it restricts awareness of the programme.

If an issue keeps you awake at night, is causing you problems at home or at work, or if a colleague’s circumstances genuinely cause you concern, please use your peer support programme before things reach crisis point. Problems are always more easily dealt with in the early stages.
We are fascinated by dates and ages. Whenever a birthday comes around, people will often ask how old you are, or if it’s a significant one. Birthdays can be a difficult day for some – one year older or one year greyer. But others will be positive about it, reminding themselves why they are celebrating.

However, when it comes to financial planning, the issue we often have is when people start linking key financial matters to their birthday. We are often told by clients that they wish to retire at a set age, such as 65 or 67. Yet, when we push back and ask why, it is often linked to legislative or contractual matters. For example, pilots tell us they have to retire at 65, or some people say that their state pension starts at 66.

Our point is that it doesn’t have to be that way and, in most instances, probably shouldn’t be that way. In fact, this reminds me of an interesting case we dealt with recently concerning a pilot planning for retirement. We had worked with him for some years and he had accrued around £750,000 in his personal pension. He was paying a regular monthly contribution to his company scheme and, at his recent review meeting, he announced that he was going to retire at 65. We asked him why he had chosen that age to stop work, to which he simply answered “because I’m a pilot, and that’s when we retire”.

We discussed this further and started to challenge him on his plans for retirement. We were keen to find out more about the ideas that he had. Initially, we didn’t want to discuss his retirement date or even how much he thought he needed – although that was clearly going to form a key part of our conversation.

**Starting over**
The question we wanted answered and the one that challenged him most was “Why are you retiring?” Our aim was to try to encourage him to understand...
Retirement is not the end of something, but the start of something

that retirement was not the end of something, but the start of something. People often just fall into retirement because they have hit a specific age. Our aim as financial planners is to force people to think long and hard about their retirement plans. Pilots, especially, are an unusual breed as many are forced to retire because of the mandatory flying age, and often find themselves quite unprepared for the change in circumstances.

For many people, retiring is all about the chance to travel but, naturally, for many of our clients, they have done more than enough travelling already and are actually quite keen to stop. However, many will mention family, hobbies or even the chance to pursue a different career or further their education. In this specific instance, the pilot was quite keen to visit places he had seen many times, but work constraints had meant he hadn’t had time to appreciate the place and, more importantly, he wanted to share the moments with his partner. Now we were getting somewhere. Retirement was now looking like spending some quality time with family. These were the answers we were looking for when we asked him why he was retiring. These discussions then enabled us to start building an idea of income requirements.

You may recall, in a previous article, we highlighted the comment from George Foreman, who suggested that it isn’t at what age you wish to retire, it’s at what income. With this in mind, we used our cashflow forecasting tool to consider the plans for our pilot in more detail, and promptly confirmed to him that he could comfortably retire in the summer of 2023, a full two and a half years earlier than he had anticipated.

This came as a complete shock to him. While he enjoyed flying, he also recognised that there were a lot of things he didn’t enjoy about his role. However, he had never really considered retiring early. We started a different discussion around the ability to phase in a retirement, maybe working part-time hours, enabling long weekends to travel, some more spare time to play golf (a passion of his) and, more importantly, the chance to move slowly from a full-time working environment to becoming a full-time retiree.

Offering support
We suggested that the pilot go away and discuss these plans in more detail with his partner and his employer. His retirement was now not going to be on his 65th birthday. In fact, it wasn’t going to be on any birthday, probably not even a specific day. His retirement was going to be a long process that we, as financial planners, would help and support with. We would not only show him how we could use his capital to supplement the reducing income, but also by using cashflow forecasting tools, we could enable him to see the implication of the phased retiring plan.

Retirement isn’t a date or an age. If you want the best from it, embrace it. Don’t tell people you are a retired pilot or retired cabin crew. Tell them you are retired, and that it was the best decision you ever made. ■

If anything resonates with you in this article, or you would like to discuss your own financial planning, we would be pleased to hear from you. You can contact the BALPA Financial Solutions team on 020 8476 4100 or email bfs@balpa.org. For more information, visit www.balpa-bfs.co.uk
Where is aviation going?

We look at the future of aviation, including the investment in unmanned tech and how this could affect pilot jobs

By Captain James Taylor, BALPA member

Just before Christmas 2019, Airbus demonstrated a visually guided automatic take-off. This was not with a one-off experimental aircraft as one might expect, but with an A350-1000 – an off-the-shelf airliner.

By mid-2020, as part of the automated taxi, take-off and landing project (ATTOL), Airbus plans to have tested visual autonomous taxi and landing sequences. It states its mission is not to move ahead with autonomy as a target in itself, but to “explore autonomous technologies alongside other innovations in areas such as materials, electrification and connectivity”. However, Airbus has a possible dichotomy on its hands. Its aim is to develop autonomous technologies with the pilot at the “heart of the operation” but, at the same time, addressing key industry concerns, one of which is an acute pilot shortage. This can only mean one thing: fewer pilots on the flight deck. But where did the threat of emerging technology begin?

It’s all about the drone

Recent emphasis on the effect that unmanned aerial vehicle (UAV) operation will have on commercial aviation has been purely from a safety perspective. With proposals by new start-up businesses to merge the operation of commercial UAVs into civilian airspace, we have been rightly concerned about how this can be achieved safely. Up until now, however, there has been little worry that these vehicles will compete directly with manned passenger flights, or that the technology will contribute to a reduction in the number of pilots on aircraft. The data uncovered so far paints an interesting picture.

Elements of autonomy

Based in Bristol, Vertical Aerospace is pioneering the use of UAV technology in the design and manufacture of electric vertical take-off and landing (eVTOL) air taxis. It has recently test flown the Seraph prototype, which is capable of carrying a 250kg payload. To increase the speed of certification, Vertical Aerospace intends to use a single pilot initially, but has stated it wants to “introduce elements of autonomy and, ultimately, make completely on-demand air taxis a reality”. Stephen Fitzpatrick, founder and CEO, stated, “Our mission at Vertical Aerospace is to make personal, on-demand and carbon-free flight a reality.” The real concern lies with the ‘elements of autonomy’.

Now, I understand one’s scepticism – “these are niche businesses with huge hurdles to negotiate”. Possibly, but whereas in the past the protections afforded by
2020, According to figures published in January to stimulate and accelerate innovation. Right? Well, there’s nothing like demand on as normal for the foreseeable future, fitting the technology, things will carry on as normal for the foreseeable future, unless technology can be tested against current regulations to see where change is needed.

In addition, the Aerospace Technology Institute is a joint government- and industry-funded body that, since 2016, has allocated £3.8bn to maintain and grow the UK’s competitive position in aerospace design and manufacture. Several projects it supports aim to increase automation. “Ah, you’ll never get me on an aeroplane without pilot,” you cry. Certainly, this is the attitude of many – but it is changing. As society accepts greater automation in all aspects of living, from cars and mobile phones to smart homes, it becomes easier to convince passengers of the benefits of fewer pilots. An academic paper published in the Journal of Aviation, Aeronautics and Aerospace in 2019, ‘Autonomous Airliners Anytime Soon?’ by Vance, Bird and Tiffin, performed a meta-analysis on all research since 2003 on the changing views of the public towards travelling on autonomous aircraft. It predicts that the 50% critical mass of approval for pilotless aircraft – common in the introduction of new technologies – will occur by 2030. And the motivation for operators? Pilot shortage and money. Predicted annual cost savings worldwide of single-pilot ops is $15bn and, for full automation, $35bn (UBS Analysts, July 2018).

But these new semi- or completely autonomous aircraft will be expensive and would take years to produce and certify. And surely, given the life-cycle of existing airframes and the prohibitive cost of retrofitting the technology, things will carry on as normal for the foreseeable future, right? Well, there’s nothing like demand to stimulate and accelerate innovation. According to figures published in January 2020, Aviation Week predicts demand of

23,000 new airliner hulls in the next 10 years, with 11,000 aircraft retirements.

How long have we got?

A lot has been said about the hype surrounding emerging technology within aviation. But all emerging technology follows a broadly similar gestation path. Gartner, a leading research and consultancy company, publishes an annual ‘Hype’ analysis for the adoption status of key technologies (see image above). From this, it can be seen that light-cargo delivery drones are five to 10 years away, and fully flying autonomous vehicles more than 10 years away. Companies such as Vertical Aerospace say five years at most, as do many of the 170 or so companies developing urban air mobility solutions.

The lowest-hanging operational fruit is augmented crew. Could these be removed safely? In September 2019, Lufthansa planned to complete a trial of a single-pilot cruise in one of its A350s, but this was postponed after intervention by its pilot body on safety grounds. The trials have been rescheduled for this year with an A350 operator in the Far East.

Engineering our future

Should we accept what appears to be the inevitable demise of our profession? Should we demand to know how we can be part of the future? Or should we work hard to gain a deserved seat at the table, to use our collective expertise and knowledge to engineer a future that does not reject technological advances, but embraces and balances them with the essential advantages of human-pilot operations?

The latter is BALPA’s approach, but it is essential that you have your say. BALPA will shortly be circulating a survey – possibly the most important in recent times – so you can air your concerns about your future. It is essential that we get this right. Hindsight will cruelly remind us if we do not.

For further information or to voice your opinion, please contact us at EmergingTechnologiesProject@balpa.org
Turbulence is problematic for commercial flights – but can technology help avoid it?

By Oli Deakin, Chief Technology Officer, and Nick Tinsley, Senior Developer, Snowflake Software

Clear air turbulence (CAT) is a growing problem for commercial flight. It is estimated to cost at least $100m per year in damage and delays in the United States alone, and can result in severe injuries to passengers and crew. The biggest challenge is that it is undetectable and unpredictable, so it is very difficult to take preventative action. It is also more likely to occur at higher cruising altitudes, so passengers and crew are typically out of their seats when CAT is encountered. Unfortunately, research indicates that climate change is likely to increase the occurrence of this type of turbulence over time, and so increase the resulting injuries and cost.

Today, airlines rely upon pilot reports (PIREPs) and weather advisories to mitigate the impact of turbulence on their operations. These tools – while effective – have limitations because of the fragmentation of the data sources, as well as inconsistencies in the level and quality of information available thanks to the subjectivity of the observations. For example, there is no standardised scale for severity of turbulence that a pilot may report other than light, moderate or severe, which becomes very subjective among different
sizes of aircraft and pilot experience. This was a problem crying out for a solution.

**Eddy dissipation rate**

In 1995, the National Center for Atmospheric Research (NCAR) published a paper proposing an algorithm to calculate the in situ eddy dissipation rate (EDR), a standardised measure of turbulence that was objective and not open to interpretation. What is crucial about the EDR calculation is that it results in a measure that is not dependent on the aircraft, removing inconsistency between aircraft size and weight, and allowing these measurements to be applied to other aircraft to understand their impact.

In 2011, ICAO adopted EDR as the standard for automated reporting of turbulence from commercial aircraft – and, in 2014, the FAA published its recommendations on EDR algorithms, triggering a greater adoption by airlines. The leading algorithm for measuring EDR is an open-source software package developed by NCAR, which will form the focus for the rest of this article.

**Calculating EDR**

The latest iteration of the NCAR algorithm is a vertical wind calculation producing two outputs per minute: the mean and peak EDR values during that period. These are calculated by collecting the following measurements from the aircraft multiple times a second, with a number of additional measurements collected for quality control and validation of the EDR figure:

- Aircraft type
- True airspeed
- Left vane angle of attack
- Right vane angle of attack
- Pitch
- Roll
- Inertial vertical velocity

As well as the peak and mean EDR values and aircraft position, additional meteorological information – including static air temperature, and wind speed and direction – is sent with each measurement. Ideally, every recording of EDR would be sent over the downlink, but this level of communication would become prohibitively expensive because of the nature of air-to-ground comms. As such, reporting is divided into two categories: routine and triggered.

**Routine reports**

Zero or minimal turbulence measurements are still important, and are transmitted by the aircraft. As these make up the bulk of EDR data reported, they are only transmitted as a ‘heartbeat’ – a regular pulse every 15 to 20 minutes to indicate the aircraft is still reporting, and that no significant turbulence has been encountered.

The importance of these readings is that they tell pilots where they can expect to avoid turbulence, and the inference is that the path between the readings is also likely to be negligible turbulence. In some cases, these readings may override earlier high turbulence values from other aircraft in the same region, allowing pilots access to the latest information on whether, for example, passengers and crew should be strapped in. These heartbeat events are always reported unless a trigger event is in progress.

**Triggered reports**

Where an aircraft encounters significant turbulence, the reporting frequency increases. The point at which this occurs depends on the magnitude of the turbulence experienced, with the latency of reports reducing with increasing values of EDR. The logic is based on a six-minute sliding window, and is triggered on occurrence of one of the following three scenarios:

1. A peak EDR in a single minute greater than a large threshold. Six minutes after this event, a further report will be sent.
> 2. A peak EDR over a lower threshold that is measured to last for more than three out of the six minutes. All six minutes’ reports will be reported, and a further report is sent six minutes later.

3. A mean EDR over a further lower threshold that is measured over four out of the six minutes. All six minutes’ reports will be reported, and no further report is sent.

The follow-on reports in scenario one and two also contain the full six minutes of measurements, and are intended to show the ‘tail’ of the event.

**IATA Turbulence Aware**

Since the first recommendations for the use of EDR were published, systems for calculating in situ EDR have been introduced into the fleets of most major airlines, and progress is constantly being made to increase coverage. This advancement brings with it the possibility of capturing live objective measurements of turbulence from en route aircraft.

In 2018, IATA launched its Turbulence Aware data platform (figure 1) to help airlines and pilots avoid turbulence when planning routes tactically in flight. The biggest hurdle preventing the sharing of EDR data has been the collection of that data from the broad set of airlines required to get a useful amount of it; if you have turbulence from only a few of airlines, there will not be sufficient coverage to gain the advantages it can bring. Turbulence Aware solves this problem by collecting data in real time from a growing set of contributing airlines, followed by rigorous quality control. The data is then consolidated into a single, anonymised, objective source database, which is accessible to participants.

The result is the first global, real-time, detailed and objective information for pilots to manage turbulence.

**EDR insights**

As this is the first time this data has been gathered in a single place, there are a number of insights into turbulence data that may be derived by analysis. A data scientist working at Snowflake Software – solution provider for the Turbulence Aware platform – was fortunate enough to inspect this fresh data set and derive some insights. Figure 2, below, shows a bird’s-eye view of a turbulent region experienced by a flight between Los Angeles International Airport and Hartsfield-Jackson Atlanta International Airport. The black diamonds indicate the location of the flight in question’s turbulence reports. A region of turbulence, associated with reported values of up to 0.25 EDR, can be seen over northern Texas. The shaded blue and green dots represent turbulence reports from the surrounding flights. By combining these points, we are able to infer a contour field (shown in shades of red) to produce a continuous representation of the location and magnitude of the turbulence being reported. This kind of analysis can be used to identify turbulent areas and make short-term tactical decisions based on real measurements, rather than predictions.

As the dataset grows, it becomes possible to identify trends across multiple flights. Figures 3 and 4 above show the directional dependence of encountering turbulence at different altitude levels arriving...
Turbulence Aware is realised through Snowflake Software’s Laminar Data Platform, a powerful and flexible aviation data-management and distribution platform aimed at breaking down data silos and creating cutting-edge solutions. If you’d like to know more, please get in touch at info@snowflakesoftware.com

What’s next?
As the global coverage of the Turbulence Aware platform increases, we can expect it to contribute significantly to short-term tactical and long-term strategic decision-making, and we anticipate this data will become an essential piece of operational context. To learn more about Turbulence Aware and how airlines can participate, visit www.iata.org/turbulence-aware

at and departing Denver International Airport for the months of July and October 2019 respectively. Each of the eight segments represents a directional slice in and out of the airport, with 0 degrees pointing north. Within these segments, a single rectangle corresponds to a flight level, ranging from FL50 to FL250, the colour of which is a representation of the percentage of the total number of turbulent reports in this region above the threshold of 0.06 EDR. The black arrow shows the average direction and magnitude of the measured wind vector during this time.

By segmenting the turbulent reports into these wedges, it is possible to investigate which direction has a greater likelihood of encountering turbulence. Of particular interest in this case is the asymmetrical pattern, which displays an increased chance of encountering turbulence, up to higher flight levels, in the westward direction out of Denver International. This pattern is noticeably weaker when the accompanying average wind vector is also weaker. A potential cause of this effect is the Rocky Mountains, located to the west of Denver, and the associated mountain wave turbulence generated by them.

This information can be used to enhance standard operational procedures (for example, to delay turning off the seatbelt sign) where ‘regular’ hotspots of turbulence in particular areas or flight levels are known. With the platform now running for more than a year, it will soon be possible to compare seasonal trends and feed the results back into atmospheric research.

The power of the dataset for research analysis is clearly demonstrated when the EDR values are combined with the other meteorological information that is included with the reports. Figure 5 investigates the hypothesis of turbulence being linked to sharp temperature gradients. After segmenting reports in the FL300-FL320 range into latitude-longitude grid squares, it calculates the average temperature gradient by finding the average reported static air temperature in a particular square, and taking the difference from the average of the adjacent squares. The mean EDR value within the latitude-longitude square is then drawn on top as a circle, with larger circles representing higher mean EDR. This allows the darker squares in the gradient plot to be compared against where the EDR representative circles are larger, to determine if there is any discernible correlation between the two.

As expected, the correlation is not one-dimensional and it appears that there are a number of factors contributing to it. During analysis of this new turbulence dataset, it should be taken into consideration that EDR is a ‘turbulence-type independent metric’, meaning the source of the turbulence is not explicit in its measurement – in other words, it could be triggered by CAT, mountain wave or other sources of turbulence. In this example, some types of turbulence may be influenced by temperature gradients more than others, and further work could be focused on identifying these contributing factors in the context of other datasets, such as geographical contours.
Log notices

The latest information and safety notices

SN-2020/001 Small Unmanned Aircraft – Water Ingress

The purpose of this Safety Notice is to remind pilots of the requirement in law that they must be reasonably satisfied that a flight can be safely made (ANO 2016 article 94(2)). The AAIB’s investigations into a series of recent incidents involving the loss of control of multicopter small unmanned aircraft have concluded that the cause in each case was a result of water ingress into the aircraft, attributed to rainfall, resulting in the aircraft falling directly to the ground. The remote pilot was unable to control its flight path. https://publicapps.caa.co.uk/docs/33/SafetyNotice2020001.pdf

SN-2020/002 Small Unmanned Aircraft – Overflight of Uninvolved People

The recent preparation of material for the Drone and Model Aircraft Education and Registration Service (DMARES) and the investigation of several UAS incidents has highlighted a requirement to provide better guidance for remote pilots of small unmanned aircraft when flying over uninvolved people, in accordance with Air Navigation Order 2016 (ANO) article 95. The purpose of this Safety Notice is to provide additional guidance to remote pilots in the form of suggested best practice when considering flight over people in accordance with articles 95(2)(d) or 95(3) of the ANO. It is also intended to remind and assist remote pilots in meeting the requirement in law that states that they must be “reasonably satisfied that a flight can be safely made” (ANO article 94(2)).

https://publicapps.caa.co.uk/docs/33/SafetyNotice2020002.pdf

SW2020/015 Revalidation of Instrument Ratings and associated class and type ratings

A recent amendment to the EASA Aircrew Regulation has changed revalidation and renewal requirements of the instrument rating for both aeroplanes and helicopters. A further delay to the implementation has been published to give examiners and operators more time to adopt to the new requirements. When revalidating or renewing an IR(A) or IR(H), the licence holder must hold the relevant valid class or type rating, unless revalidating or renewing the privileges of the class or type rating at the same time as renewing the IR. http://skywise.caa.co.uk/revalidation-of-instrument-ratings-and-associated-class-and-type-ratings

SW2019/209 Requirement for Use of CAA-Designated Examiners to Extend LAPL(H) Privileges

The purpose of this Safety Notice is to ensure safety within the Light Aircraft Pilot Licence Helicopter community, due to a number of incidents. Safety concerns have arisen as a result of minimum dual flying training hours for LAPL(H) privileges’ extension under FCL.135.H being less than the AMC2 FCL.725(a) type rating requirements applicable to holders of higher licences.

SW2020/010 Class E airspace ATS procedures amendment – phase 2 – version 2

MATS Pt 1 (CAP493) Supplementary Instruction (SI) 2019/06 implement phase 2 changes to Class E Airspace ATS procedures. This SI has been updated to include several amendments, reissued as version 2. http://skywise.caa.co.uk/class-e-airspace-ats-procedures-amendment-phase-2-version-2
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HEALTH AND SAFETY GONE RIGHT

We look at health and safety – and how this can be applied to aviation, burnout and the effects of fatigue

By Captain James Burnell, BALPA rep
My journey of learning and collaboration started a couple of years ago, after a five-day course in health and safety at BALPA HQ. It opened a world of creativity and promise that I hadn’t foreseen, and that I found somewhat lacking in the punishing role of a full-time captain in the low-cost aviation world. Frustrating and disappointing are words I still use to describe the position I hold as a safety rep running health and safety for our Company Council. However, there is now a bubbling undercurrent of promise from the conviction of finding a great way to improve the lives of those I represent.

Coming into health and safety with very few preconceived ideas, but an understanding of the industrial landscape in the UK airline business, I found the course eye opening. This is mainly because of the potential power of self-determination it gives to the workers in all areas of their lives. I found this a stark juxtaposition to the compromising world of industrial negotiations. However, I soon learned that regulation is only as good as those willing to enforce it. The CAA, which enforces health and safety legislation on behalf of the Health and Safety Executive, falls well short of my expectations. ‘Soft-touch regulation’ has a bad name with the workers in our industry – and, in my opinion, for good reason.

As I looked further into this subject, my mind has been changed – this type of regulation has much promise, but hinges on the involvement of a well-informed and properly motivated regulator. Consequently, this industry’s lack of guidance and enforcement of health and safety is the true cause of many negative symptoms that the union strives so hard to curb – fatigue, wellbeing, fume events, and a self-modernising safety culture, to name but a few.

Culture change
My focus has been firmly on understanding where this system can best be applied to greatest effect. It became clear that change has to be built on strong foundations, tackling the causes rather than the symptoms. I felt it was vitally important to concentrate on the less-than-ideal health and safety structure and culture within my airline. Luckily for the health and safety subcommittee of our Company Council, the airline had already identified this deficiency in structure, and a complete rebuild is under way. The new structure looks impressive, but still does not address the culture that needs to permeate the business, and I remain fearful that the promise of improvement may yet be watered down or lost.

This industry’s lack of guidance and enforcement of health and safety is the true cause of many negative symptoms that the union strives so hard to curb

The true foundation of any modern health and safety system within high-reliability, safety-critical industries is the understanding of the core building blocks of health and safety culture by the senior management team – and the dissemination of these principles to the wider company to varying degrees.

To understand the culture, theory, and practice, I have immersed myself in the international world of health and safety in high-risk, high-reliability operations across many industries. Topics I have covered include human and organisational performance, safety culture, restorative just culture, process safety, high reliability and operational excellence, and occupational health. The culture of shared learning and support in this community is truly heartwarming. It is this, I believe, that is inherent in the concept of health and safety, and will provide the greatest gains for the airlines that choose to embed a high-quality system properly.

Shared responsibility
It is vitally important for organisations to understand that health and safety is a shared responsibility across all areas of a business, and not the remit of just one or two departments. The ‘silo’ nature of airline management in the UK is contradictory to this spirit.
of cooperation and, therefore, to a great health and safety structure. For example, the implementation of concepts such as psychological safety and restorative just culture across HR management would lead to HR processes that not only support safety-critical operations, but also foster organisational learning and continual improvement in the airline.

If we look at health and safety as individual topics, the improvements for our community from a strong structure could be wide ranging. Starting with pilot health, we could see far improved health—data capture, enabling the design and implementation of much-needed controls to mitigate the symptoms of a very mentally and physically punishing occupation.

With comprehensive data released from the airlines about fume events, noise levels, accidents/incidents and more – plus enforced legislation – the safety rep teams can start to make significant improvements in many areas. For example, with fatigue – a big problem, especially in the short-haul world – the Health and Safety at Work Act will give us power to take action. Based on health data, safety reps can limit the most harmful duties regardless of the flight-time limitation structures. In addition, the extra data will stimulate further research into the damaging nature of our occupation, which currently draws a lot of attention from the academic world.

New structures in aviation safety will stimulate worker engagement and prompt the much-needed conversations that allow closure of the gap between work as imagined and work as done. This engagement will facilitate discussion about concepts such as ‘safety II’, ‘the new view of safety’, psychological safety, and others, to modernise the thinking. Safety II thinking alone should lead to a more proactive safety system that looks at what goes right as well as wrong. This will create ‘leading indicators’ of safety, as opposed to the traditional ‘lagging indicators’, which require an accident or incident to happen before any organisational learning can take place.

As with concepts such as restorative just culture, organisational learning is built into much of the new wave of safety thinking, opening ways for the airlines to improve continually. Even the most basic of new safety thinking promises across-the-board improvements. Take, for instance, how safety is measured – not as the absence of accidents, but as the capacity to absorb errors and failures. This allows for better design of procedures, training and a host of other improved controls. With the ‘new view’ lens, we can re-examine human-performance issues, generating concepts such as ‘the system drives outcomes and context drives behaviour’ leading to investigations that are system-focused to bring about continual organisational improvement rather than individual blame and retribution.

**Foundations**

All these potential improvements are built on worker engagement and organisational learning, which must be facilitated through a comprehensive restructure of health and safety in the airlines and the regulator. It will require management not to see workers as the problem, but as the solution. A truly collaborative approach through well-structured health and safety frameworks will give support to the individual and the business, creating the next generation of airlines that set the standards for reliability and excellence.

Hopefully, *The Log* will continue to publish articles from leading thinkers and practitioners in this area, and bring you more of the innovative thinking that I have touched on here. Health and safety should never be a static concept with a right and wrong way of working, and this most unique of industries can benefit from many modern concepts.

More than that, I have a strong conviction that health and safety is a great way to facilitate the much-needed progression towards operational excellence.
Working well

How do we ensure that the health, safety and wellbeing of pilots and aircrew are given priority?

By Simon Brown, BALPA OHSG rep

“When you build a new house, you shall make a parapet for your roof, that you may not bring the guilt of blood upon your house, if anyone should fall from it.” Book of Deuteronomy 22:8

Health and safety legislation goes back a long way. Today, the Health and Safety at Work Act 1974 (HSWA) is the cornerstone of the legal framework for protecting employees at work. The Factory Acts and other legislation had developed since the 1830s, with detailed prescriptive dos and don’ts. The HSWA established a new approach, based on risk assessment and ‘reasonable practicability’, putting the onus on employers to remove or control the hazards and risks they create. The Act also established the Health and Safety Executive (HSE) as the over-arching regulatory authority, with considerable legal powers – and, critically, enshrined the rights of employees to full consultation on health and safety issues at work.

For many years, I was employed as an HSE inspector and, recently, have been advising BALPA’s health and safety representatives on their rights. I had no previous experience of the airline industry, apart from workplace inspections, accident investigations and a prosecution for ground-based airport activity.

I was surprised to discover that, under a 15-year-old memorandum of understanding, the HSE has stepped back from regulating the work activities of flight crew. This responsibility has been given to the CAA. There are problems with this arrangement. The CAA does not have any legal powers under the HSWA, but has a catch-all single regulation in the Civil Aviation (Working Time) Regulations 2004 (CAWTR) to cover occupational health and safety. The CAA is primarily interested in flight safety – not the health, safety and welfare of aircrew. It is telling, and shocking, that the CAA has not issued a single enforcement notice against any employer over a health and safety issue in the past 15 years.

The occupational health and safety culture in the airline industry seems primitive

Hit and miss
The reporting of injuries and illnesses caused by work – strictly regulated across the rest of the UK workforce – is a hit-and-miss affair. The arrangements for notifying the CAA (or the HSE) about injuries or illnesses are opaque, to say the least. So it is no surprise that the CAA seems to have little appetite for actually investigating incidents of injury and ill health. To cap it all, there is confusion – even among the regulatory authorities – about their legal framework for regulating health and safety at work.

To be absolutely clear, and to dispel any myths, the HSWA does apply to aircrew. There is a specific exception for aircraft in flight and outside Great Britain. The Act does apply to work activities on an aircraft on a domestic flight, and on the ground inside and outside of Britain.

Consultation with the workforce and the involvement of employee representatives are central pillars of the system for health and safety management. The CAA plays no role in this fundamental process – which helps to explain why so many airlines have been reluctant to engage, and even blatantly obstructive, when BALPA health and safety reps have attempted to raise issues and improve procedures.

From an outsider's perspective, the occupational health and safety culture in the airline industry seems primitive, and decades behind the rest of industry. I cannot comment on the flight-safety culture and arrangements, but, as a frequent flyer, I hope and pray it’s a lot better.

Aircrew are entitled to the same rights as employees in the rest of Britain. I am hopeful that BALPA can make the difference to ensure that the health, safety and wellbeing of pilots and aircrew are given the priority they clearly need.
Much of it seems like ancient history now, but the big Brexit questions over the past 18 months have been whether Theresa May’s deal could get through, whether the EU would agree to extend Article 50, who would win the Conservative leadership election, whether the eventual winner would also request an extension (no – he’d die in a ditch, apparently), whether we were heading for a no-deal exit, and ultimately, how this whole mess would be resolved through a General Election.

Throughout the political hurly-burly, the practical effect of Brexit on industries and professions such as ours can get lost. So, let’s take stock.

As expected, the new Tory-majority parliament passed the Government’s European Union (Withdrawal Agreement) Bill, and the UK finally left the EU’s institutions and ceased to be a member on 31st January. Now we’ve entered the implementation phase of the withdrawal agreement, during which time little will change while both sides negotiate the future relationship. The two areas that are important to pilots are safety regulation and air service agreements. Neither are considered in the withdrawal agreement; they are subject to negotiation as part of that future relationship. In 2018, May said she would press for our continued “membership” of EASA, although how that would have worked in practice, and how it was compatible with other Government red lines, was not clear.

A new approach?
A recent development appears to be the Government firmly moving away from the May proposal towards the CAA gaining complete independence from EASA and promoting regulatory divergence. Is that real, or is it part of the 4-D chess of these complex future relationship negotiations? Only time will tell. In any case, getting the CAA ready to take over every aspect of safety regulation from EASA by the end of the implementation phase seems a very tall order indeed.

Safety first
Now, we all know that EASA leaves much to be desired in the eyes of many pilots, but BALPA has been clear from the beginning – the UK’s continued involvement in the EASA system was in the best long-term interests of aviation safety. High uniform levels of safety across the continent should stop countries from attempting to undercut others on safety. If the current mood music is right, and when all is said and done there is complete ‘independence’ from EASA, regulatory divergence can go in two directions. This Government is unlikely to diverge in a way that is encouraging to us. But let us see.

More needed
On air transport agreements, more detail is required. Some agreements to replace EU-wide ones have already been concluded, including the UK-US one for when we leave the implementation phase. Other agreements, including one with the EU, remain on the to-do list. The basis on which UK-based airlines will be able to operate into, out of and within the EU is a matter of extreme importance. We have already seen airlines taking contingency measures such as moving aircraft off the UK register (and, to a much smaller extent the reverse). We want the UK aviation sector to thrive, not be forced off-shore, so we hope the future air service agreement with the UK will be as close and mutually beneficial as possible.

The Conservatives’ winning election slogan was to “Get Brexit Done”. In our sector and in many others, that work is only just beginning.
We look at staff car parking, and how the location of these can affect report times – and – ultimately contribute towards the issue of fatigue.

Car parks – a minor ‘first world’ problem? Perhaps not. Let me ask a simple question: as a pilot, where and when do you consider yourself ‘at work’, or ‘leaving work’? The point of report has become an item of contention within various BALPA-represented airlines, particularly given the propensity of management to demand more of pilots in their own (rest) time. Airside crew rooms, reporting directly to the aircraft, and increasingly remote staff car parks require crew to arrive at work earlier and earlier to satisfy the latest demands of their employers.

In my view, this simply isn’t good or sustainable practice. Flight time limitations (FTL) is a system designed to limit the amount of time and/or number of flights a pilot can do within a duty for safety reasons. However, one should argue that the location of the start of the flight duty period (FDP) is crucial – from where are you ‘at work’? If the FDP is considered to start at a crew room, how long has it taken you to get there from the place where you actually arrived at the airport?

Starting work
Most of us drive to work. The hours we keep, and the frequency and cost of public transport, make the car the only practical method of commuting. A car has to be parked somewhere, and the trend is for airports to move staff car parks further and further away from the airport buildings for commercial reasons. Therefore, it’s entirely possible that you entered airport property a significant amount of time before your rostered report time, and a significant geographic distance from the official place of report.

This implies that the time taken from parking your car and reaching the official place of report should be in your own time – time that might also be defined as ‘rest’ from a previous duty, which doesn’t sound particularly reasonable. If you’re at work arriving at the car park, surely the FDP clock should commence at that time and place. If not, then why not?

Of course, the time taken to get from the staff car park to the point of report will mean different things to pilots working for airlines at other airports. If you are a long-haul pilot operating four or five trips a month,
15 minutes per trip getting from your car to the report point may seem proportionally irrelevant. It will matter much more to a short-haul pilot who may well be commuting from home to the airport every duty day. That 15 minutes will seem far more significant, quickly adding up during the course of a working year, and is more likely to impinge on rest time, given the nature of the job. Also, some airports behave far more respectfully and sympathetically towards staff than others, with car parks close to the terminals or administration buildings. Most, however, behave in the opposite fashion.

BALPA’s view is that to reflect the definition of FDP correctly, the report point ought to be the earliest measurable point from which you could reasonably define yourself as ‘at work’, with the corollary being your airline commencing the duty at the entry point to the car park. Unfortunately, most airlines will realise that, because of the geographic and time issues caused by remote car parking, a significant amount of duty time will be eaten up by getting to the briefing location, be it a crew room or an aircraft. The knock-on effect will likely be less available time for flying and, from the airlines’ point of view, lower productivity.

When airlines are challenged on their reasons for not commencing FDP at the staff car park, a frequent and superficial justification may be infrastructure – it’s simply ‘too difficult’ to arrange. It’s easy to shrug off – it’s not uncommon for pilots to arrive at the airport well in advance of their official report time, have therefore been ‘at work’ far longer than is officially recorded, and may well be effectively operating within an ostensibly incorrect FDP calculation.

This should set alarm bells off – pilots rely on maximum FDP times to help keep them safe. If, however, due to your actual start time at the staff car park, you’ve been at work far longer than the official records say – and potentially started within an earlier, more restrictive FDP time band – it’s entirely arguable that you are not as safe as you think.

**Rest time**

So far, we’ve only really discussed the time taken getting to work – what about the other end of the day? Again, to a long-haul pilot, the 15 minutes back to the car after a trip might not seem a big deal. But, to a short-haul pilot, those 15 minutes are significant and will be eating into your rest time before the next duty. You’re not resting: you’re bouncing around the airport in an overcrowded bus. In this example, 30 minutes extra per duty has been experienced where you are somewhere at the airport, on airline business. But the FDP that is designed to limit your time at work for safety reasons is not counted, nor its impact on rest. In raw terms, what the...?

Rest time should not be ignored any more than FDP times – in fact, it may even be a more powerful argument. The 1973 report by Douglas Bader for the CAA seriously considered regulations on FTL, and – for the first time – also discussed rest. It recommended a minimum of 12 hours between duties within which the “opportunity for an uninterrupted period of eight hours’ horizontal rest” should be made. Time between duties comprises either days off or rest periods. Bader recommended

If you’re ‘at work’ arriving at the car park, surely the FDP clock should commence at that time and place. If not, then why not?
that rest periods must allow for an eight-hour sleep opportunity. This is still a requirement under EASA rules. The argument, therefore, could be easily made that time spent ‘at work’ travelling to and from a car park is invading one’s designated rest period, and may even be impinging on one’s ability to achieve enough time in bed. Increasing peer-reviewed scientific evidence strongly suggests that lack of sleep is the primary driver of long-term fatigue.

Furthermore, if the rest period is, in effect, squeezed at the end of one FDP and the start of the next, this could be tantamount to reducing minimum rest at home base – less than 12 hours’ rest at home base requires “suitable accommodation” to be provided by the airline.

Another EASA rule says that airlines should “provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period”. How effectively is this responsibility being discharged with remote car parking?

**Clearer thinking**

The problems presented so far are not easy to answer, but it would help if the regulator were to define more clearly where and when a duty should commence and finish, and be robustly challenged if it cannot properly justify why that location isn’t the first point of entry to the airport. The regulator should adopt a more objective position on the achievement of quality rest. Matters might also be improved if pilots helped themselves more often. I find it depressingly fascinating observing pilots who’ve become utterly beholden to the maximum available FDP, and whether or not they can utilise commander’s discretion to extend an FDP, but not include in their decision or thought processes how long they have actually been at work. What’s the point of FTL if its assumptions are not rigorously applied?

A final point to consider is stress – something with which we are increasingly familiar and disappointing accepting as a factor working against a successful, long-term career in aviation. Remote car parking and bus travel adds an unwelcome element of stress to a job already overburdened with it; the reason being the loss of control and determination. Having to rush to catch a bus or stand in the cold waiting for one might sound trivial but, to put it simply, it is hardly likely to put a safety-critical employee, such as a pilot, in a positive and proactive mood. Rather more, they’re likely to be anxious and uncertain. Pilots shouldn’t need reminding that our primary role is to ensure that when the proverbial hits the fan, we ensure the blades can still just about spin. In other words, **we are the last line of defence against safety being compromised.** Thin-end-of-the-wedge issues like car parks and poorly organised buses beyond our control should be verboten.

In my view, the regulator should ensure that car parking for duty-limited employees such as pilots is as close as possible to the location of report, with a ‘mere’ 10- or 15-minute bus ride each way unacceptable. By doing this, an FDP is more accurate and the operation inherently safer, with the same applying to rest periods. The glorious result being a pilot arriving for work less stressed-out, and fully prepared for the challenges of the day ahead. Well... hopefully.
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Your home or property may be repossessed if you do not keep up repayments on your mortgage.
The Airbus A400M releases volcanic ash to form artificial ash cloud for the test.
> tephrata, the wider term for fragmented volcanic material. “This ash is usually made of volcanic glass containing a high amount of silica – about 50-70% by weight in Icelandic eruptions – and other elements such as magnesium, iron and aluminium.” The reference to glass can be misleading. “Volcanic glass has many of the same physical properties as pure silica glass, but it is often opaque,” says Carroll.

The ash solidifies instantly, forming jagged, abrasive particles (sandblasting forward-facing surfaces such as windshields) that cause respiratory problems if inhaled. They are also not water-soluble, remaining invisible to weather radar. Carried aloft in a plume that draws in vast quantities of air, downwind fallout is dictated by particle size and density. The lightest fractions, plus sulphur dioxide (SO2), are potentially carried for thousands of miles, particularly when driven by a southbound jet stream.

**Distribution**
The total avoidance strategy arose from benchmark cases of the 1980s (BA9 and KLM867) on the Pacific Ring, notable for low airspace density. European geological stability and scarcity of engine-damage data meant procedures hadn’t yet been forced to define tolerances for high-intensity airspace. Nine volcanic ash advisory centres (VAACs) began monitoring and forecasting worldwide plume activity in the 1990s.

The London VAAC (spanning Greenland to the English Channel, Gander to 60°E) is the responsibility of the Met Office. “Procedures were very clear cut – there just hadn’t been this set of conditions before,” says Dr Claire Witham, head of atmospheric dispersion and air quality at the Met Office. This remit includes any airborne dispersal threat, such as the 2005 Buncefield oil refinery fire. The unique set of conditions was unexpected and critical for what happened next. “The process was taken up into the political sphere with the associated knock-ons,” says Witham. “Ministers requested an alternative set of procedures; as a result, the Met Office was asked to look into more options.” This is what triggered a shift from a binary no-fly decision to quantitative forecasts of ash concentration in 2020.

“We work collaboratively with the VAAC staff to develop the science and systems that they use operationally," adds Witham. To observe the threat, satellites permit a good analysis of lateral extent, with vertical data harder to obtain. Applying plume altitude (powerful eruptions are unrestricted by the tropopause) to wind data is fundamental in modelling dispersal. “Certain types of satellite data can be processed to give information on the top height of the plume, but these provide no information on depth,” says Witham. Satellite-based light detection and ranging (LIDAR) offers some potential to deduce vertical extent. “These follow a very limited path, so may only intersect the plume occasionally over a few days.” With PIREPs rare, ground-based LIDAR is also used: Iceland is one of the few places with a permanent network, the UK following suit in 2015. Their respective Met Offices maintain a good dialogue.

The 2011 Grímsvötn eruption produced a different scenario, with a smaller impact because the ash drifted eastwards.

EYÁ-WHAT?

Icelanders pronounce their notorious volcano “Ay-a / fyat-la / yo-kutl”, lisping the final syllable. Meaning ‘island mountain glacier,’ there’s linkage here to old English: ayot (island) – fell – the ‘ikel’ of icicle. Icelandic naming conventions acknowledge constituent parts. Alternatively, scientific circles sometimes refer to it as ‘E16’ or ‘Eya’.
An intense white light shining from the engine is caused by ash particles oxidising away titanium compressor blades. No harm. The remaining 70% to 90% enters the engine core, where it can cause damage. A dramatic effect is the appearance of an intense white light shining from the front of the engine, an effect caused by ash particles oxidising away the titanium compressor blades.

“Air typically goes from ambient to 700°C inside the compressor, then 1,400-1,500°C across the combustor and turbine,” says Clarkson. This is just above the glassing point of the ash. “Ash softens to treacle,” adds Clarkson. This phase transition varies with chemical composition, according to the geographic origin of the material, but begins to choke the engine. The volcanic ash checklist requires thrust reduction (reducing combustion temperatures, limiting damage and preserving relight potential) with autothrust disconnection (preventing thrust increase). It is not recommended to climb at high power and it is considered less hazardous to turn 180° than continue. Increasing bleed demand also offers some surge protection.

The rarity of eruptions means industry has studied similar phenomena. “Sand and dust are a useful reference because there’s so much data,” says Clarkson. “A typical sandstorm might have a concentration of 2-4mg/m³, a bad one 10mg/m³ – but a volcano would be far in excess of that.” An estimate of the concentration BA9 encountered in 1982 would be 200mg/m³. “It’s important to understand the differences and dial those in to our understanding of ash,” says Clarkson.

Such comparisons, 2010 data, and subsequent engine testing were fundamental to the creation of the Rolls-Royce Duration of Exposure versus Ash Concentration (DEvAC) model, which defines nuanced dosage zones: what cumulative exposures are engines susceptible to? Regulators make final airspace approvals while devolving tactical decisions to enter lower-dosage zones to informed operators, who have invested in their safety cases. Management systems would consider the additional engine wear inherent in the cumulative dosage along multiple routes. There’s a further threat: SO₂ is one of many toxic gases released in eruptions. “Sulphur exposure would eventually reveal itself as corrosion,” says Clarkson. Cabin uptake of SO₂ is also subject to ongoing study. “It’s theoretically possible, but not yet proven.”

Detection

Collaboration between Nicarnica Aviation, Airbus and easyJet demonstrated the Airborne Volcanic Object Imaging Detector (AVOID) in 2013. In a trial over the Bay of Biscay, a tonne of Icelandic ash was released by differential pressure from an A400M flying an upward helix. The differential infrared sensor was mounted on a test-bed A340 flown towards the artificial plume, initially visible to the eye, but dissipating quickly. Measurements were independently verified by a modified DA42 from Düsseldorf University; the trial concluding that AVOID could detect ash at concentrations representative of 2010 from 60kms.

So where is AVOID? The Technical Readiness Level (TRL) of a product defines its evolution from one (research) to nine (deployment). The trial would have been suitable proof of TRL-6: demonstration. “The team were learning as they did it, says Clarkson. “It proved the principles and techniques, but the challenge is how you install and certify it.” A significant amount of work to miniaturise, calibrate and integrate the output would be required to reach TRL-9. Fewer hurdles exist for ground-based sensing – the Met Office has installed a significant LIDAR network specifically for the future.

The first responder in 2010, within hours of initial airspace closure, was the Cranfield-based Atmospheric Research Aircraft (ARA). A heavily modified BAe 146, it used optical probes with ground-based LIDAR to confirm ash concentrations. Spurred on by the 2011 eruption of Grímsvötn, capability was bolstered by the Met Office Civil Contingency Aircraft (MOCCA), a piston-engine Cessna 421.
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**Action**

The guru of volcanic ash survival must be Captain Eric Moody. “I had quite a few engine failures in my first few years,” he says. On 24th June 1982, he experienced five inside 20 minutes aboard BA9, a 747-200. “13:44 GMT – that’s when they all stopped,” he says of his encounter over the erupting Mount Galunggung in Indonesia. This event is explained in a detailed 1986 BALPA article at [www.ericmoody.com](http://www.ericmoody.com). The crew now experienced unreliable airspeed and pressurisation loss above significant terrain. With engineer Barry Townley-Freeman continuing restart drills, the temporary oxygen mask failure of SFO Roger Greaves forced an awkward decision. “I threw away six grand of height,” says Moody. “There was Roger playing about on the floor reconnecting his mask, I appreciated his spare capacity and wanted to keep the team together.”

Leaving the plume, #4 restarted first, considered protected by an early shutdown. The remainder followed, a turn towards Jakarta taking the crew around Galunggung. “When #2 surged again, I knew they were all seriously damaged,” Moody reveals. They shut it down, resisting further thrust changes and configuring with drag. The glideslope was out and visibility was minimal through windshields sandblasted opaque; Eric leaned across to a clear, vertical strip at the windshield edge. “No more than that,” he says, holding thumb and forefinger aloft.

Initial fears of fuel starvation would not relent. “We got off that aeroplane convinced we’d cocked up,” Moody says. “Everything now in the checklist, we did.” A residue on their hands first introduced suspicion. “We subsequently devoured the NOTAMS; there was nothing. Everything kept pointing back to a volcano,” he says, recalling seeing unusual colours in the sky. Confirmation arrived days later.

**Resolution**

The Philippines and New Zealand recently returned volcanoes to the headlines, and Iceland is still very active. Hekla and Katla, among others, are considered eruption-ready, but determining when is still beyond the capabilities of long-term forecasting. However, we now have informed practice and data to permit a coping strategy of imposing restrictions without total shutdown.

Commended by the CAA for his work towards avoiding a repeat of 2010, Rolls-Royce’s Clarkson summarises: “It’s a great story of collaboration, making use of what we have; it’s not complete, but we have come a very long way.”
Crossword

When all answers are in place, the letters in squares 1 to 9, then the odd-numbered squares 11 to 23 will spell out something appearing elsewhere in this issue; its location can be found at 27 and 28 across.

Across
8 Rescue vessel (8)
9 Airport passenger departure area (6)
10 Scandinavian god discovered in earth orbit (4)
11 Type of horse that gets back into dressage (3)
12 Tall tree (5)
13 Sleeveless jacket (6)
15 Sadly Lee’s boot is out of date (8)
16 Tightly tied or tangled (7)
19 Having no practical purpose (7)
22 African river that rises in Lake Tana, Ethiopia (4,4)
24 Region around the North Pole (6)
25 Flag carrier airline of Spain (6)
27 It figured largely in the Titanic episode! (3)
28 Come down to earth (4)
29 Phonetic alphabet ‘Y’ (6)
30 Wind speed scale (8)

Down
1 Age of majority in the UK (8)
2 Twelve months (4)
3 ___ Sebastian Bach, composer (6)
4 Sounds like a sneeze, but unusually is a hoot (7)
5 Ceremonial flights above a particular place (8)
6 ___ jet, one able to 28 across and take off vertically (4)
7 Filled with horror when silver hats redesigned (6)
14 I take break with Ms Price (5)
16 Blossoming garden tree (5)
18 The ‘E’ of UAE (8)
20 Fairings on propeller hubs (8)
21 Heartless Beatle supports new title for their 1970 hit (3,2,2)
23 Native of Tripoli, perhaps (6)
24 Sports stadia (6)
26 Garden implement chopping head and tail from rattlesnake (4)
28 Upward force exerted on an aerofoil (4)

Caption competition
Write an amusing caption for the picture above and, if you’re selected as our winner, you will receive £50.
Image submissions can earn you £20 if they are used, so send your picture to TheLog@balpa.org

Winner from last issue
“Please can I have an upgrade?”
Jonathan Willis

How to enter
Email your entry to TheLog@balpa.org with the subject line ‘Caption competition’.
Or send it to: ‘Caption competition’, The Log, BALPA House, 5 Heathrow Boulevard, 278 Bath Road, West Drayton, UB7 0DQ
Closing date: 11th May 2020

Crossword answers Winter 2020
Down: 1 Anglo 2 Turboprop 3 Meet 4 Therapy 5 Rosters 6 Tabs 7 Route 8 Wednesday 14 Eat in 15 Basra 16 Unspoiled 18 Headlight 20 Hessian 21 Glasgow 23 Roger 26 Sense 27 Stay 28 Toga
George Bush; Houston
Everybody is into electricity these days: electric cars, buses, trains, bicycles and scooters abound, in addition to the long-established electric heating and light. The last Log joined in with an article on alternatives to fossil fuels for aviation, including electric aeroplanes.

The very well-researched piece concluded that, unless battery technology makes a truly giant leap in energy density, all-electric commercial aeroplanes are unlikely to fly until 2400! But, before we all get too excited, the question needs to be asked: where is all this electricity going to come from?

Obviously, wind, solar and nuclear sources will play a part, but will they keep up with the fast-increasing demand? One massive but hidden user of electricity is the World Wide Web. The ‘cloud’ might seem a cosy, benign place to store that video of Auntie Ethel being silly after too much sherry at Christmas; however, some estimates suggest that it and the rest of ‘www’ and IT will consume 20% of all globally generated electricity by 2025. Time for serious planning?

Difficult conversations
Maybe it is just OG’s bad luck at social gatherings, but when the dirty secret comes out (“Once upon a time he was a pilot, you know”), there are two common conversational complaints to be dealt with.

The first goes something like “Why has travel by air become so nasty?”, followed by the accuser’s latest aviation travel horror story – real or imaginary. Depending on OG’s mood, the answer to that one can be blunt: “You get what you pay for.” Alternatively, the OG’s defence of the industry – his bread and butter provider for many decades – can be so stultifying and boring that the accuser nods or clears off.

The second accusation: “Why do I always get a cold whenever I fly?” is trickier, and OG’s answer may well be contentious. It goes like this. Like all transport hubs, an international airport terminal contains lots of people from different countries, who import a variety of contagious bugs. Stressed and squeezed together in shops, restaurants and boarding queues, they are a perfect vehicle for spreading and catching colds.

Then OG’s interrogators get the medical moral: just sing the first verse of the National Anthem while washing your hands in hot, soapy water. The medics (and allegedly Florence Nightingale) rate it the ‘gold standard’ protection against all nasties.

STABLE DOOR SHUT – HORSE GONE 1
“The CAA estimates that there are 130,000 drone users in Britain but so far only around 50,000 have registered,” BBC News, 29th November 2019 – the last day to register to fly a drone weighing more than 250 grams (8.8ozs). So, what will happen to the other 80,000 drone users? See ‘Rocking Chair’, Spring 2015, on the possibility of the Bloggs family’s drone becoming a nuisance.

STABLE DOOR SHUT – HORSE GONE 2
“Boeing has performed a U-turn on training for its crisis-hit 737 Max jets and is now recommending new pilots spend time in a flight simulator before taking the controls of one of the aircraft for real.” Daily Telegraph 8th January 2020.

Before we get excited, the question needs to be asked: where is all this electricity going to come from?
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The survey says...

Every two years, BALPA checks in with our members to see how they think we are faring in a number of areas, including the issues on which we focus, our value for money, and how well informed you feel

The information we get through this survey helps us to set the agenda that most supports our members. We use Savanta ComRes, an independent research consultancy, to speak to a proportion of our membership across the airlines in which we’re recognised.

Here is just a snapshot of what we’ve discovered. While we’ve seen a lot of positive improvements, there is always more to be done, and any areas that need special attention will be a point of focus for BALPA over the coming two years.

BALPA-wide

Positivity towards BALPA is at an all-time high, with 73% of members feeling ‘fairly’ or ‘very’ positive towards the association.

82% of members feel their BALPA subscription offers good value for money.

87% of members feel BALPA understands their concerns and is tackling them.

92% of members feel ‘fairly well’ or ‘very well’ informed about BALPA.

Industrial

Among pay and lifestyle issues, scheduling (70% of members selected this issue as ‘very important’) and protecting jobs (70%) are key.

95% of our members see improving pensionable pay as a ‘very important’ or ‘important’ aspect of pay negotiations. This is regarded as the most important factor when it comes to pay negotiation.

There has been a significant increase in those who feel part-time working should be a ‘very important’ part of negotiations in the next 12 months, moving from 27% to 40%.

Flight safety

86% of members trust BALPA to maintain aviation safety – it’s only pilots you trust more (96%), placing BALPA above the CAA, EASA, your company’s management and the government.

33% of members have lodged a fatigue report in the past six months.

86% of you say fatigue is a ‘very important’ professional issue for BALPA to focus on. It remains the top professional concern.

And of course… The Log

90% of members read The Log at least occasionally, and 88% find it enjoyable.
Chain reaction

Not only is cycling a cool hobby, it’s also great for your health. Here are our must-haves

1. Proviz Reflect360 CRS Plus, £119.99
   This jacket features millions of tiny glass beads, which provide an astonishing level of reflectivity at night. It’s also highly breathable and waterproof (down to 10,000mm), with taped inner seams, and features a rear spray guard to help prevent splashes. Available from www.provizsports.com

2. Carradice top tube panniers, £80
   A classic old-school pannier, last manufactured in the 1950s and recently reintroduced by this British manufacturer. Featuring leather straps, this smart bag is made from waterproof cotton duck canvas. Available from www.carradice.co.uk

3. See.Sense ICON2 lights, £149.99
   These super-bright USB-charge bike lights will make sure you’re seen on the road – the front light is 400 lumens and the back 300 lumens. They have side visibility, plus a neat feature that makes the lights flash brighter and faster at junctions and roundabouts. They also boast sensor technology to detect real-time information on near-misses, road surfaces and journey flow. Available from https://seesense.cc

4. Castelli Endurance 2 bibshort, £125
   Something for the serious cyclist, these bibshorts feature a seamless seat pad for greater comfort and improved airflow, as well as textured compression side panels for muscle support. The fabric is super lightweight and breathable – perfect for summer rides. Available from www.castelli-cycling.com
5. B’Twin cycling photochromatic glasses Roadr 900, £49.99
These photochromatic glasses automatically adjust to ambient light levels, and feature an anti-fog coating that works in all weather conditions. They also come with a yellow lens to enhance contrast in low light. Available from www.decathlon.co.uk

6. Megmeister women’s DRYNAMO base layer, £54.95
Ideal for training and racing, this base layer works perfectly in all weather conditions. It can repel water, keeping skin dry, and has excellent moisture-wicking capabilities. Available from shop.megmeister.com

7. Garmin Edge 830, £349.99
The perfect gadget to record your ride, with a huge range of features. The Garmin 830 measures metrics such as bike set-up, ride duration and position; body performance; training status; and heat and altitude. It will also map your route and help you find rides that locals love most. Available from www.garmin.com

8. Rapha Brevet Windblock jersey, £145
Made from merino wool, this stylish jersey features wind-resistant panels to give extra protection on rides. It also boasts hi-vis and reflective stripes to aid visibility in low light. Available from www.rapha.cc

9. Lumos Kickstart helmet, £139.95
This smart helmet has integrated LEDs with more than 500 lumens of output to brighten your way. It has a red warning triangle at the rear plus a ‘brake light’, together with indicator panels at either side that can be activated. Available from https://uk.lumoshelmet.co

10. Abus Bordo Lite 6050, £44.99
Good for short stops, this folding steel lock has a synthetic coating to protect your bike frame from scratches. It folds down small enough to fit in your pocket, and is long enough to fit around your rear wheel, frame and a post. Available from www.amazon.co.uk
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Know your rights

How organised is BALPA in your airline?

By Terry Brandon, BALPA National Officer

Q BALPA officials often talk of our membership being organised. What would be the measure for this – how do I know if we are organised or not, apart from membership density?

Membership density does not necessarily equate to an organised pilot group. Obviously, high levels of membership demonstrate that we represent the majority of pilots within an agreed bargaining unit, but other tests could be applied to see if the membership is organised or not.

Organised Company Council checklist

1. The Company Council has a robust business plan that is reviewed regularly and includes: increasing membership; strengthening communications; local activity; and succession planning.
2. BALPA is proactive in dealing with future industrial issues – BALPA is always relevant in the airline.
3. BALPA reps and officers provide strong leadership and direction.
4. Company Council communications are regular, relevant, and short and snappy.
5. Reps organise local events, such as meetings, socials or curry nights.
6. Reps attend BALPA HQ events, such as the strategic forum day (SFD).
7. BALPA has operating health and safety reps.
8. The Company Council can correctly anticipate management responses to issues raised.
9. BALPA reps always have a slot at pilot inductions or training courses.
10. Every member who lapses or resigns from BALPA is immediately contacted by a rep.
11. The Company Council knows who non-members are and have a plan to engage with them.
12. All reps have a designated role and responsibility, and report back to the Company Council at meetings on activity and progress.
13. BALPA reps have attended union training courses.
14. BALPA members play a role in raising the union’s profile and assist in recruiting colleagues.
15. Membership follows the recommendation of the Company Council in ballots.
16. BALPA reps have a professional relationship with management.
17. All BALPA members know who the Company Council, base or health and safety reps are.
18. The membership determines the Company Council’s priorities through feedback and engagement.
19. Members celebrate BALPA successes, but share the disappointment when we have not achieved every item on our agenda. We do not blame each other – we are all BALPA.
20. Pilots see BALPA as a union, rather than a service provider – we are all dependent on each other and our ability to represent, negotiate and campaign successfully. We are intrinsically linked.
The great ice circle

Iceland offers a wild, diverse loop for your own Viking saga

By Captain Robin Evans, Senior Log Contributor

I turn off the road to check the map. Sometimes, the only clue to an Icelandic guesthouse is a tiny fingerboard pointing into the wilderness. I’m suddenly distracted. Under cover of darkness, the atmospheric skies of earlier have cleared; twisting green and white curtains wave gently down, filling the sky.

The cold, hunger and navigation issues all instantly evaporate. The earliest settlers lived in fear of the aurora, believing solar flares or huge fires surrounding the oceans influenced their night skies. They weren’t far off: plasma on the solar wind interacting with gases in the magnetosphere, oxygen glowing green. Understanding the physics doesn’t dampen the marvel; any explanation seems unsatisfactory compared to the visual Icelandic punch.

Diversity

We come from the land of the ice and snow, from the midnight sun where the hot springs blow. So sang Led Zeppelin in the Immigrant Song, inspired by their 1970 visit here. It took another four decades for Eyjafjallajökull (Icelanders call it the ‘tourist volcano’) to thump the country into public consciousness, and a financial crash the same year opened the door to a new boom. Iceland now has one of the highest ratios of population (360,000) to annual tourists (2.3m). Most are found on the well-trodden Golden Circle – the Thingvellir faultline, steamy rumblings at Geysir (the origin of ‘geyser’) and huge Skáftafell waterfall. All three can be squashed into a day from Reykjavik, but here’s an alternative. Thingvellir, the site of the 930AD parliament, is the closest and most physical – and, therefore, the least crowded. Straddling the Mid-Atlantic Ridge, which fuels Iceland’s volcanic energy, it offers good walking among glassy lakes and snowcaps. You can now slingshot onto the true Golden Circle: all 800 miles of coastal Route One. A complete circle takes at least a week: how long have you got – and north or south?

We take European geographic variety for granted; Iceland probably offers the greatest within a border. With planning (the Diamond and Silver Circles...
offering longer itineraries of lava fields and glaciers) you can design your own great ice-circle to dodge the masses. The newly launched Arctic Coast Way offers a great exploration to the north, but, pressed for time, here are some spoils of a long weekend heading south.

**Super natural**

As Route One unfolds, it suggests the Outer Hebrides, New Zealand farmland and snowcaps with Arctic tundra, Hawaiian lava fields and a slug of the moon thrown in. Hours pass to the squeak of studded tyres, the car covered in a gritty film of dust and ash. Mealtimes come and go; Icelandic food would have to wait. The town of Vík, midway along the southern coast, has a wild-frontier feel. Colourful, corrugated roofs historically indicated a utility: yellow (medical supplies) and red (traders). In the surrounding countryside, traditional turf-roofed churches — their graveyards a series of unmarked tussocky humps — and houses hunker into the ground. The latter are often repurposed as storehouses, farming families once living in the rafters, reliant on their animals for warmth and wealth.

The huge volumes of water draining off the interior mean much of the coast is vast floodplain, volcanic activity beneath the icecaps periodically triggering raging jökulhlaup floods. This is spanned by single-lane, girder bridges, where unsuspecting oncomers sometimes revert to their default side of the road. Tourists do get into trouble. Rescues from icy rivers and deaths occur.

West of Vík, you’ll find an unmarked car park with a stream of walkers heading over the horizon. They’re trekking to the US Navy DC-3 at Sólheimasandur, the outwash plain of the Sólheimajökull glacier. Downed of fuel exhaustion in 1973, it’s a strange sight: an empty hulk of silver, stripped and sand blasted on a black beach under a moody sky.

Katla and Hekla, Iceland’s twin volcanic monsters that dwarf Eyjafjallajökull, lie north of here. At Lava, the nearby interactive volcanology centre, it’s easy to understand why the population keeps away from the vast, fire-breathing interior. The UK media twitches about Iceland trembling, but, the truth is, only an absence is newsworthy, the Icelandic Met Office recording multiple daily events. Consider this through an Icelandic filter: here is a nation that thrives alongside the harshest elements.

Icelanders are brought up between the super natural and supernatural. You’re never too far from a legend, often involving small people — elves known as huldufólk. Subtle evidence of this is everywhere. One guesthouse has a neat set of small, wooden houses in a flowerbed. In the fishing town of Eyrarbakki, a weathered set of squat rocks painted as traditional

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A unique way to get acquainted with a cracking glacier
houses sit on a driveway. Particularly around Christmas, many churches offer an unexpected treat. With abundant geothermal power, Icelanders cover their gravestones in lights. Some reflect the snow in crisp white, others a flood of colour. From a distance, it appears the elves are getting ready to party.

**Elements**

“Ice is a tenth of our landscape – it’s our identity,” says Ingmar Henriksson, as we zip across the lagoon towards a vast glacier. “Iceland is ice-land after all.” Around us, house-sized bergs wander in tidal purgatory, their cobalt towers rearing up from a soup of sparkling chunks.

The glacier towers far above us. The normal cycle of build and erode is increasingly one way, however, the retreat approaching a metre per week. Iceland recently became the first country to hold a glacier funeral. A cortege of a hundred, including the Prime Minister, trooped up an old volcano to honour the ice on its back as static – newly dead.

Glacial colours are surprising, the face riven with the smudgy veins of volcanic ash laid down over centuries. Freshly exposed ice glows turquoise, air crushed out by the squeezing bulk. Early settlers considered these fluorescent shades evidence of a supernatural, stored energy. Again, they weren’t wrong, a symphony of ripping sinews erupts as a huge chunk peels off, crashing into the icy water.

As the waves barrel towards us, Ingmar explains why do-it-yourself glacier tourism is heavily frowned upon. “If you mess with nature here, you will go home in a body bag,” he deadpans. The silence leaves me pondering my small, incremental contribution. Ingmar reads me: “If you hadn’t come, then you wouldn’t know. When you see these things, there’s no denial, is there?” He translates the origin of this place. Slowed down, the harsh Icelandic syllables sound softer. Brei – dam – er – kur – jo – kull: wide, woodland glacier. Blame the ice, everything here crystallises into the simplest units.

We point back to shore, where the Atlantic is busy dashing the glittering shards into oblivion against the volcanic sands of Diamond Beach. The authentic way

Icelanders cover their gravestones in lights. Some reflect the snow in crisp white, others a flood of colour. From a distance, it appears the elves are getting ready to party.
The Breiðamerkurjökull glacier is lined with volcanic ash, waterfalls collecting can easily become a habit.

**STRATEGY**

- Peak season May-Aug for light evenings and whales or puffins
- Winter best for ice-based activities and the aurora
- Accept an increase in cost factor (£1=160 Icelandic Krona)
- Use a map to plan realistic daily distances (km) at speeds lower than expected because of the surfaces (paved roads limited to 90km/h)
- Ideas: www.extremeiceland.is; www.flightseeing.is; lavacentre.is; www.arcanum.is

To experience this would be to add a small chunk to a hip flask of the local firewater, Brennivin.

**Quirky**

Working west, the intrigued might close their loop at the Blue Lagoon, south of Keflavik. The best way in is from the south coast, an immaculate tarmac ribbon twisting through a dense landscape of volcanic pillars; legend suggests they’re trolls, frozen in daylight. The Blue Lagoon is marketed as a natural hot spring, actually artificial, but fuelled by the hot exhaust of the nearby geothermal plant. Volcanic rock walls mean all views are upwards, atmospheric by dusk as the clouds rip by. It’s a hellish vision: wraithlike figures passing in the mist to the distant roaring of the plant. Book ahead – or, for a more authentic touch, enlist the help of the locals to find their true, natural pools.

At 64°N, Reykjavik is Europe’s most northerly capital, named from Vík (bay) and Reykja (smoke). Compact and colourful, with abundant street art, it’s quirky – the harbourside Reykjavik Fish Restaurant even offers dried fish lightshades. Elsewhere, the eclectic Café Babalu, on Skólavörðustígur, has a Star Wars-themed bathroom. Goodies such as plokkari (fish pie) or klenát (doughnuts) are calorie appropriate for rugged souls escaping the cold.

The accommodating locals have impeccable English; one asked me if I was Icelandic, so surprised was she to hear a friendly takk of thanks.

Reykjavik sits on a hillside, framed by two man-made monoliths: the modernist waterfront Harpa Concert Hall and the 245ft hilltop spire of Hallsgrímskirkja (Hallgrim’s church). Both are inspired by the cellular structure of cooled lava and suggest the aurora. Harpa is covered in thousands of glass tiles that shimmer in changing shades by night; the church buttressed by huge, angular columns as if beamed down from space.

As lights flicker on in the city, the distant snowcaps appear to glow in the darkness. Like the crescent moon, this great ice-circle is incomplete – for now.
Obituaries

David James, 1983-2019

David James, or DJ, was a senior first officer with Monarch and British Airways. Having had a career as an aero engineer at Rolls-Royce, he trained at CTC in 2007 before joining Monarch. DJ was elected to the Company Council in 2013 and quickly became a key member of our team. His ability to decipher spreadsheets and accounts was remarkable. He was an extremely clever individual and the hard work and long days (and nights) he put in for his Monarch colleagues was without equal. He was so selfless, and keen to help everyone.

DJ even managed a bit of command time at Monarch when his captain was incapacitated on a flight back from Lanzarote. Dave handled the subsequent single-pilot medical diversion to Bordeaux with aplomb, and was highly regarded by everyone for his efforts.

In 2016, he left Monarch to join British Airways and fly his dream aircraft, the B747. He thoroughly enjoyed his time on the long-haul fleet, and was often accompanied on trips by his mum, Anita, and his partner Jo. I have no doubt DJ would have gone on to ever greater success at BA, and as a BALPA rep there, too.

However, it wasn’t to be. In 2018, DJ was struck down with leukaemia. He fought this with his customary determination and good humour. He died on 4th December with Anita and Jo at his bedside.

Dave was a great character, with a love of all things mechanical, strange fruity beers and highly questionable dress sense. Not many people could carry off a velvet jacket or a day-glo orange polo shirt, but DJ could, and often did. A night out with DJ was certainly never dull. He will be sadly missed by all who knew him.

By Captain Andy Lancefield

Campbell C Bosanquet, 1946-2020

Campbell’s love of flying began at Newcastle University, flying Chipmunks in the RAF University Air Squadron, and, on graduation, he joined the RAF. He was one of the first pilots flying back and forth to the oil rigs in the North Sea, with the Sikorsky S61 and Chinook.

In 1977, Campbell was involved in the rescue of the imperilled crew of the Elinor Viking during a wild winter storm. There was no rescue helicopter based in Shetland, so Wick Coastguard contacted British Airways Helicopters to request assistance. Campbell immediately volunteered to fly with the crew, supported by a second helicopter and an RAF Nimrod.

The helicopter crew had no training for this type of operation, and yet – through great skill and immense courage – they were able to rescue all eight trawlemen. They received many bravery awards, including the Queen’s Commendation for Valuable Services in the Air.

Aside from flying, Campbell was terrific handyman. He was known to have a tool for everything and could fix anything. His retirement was filled with developing his smallholding, building his shed and driving his green tractor. He was also involved with carriage driving, becoming chairperson of the Scottish Carriage Driving Association for the past four years.

Campbell had a full and energetic life and showed kindness to all he met. His sense of humour remained to the end.

Campbell was diagnosed with bowel cancer in October 2018 following routine screening, and his message to all was “don’t waste time, and don’t ignore it. Use the test kit, and don’t take a chance that everything will be all right.”

Campbell was married for almost 50 years, and had three daughters and six grandchildren.

By Victoria Moore, Campbell’s daughter
Book reviews

Our pick of the best flight-related tomes this issue

Aero-Neurosis: Pilots of the First World War and The Psychological Legacies of Combat
by Mark C Wilkins (published by Pen & Sword Aviation, £15.99)

As aviation took off during 1914, it was predominately young men who flew and fought on both sides during the war. There was a technological advance with these new machines and many pilots who survived felt that normal life was nothing in comparison with being fighter aces. Many advances were also made in the medical profession because of more high-powered weapons, which helped to assist those injured in war. This book tells the story of how the medical and psychiatric profession evolved symbiotically with the war, and how the unique conditions of combat flying created a whole new type of neurosis.

A very interesting read showing the demands on pilots during the war, and how they coped afterwards, which set the scene for future generations.

Review by Matthew Martin, Log Board member

Race Across the Atlantic, Alcock and Brown’s Record-Breaking Non-Stop Flight
by Bruce Vigar and Colin Higgs (published by Air World, available from Pen & Sword, £19.99)

This is a great book about a competition set by the then owner of the Daily Mail, Lord Rothermere, who offered £10,000 to the first aviator to cross the Atlantic.

It was won by Captain John Alcock and Lieutenant Arthur Whitten-Brown, who completed the journey in a total of 16 hours and 28 minutes – an incredible feat at the time. The book explains how the race was delayed by World War I, how many of the teams that entered never made it off the ground, and how the risk of crashing mid-flight into the freezing Atlantic was real.

This book has dozens of fascinating photographs and letters dating from this time, which capture the history that led to the non-stop, long-haul flights that we take for granted today.

Well worth a read.

Review by Matthew Martin, Log Board member

Would you like to review a book for The Log? If so, simply email TheLog@balpa.org
The apprentice

We look at the promise of pilot apprenticeships

By Charlotte Branson, BALPA Media and Communications Officer

ALPA has been challenging the aviation industry to find ways to roll out pilot apprenticeships in a bid to remove the financial barrier to pilot training, which puts off those from less affluent backgrounds. Gone are the days when airlines would recruit potential pilots and subsidise their training. Now, those aspiring to a career in the skies have to pay their own way when it comes to training – as many of you will have experienced – and that can cost up to £130,000.

When the Government announced its apprenticeship levy, BALPA immediately got to work looking at how this could be applied to pilots, and if this could be a solution to the £100,000+ question: how can we open the pilot profession to a wider pool of talent, not just to those with the deepest pockets?

Slow uptake

Working in conjunction with others in the industry, we helped establish the first apprenticeship standard for commercial airline pilots in the UK. However, this has been a challenge, as the cost of becoming a pilot far outweighs the funds available to businesses for apprenticeships.

A year on, we are still yet to see airlines take up this opportunity. Work is ongoing with BALPA, the Aviation Industry Skills Board, Government and airlines, to find solutions that will make this option more practical.

For now, trainee pilots still fall between the cracks when it comes to help financing their training. But BALPA is continuing to fight their corner and urging the industry as whole to recognise the opportunity apprenticeships offer.
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