AUTUMN/WINTER 2014

CluedUp

SAFETY MATTERS FOR GA PILOTS

Civil Aviation Authority

INSIDE

GO or NO-GO?

The decisions that count – and who's at risk

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Civil Aviation Authority

CHANGES AHEAD

Most of you have probably not noticed much change to your flying routine over the last 12 months. The weather has been reasonably good and hopefully you have taken suitable advantage. Behind the scenes, however, work is now well underway to simplify a lot of the rules and regulations governing recreational flying. When completed, the benefits should be felt by the majority of private pilots.

The Civil Aviation Authority, in partnership with General Aviation representative groups, is studying ways to roll back red tape in areas such as aircraft certification requirements, flight training and the rules around 'cost sharing'. There is even a root-and-branch review of the Air Navigation Order underway! We are also working hard with EASA to support their 'new approach to General Aviation', which aims to deliver 'simpler, lighter, better rules'.

Although you can read about some of these initiatives in the following pages, most of this edition of *Clued Up* stays close to its roots of providing useful advice and information on general aviation safety issues.

We are all well aware of the unpredictable nature of our weather, particularly in the winter months, so we take a hard look at the serious risks associated with flying into IMC. Meanwhile, an air traffic control safety specialist from the CAA tells us all about Flight Information Services. We also look at replacement of the UK's VOR system and details of the GA Unit's changes in general aviation so far. With a report on how to avoid a rotorcraft loss of control and all the regular news features and incident reports, this issue will hopefully have something for everyone.

The scale of what we are undertaking together with the GA community is unprecedented and some of the projects will take significant time and resource to deliver – such as the GA ANO Review – but as we head into 2015, I firmly believe we will see more change that enables general aviation to become leaner, simpler and more competitive as the year progresses. Speak to any member of the GA Unit, or indeed any member of the CAA, and I am sure they will confirm this amount of effort and change for GA is unprecedented.

Enjoy this edition.

Tony Rapson
Head of the General Aviation Unit
Civil Aviation Authority

> The scale of what we are undertaking together with the GA community is unprecedented

An electronic version of this magazine is available at **archantdialogue.co.uk/cluedup**
To keep up to date on all airspace safety issues, follow **@airspacesafety** on Twitter.
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SAFETY MATTERS FOR GA PILOTS

Cover photo
Simon Finlay/Brian Barr

Free distribution
Clued Up is distributed free to all holders of a UK PPL and at selected GA events across the UK during 2014/15.

ARCHANT DIALOGUE

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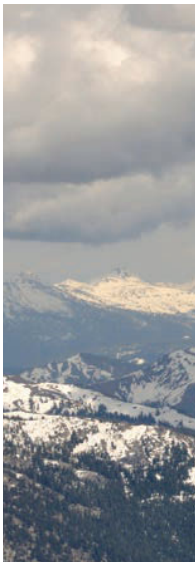

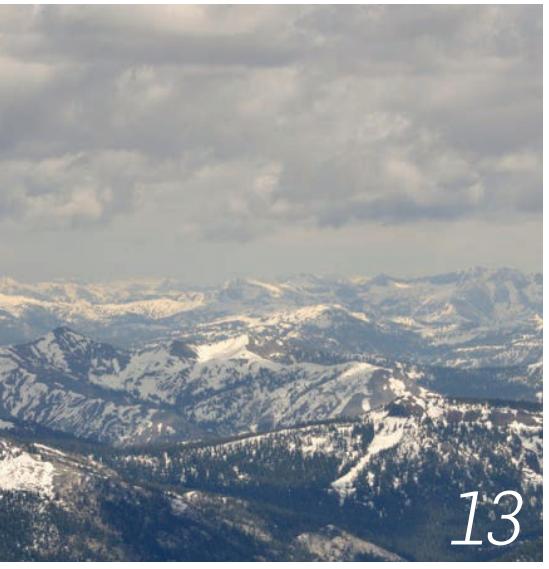

What's inside...

Clued Up magazine brings you the latest news in aviation safety, topical issues, advice and contribution from pilots, air traffic controllers and safety experts from across the UK's General Aviation community

One of the highest causal factors for this type of accident is lack of understanding of weather – p15

"THE SAFETY SIX"

The most significant causes of fatal and serious accidents in GA or where the associated risk is great*

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* Source: UK CAA

CAA launches review of the ANO

THE LONG-STANDING Air Navigation Order (ANO) is to be reviewed to ensure it is relevant nowadays for General Aviation (GA).

Launching the study, Padhraic Kelleher (pictured), the CAA's Head of Intelligence, Strategy and Policy, said: "The Air Navigation Order has developed over many years, but with the large amount of change that has taken place in recent years, we have to ensure that the ANO is suitable from a GA perspective. I am confident that by the end of the review process we will be well on the way to a simpler, more streamlined and ultimately more successful General Aviation sector."

The CAA has already established an independent GA Challenge Panel to oversee the ANO review and Julian Scarfe, who is a vice president of Europe Air Sports, is chairing this. The team's first steps will be to examine the ANO provisions relating to general aviation. The idea of the review is that the CAA will be able to identify those areas which could be deregulated or simplified to make compliance easier for GA pilots and organisations.

The review should be completed by March 2015, followed by a public consultation on its initial concepts and a second consultation in September 2015 on the CAA's specific recommendations.

Any changes to the ANO will have to be approved by the Department for Transport and DfT officials will be working closely with the CAA throughout the review.

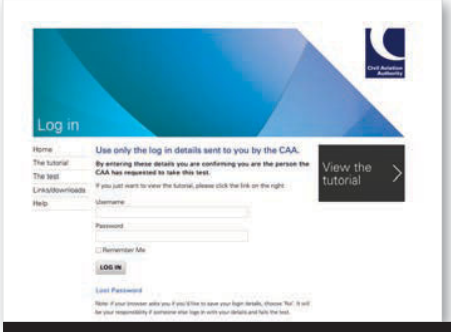
Infringed airspace? Sit an online test

PILOTS THAT INFRINGE airspace may now have to sit an online test. It's a similar concept to that initiated by the DVLA allowing drivers to opt to take a speed awareness course instead of accepting penalty points on their licence. If a pilot does infringe then he/she may be contacted with a letter from the CAA containing a username and password to access the test at *http://infringements.caa.co.uk*. The test is made up of 20 randomly selected multiple-choice questions probing the full range of pilot knowledge, and must be completed within ten minutes. Only one attempt may be made at the test, with the pass rate set at 80%. If the test is not sat within a month, pilots will face "further licensing action being taken".

Only incidents in which the pilot had displayed poor judgement or insufficient knowledge will he/she be expected to sit the test. However, where a pilot displays a wilful intent to fly unauthorised into controlled or restricted airspace, a criminal prosecution may still be resorted to in the first instance. There's good reason for this, too. Despite the efforts of the CAA, air traffic control providers and other organisations in the aviation industry, there has been little decrease in the number of infringements each year. In 2013, air traffic control provider, NATS, reported 670 incidents of pilots infringing controlled airspace – equating to one incident occurring every five hours of daylight, spread over the course of the year. Add on the infringements into temporary restricted airspace and danger areas and that total reaches 900. Phil Roberts, Head of Airspace, Air Traffic Management and Aerodromes at the CAA, says this figure is "stubbornly high" and that it represents an unacceptable safety risk. He adds: "Our firm hope is that pilots who have infringed, and subsequently sit the test, will learn from their mistakes and become better pilots as a result and, as a consequence, be less likely to infringe again in the future."

He is also urging all pilots to visit the infringements website to look through the 'infringement avoidance' tutorial that serves as a basic refresher. Both the tutorial and the test have been produced with the help of GA representative groups, such as AOPA and BMAA, as well as NATS and the Ministry of Defence.

The CAA also acknowledges that some of the infringements that take place aren't necessarily caused by poor judgement from the pilot. Sometimes it can be the result of miscommunication or misunderstanding with an air traffic controller, for example. In cases like this, it is unlikely the pilot will be required to sit the test.



NATS trial of Mode S and ADS-B

PILOTS WILL BE able to test out the full functionality of their Mode S transponders in a trial being run by NATS with a date to be announced.

The trial will allow pilots to connect their Mode S to a non-certified GPS to transmit their position, height and call-sign via ADS-B and, in some cases, receive the same data being transmitted through ADS-B by other aircraft. Under current safety regulations, the ADS-B functionality cannot be used unless the GPS signal has had its accuracy certified by the CAA; however, NATS and AOPA have secured permission to conduct a UK-wide trial using uncertified signals.

'Safer' gyroplanes get the OK to fly over built-up areas

PILOTS OF FACTORY-BUILT, type-approved gyroplanes can now overfly congested areas because it is felt that they are safe enough nowadays to do so.

Unlike many aircraft currently operating on 'Permits', gyroplanes have not previously been allowed to overfly congested areas at any height. Pilots must, however, be able to demonstrate they can manoeuvre clear of a built-up area should their craft suffer an issue such as engine failure.

With a general exemption now issued, the CAA will write to individual owners confirming the new policy.

The CAA's Richard Craske, Head of the Gyroplane Panel of Examiners, said: "This is a positive recognition of the safety standards now being achieved by the Gyroplane community.

"The introduction of new airworthiness standards, adopted by manufacturers, helped generate a growth in gyroplane activity that necessitated a review of the CAA's oversight with respect to training standards.

"Gyroplane instructors and examiners have worked hard to raise standards and to adopt new procedures. With the improvements in airworthiness, the CAA now has the confidence to support the community with the removal of the over flight restriction."

Endorsing the new policy, Phil Harwood, the Training Liaison Officer for the British Rotorcraft Association and a gyroplane instructor and examiner, said: "The gyroplane industry has been growing extremely rapidly over the past few years since the introduction of factory-built approved gyroplanes.

"The gyroplane community is extremely enthusiastic and it has been a pleasure for all parties to work together and evolve in terms of standardisation of training. It is great that the CAA recognises this and is working to help us grow and offer the same privileges as traditional general aviation."

Pilot controlled runway lighting

PILOTS CAN NOW activate the runway lighting on licensed aerodromes that have agreed to offer the service. Pilots have been able to do this on unlicensed aerodromes for a number of years but they can do so when flying near licensed aerodromes (in the past this ability was reserved solely for the emergency services). The rule change is another result for the CAA's GA Unit, which clearly sees a potential safety benefit for being able to locate runways in either low-vis conditions or at night. Aerodromes that already have pilot-controlled lighting technology installed for the emergency services can now extend its use to all pilots, but only once an appropriate method of operation has been agreed between the aerodrome and pilot users. One method involves the pilot pressing the transmit button a number of times in quick succession. Aerodromes that haven't got the technology will need to submit a proposal to the CAA. Details of the criteria that aerodromes need to meet are in Information Notice IN 2014-143.

Looking for a Safety Evening?

THE GASCO SAFETY Evening Season is underway. Current dates and locations are:

7 January 2015, 19.30: Earls Colne, Anglian Flight Centres Ltd, Earls Colne Airfield; contact Eddy Ford, tobook@aol.com

3 February 2015, 19.30: Cardiff Airport, Porthkerry Room, Cardiff Airport

5 February 2015, 19.30: Crowfield, TBA

5 February 2015, 19.30: Bournemouth, New Imperial Meeting Room, Departures Terminal, Bournemouth Airport; contact 01202 364114/01202 364110, email: ruth.osborn@bournemouthairport.com

6 February 2015, 19.30: Husbands Bosworth, The Gliding Centre, Husbands Bosworth Airfield; contact Joanne Young 01858 880521, email: office@theglidingcentre.co.uk

10 February 2015, 1930: Elstree, Elstree Aerodrome Café, Elstree Aerodrome; contact Vicky Farmer or Geraldine Davidge, 07810 597273, email: geraldinedavidge@gmail.com

10 February 2015, RAF Halton, further details TBA

18 February 2015, 19.30: Bodmin Airfield, Cardinham, Nr Bodmin; contact Pete White 01752 406660 or 07805 805679, email pete@aeronca.co.uk or Michelle Culverhouse 01208 821419, email admin@cornwallflyingclub.com

25 February 2015, 19.30: Lasham, Lasham Gliding Society, Lasham Airfield; contact Colin Watt 01256 384900, email: office@lasham.org.uk

5 March 2015, 19.30: Penkridge (Staffordshire Aero Club), The Haling Dene Centre, Cannock Road, Penkridge, Stafford, ST19 5DT; contact Simon Ganecki 01922 416381 email simon.ganecki@which.net

10 April 2015, 19.30: Lashenden (Headcorn), Staplehurst Village Hall, North Hall, High Street, Staplehurst, Kent, TN12 0BJ

If you would like to host a safety evening, get in touch with Penny in the GASCo Office, email penny.gould@gen-av-safety.demon.co.uk or 01634 200203.

Class F airspace replaced

CLASS F AIRSPACE is changing. It's been in the UK in the form of Advisory Routes (ADRs), but these are being replaced by Class E 'airways' or returned to Class G airspace. The dimensions of the new Class E airways will not necessarily mirror the exact dimensions of the ADRs they replace and they will also become Transponder Mandatory Zones (TMZs). Some of the base and upper levels will change too and there will be additional airspace near the Aberdeen CTR/CTA.

Class E is controlled airspace, but VFR aircraft can fly in it without a 'clearance' and without needing to be in contact with ATC, as long as they have a functioning Mode S SSR transponder onboard. VFR aircraft operating without a transponder can access the airspace, but must first establish two-way radio contact with air traffic control before entering. As the changes will have the greatest impact upon the Scottish FIR, the CAA has arranged for the next edition of 1:500,000 Aeronautical Chart 'Scotland' to be published on November 13 2014, instead of the original scheduled publication date of June 26 2015. Other affected VFR charts will be amended according to the chart publishing schedule at *www.nats-uk.ead-it.com*.

Medical services to be reviewed

THE CAA HAS started a review of the medical services it provides. The authority's Medical Department at its Aviation House HQ in Gatwick currently oversees the medical certification process for 16,000 commercial and 30,000 private pilots holding UK-issued European Aviation Safety Agency licences, as well as medical certificates for air traffic controllers. It's been suggested that the CAA may look to outsource the work it currently carries out at Aviation House and it may also consider asking pilots to liaise directly with their AME in the first instance about any medical concern. Details of a consultation will be published after the initial review is completed.


United Kingdom Civil Aviation Authority

EUROPEAN UNION Class 2

MEDICAL CERTIFICATE pertaining to a Part-FCL Licence

Issued in accordance with Part-Med

This medical certificate complies with ICAO standards, except the LAPL certificate.

Fears over drones

THE USE OF DRONES will raise "significant safety, security, and privacy concerns" in the next 20 years, according to a University of Birmingham Policy Commission Report.

The report has also called for "urgent" measures to safeguard British airspace and privacy.

The research was led by Sir David Omand, a former head of the UK's intelligence centre, GCHQ.

Currently, drones that weigh less than 20kg can be flown within the line of sight of the operator and with permission of the Civil Aviation Authority.

But if the pilot of the drone doesn't have CAA permission then they cannot:

- Fly it over or within 150m (492ft) of a congested area
- Fly it over or within 150m (492ft) of an organised open-air assembly of more than 1,000 persons
- Fly it within 50m (164ft) of any vessel, vehicle or structure that is not under the control of the person in charge of the aircraft
- Fly it within 50m (164ft) of any person

PICTURE: ANDY R ANNABLE 2014

FLYING A CLASSIC IS EASIER

IF THERE'S ONE aircraft most people would like to fly in it's a Spitfire – and now they can. Until recently, non pilots could only fly in the iconic machines if they were lucky enough to have a friend who could fly them free of charge. Now owners can take paying passengers.

Boultbee Flight Academy, based at Goodwood, which has two two-seat Spitfire TR.9s, is the first organisation to be approved to offer paid passenger flights in the aircraft.

People could already fly in many GA and historic aircraft, but if the operator wanted to make a profit from the flight they needed to obtain and maintain a full commercial Air Operators Certificate approval. The CAA's new policy allows a much easier route by ensuring passengers are fully aware of the level of regulation and risk before deciding to fly.

"We are delighted to see professional organisations like Boultbee making the most of the rule change by applying an appropriate level of safety oversight, in tandem with the principle of informed consent, to allow passengers to fly in historic aircraft such as the Spitfire," said Tony Rapson, Head of the CAA's GA Unit.

"We hope this change will lead to similar opportunities, allowing Boultbee and others to grow their business and increase the numbers enjoying flying."

Boultbee's flights will be provided by ex-military and civilian pilots, including three previous Officers Commanding the RAF Battle of Britain Memorial Flight, an RAF Eurofighter Typhoon test pilot and Rolls-Royce's Chief Test pilot.

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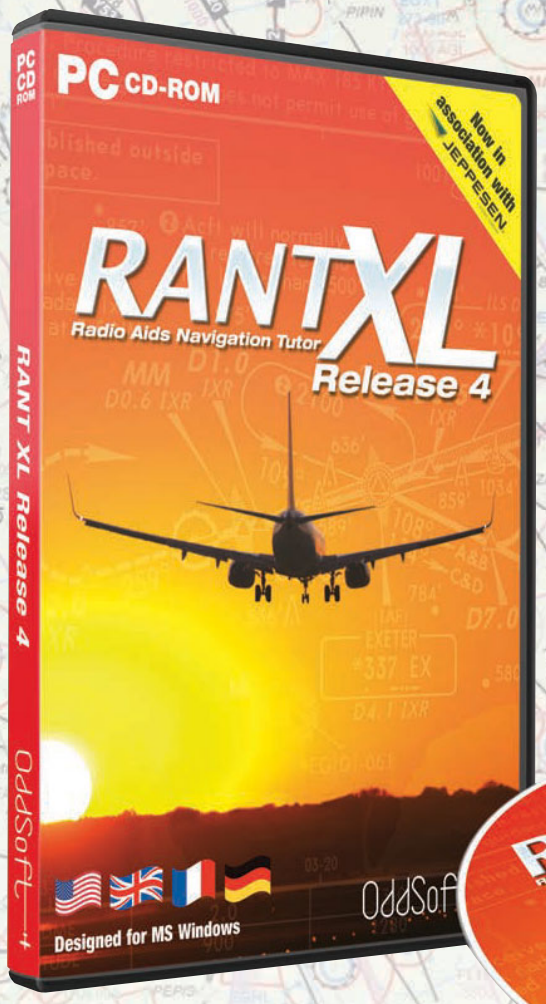

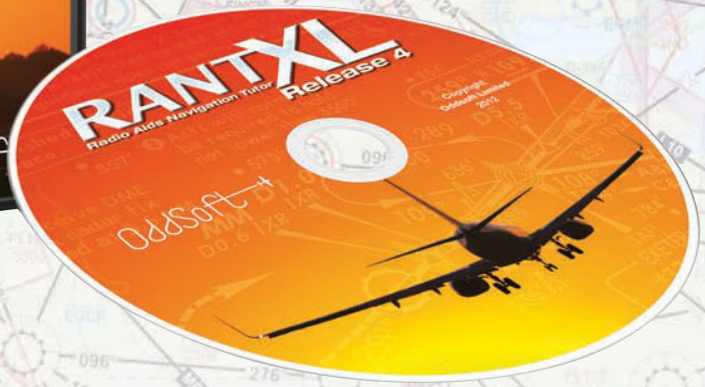

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Written by a current senior CAA examiner this software comes with a flight-planner for use with RANT and our databases cover most of Europe, USA, Australia, NZ and S Africa. Check us out at **www.pprune.org.uk.**

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Three-year 'breather' for schools to become ATOs

FLYING SCHOOLS NOW have an extra three years to become an Approved Training Organisation (ATO).

EASA originally wanted all Registered Training Facilities (RTFs) that provide private pilot training to become ATOs by April 2015.

The extra three years given by EASA (decided on October 9 2014) means that schools in the UK can legally continue instructing students for 'EASA' private pilot licences until April 2018. In the meantime the CAA will continue to work with EASA to push for what the CAA calls "a more proportionate system".

Tony Rapson, Head of the CAA's General Aviation Unit, said: "This postponement is not only important in itself, but is also clear evidence of EASA starting to deliver on its commitment for 'Simpler, Lighter, Better Rules for General Aviation."

When EASA brought in its new 'EASA' licences it said it wanted every school to be 'approved' to deliver the right kind of flying training. This request originated from EASA's 'Aircrew Regulation'. The extra three years is great news for RTFs all over the UK, who now have more time to work out what is required of them and what extra they need to spend or implement to get a tick in the box to become 'approved'.

It isn't stopping there, though. The CAA says it is going to remain committed to making sure the transition process from RTF to ATO contains the minimum of regulatory burden.

Easier for non-EASA aircraft to have mods

PILOTS WHO OWN ex-military and vintage aircraft that are on EASA's 'Annex 2' list will now be able to make minor mods and changes much more easily.

Any minor mod that is already supported by a Supplemental Type Certificate (STC) can be installed without further CAA involvement. However, the STC has to be approved by a state that the UK has a bilateral agreement with, such as the USA or Canada. It means that owners who want to have a change on their aircraft that other pilots have in other countries, can now make them.

Francis Donaldson, the Chief Engineer of the Light Aircraft Association, says the initiative "will allow CofA aircraft owners similar access to STC'd modifications as is already enjoyed by aircraft types now operating on a Permit to Fly".

He adds that: "We hope that this change will reduce some of the administrative overhead for LAA members owning CofA aircraft and will also help support maintenance providers and parts suppliers to this segment of the industry."

The new rules have been made possible through a change to BCAR CAP554.

Government's help for General Aviation

THE UK GOVERNMENT released its response to the GA's Red Tape Challenge report on October 13. The Minister without Portfolio, Grant Shapps, and Aviation Minister, Robert Goodwill, said that a full strategy for GA will created over the winter and is expected to be announced in spring 2015. You can read the full response at *gov.uk/government/uploads/system/uploads/attachment_data/file/364477/141016-10255-DfT-Gov_Response_to_GA_Panel-ACCESSIBLE.PDF*

Speak as one

A STRATEGY AND safety management directorate has been created at EASA's with the premise to help the Agency speak with one voice.

Patrick Ky, EASA Executive Director, says the new directorate will reinforce the role of EASA at the centre of the European aviation regulatory system and work "in partnership with the member states and in support of the growth and development of the aviation industry".

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RISING RISKS

It's easy to say, but controlled flight into terrain still remains a big cause of accidents – so why is this?

PICTURES BY KEITH WILSON | WORDS BY STEPHEN MORLEY

"The pilot and his family perished when their aircraft struck high ground in poor weather." This sad scenario continues to be reported despite all efforts, so why do we continue to fly into worsening weather, and the unimaginable consequences, as the statistics show?

Let's start with the easy bit, the definition of CFIT. According to the UK CAA, Controlled Flight into Terrain (CFIT) occurs when an airworthy aircraft under the complete control of the pilot is inadvertently flown into terrain, water or an obstacle. Wags would tell you every flight finishes with CFIT and the trick is to make sure it is at an airfield and on the runway. But that's not the definition we'll be focusing on here. First, it's worth taking a look at the statistics and then seeing how these accidents happened – and how they could have been avoided.

CAP 667 is a review of GA fatal accidents from 1985 to 1994. There are more recent statistics available but those in CAP 667 analyse CFIT accidents in some detail.

Of all the GA accidents involving fatalities during this period, CFIT was the highest percentage at just over 20%. Next was loss of control in VMC at 20%, followed by low flying/aerobatics at 19%. Loss of control in IMC accounted for just 8% of fatal accidents. So the four main causes of fatal accidents accounting for almost 70% of all fatal accidents in GA are all due to pilot error.

Interestingly, further analysis of the data reveals that more than half the pilots in the CFIT accidents were over 50 years of age, compared with less than a quarter in other accident types. Also, half the pilots had more than 1,000 hours experience and 45% of them had an instrument rating of some description. Lastly, more than 35% of CFIT accidents happen in the home base local area of the pilot in command. So it's probably fair to conclude that the typical CFIT pilot is mature and experienced, but

nevertheless elects to fly in conditions that risk CFIT, ignoring safety altitudes and possibly making navigation errors.

These accidents are not confined to mountainous areas, either. Sadly, in the South East of England the South Downs claim many lives and they are less than 1,000ft amsl.

So why do these mature and experienced pilots fly themselves into such trouble? Many might say such accidents are the tip of the iceberg. Indeed we will never know how many pilots missed that high ground by a few feet and continued blissfully unaware, but those pilots also need to review their airmanship or 'threat and error management', as we must now call it.

I instruct at a flying school and have heard pilots in difficulty due to worsening weather many times. Recently I heard an exchange where the pilot was given a position report over the South Downs and elected to descend into VMC despite being told that the cloudbase was reported at 800ft.

Fortunately he did not fly into Cumulus Granitus that time. What was he thinking? You might say "I'd never do that", but then he might have said that, too. The words of the recent Safety Evening host ring in my ears. "If you say that you have just taken your first step towards an accident."

When I studied the theory for the CPL, the Human Factors syllabus was significantly larger than the PPL. A lot of time was dedicated to accident cause and prevention. An interesting statistic from that (not enough stayed in but this bit did) was that a typical accident is preceded by an average of seven errors.

If you look at a typical CFIT accident most of those errors occur on the ground during the planning stage: lack of awareness of weather, inadequate weather planning, lack of understanding of safety altitude and terrain during the route, lack of planning for worsening conditions. These are all decisions we know will affect our decision to fly, or at least the route we fly, but they appear to be systematically ignored by the unlucky few and possibly the lucky many. But either way several of the holes in the Swiss cheese model have already been lined up.

Using the same model for the flight, our experienced and mature IMC-rated pilot elects to take off on a VFR flight over high terrain and low controlled airspace despite the weather warnings and adequate planning. Another hole. He also neglects to look at the NOTAMs, so is unaware of the aerobatics display over the airfield he wishes to transit. Yet another hole. Has he thought about a lowest safe altitude below which he will not continue the flight? Another hole and he hasn't even taken off yet. It happens.

Struggling to maintain VMC during the flight the pilot is informed he cannot enter the transit airfield so turns toward higher ground, entering thickening cloud as the terrain rises. Being experienced he doesn't lose control but elects instead to descend into VMC under perfect control. The final hole.

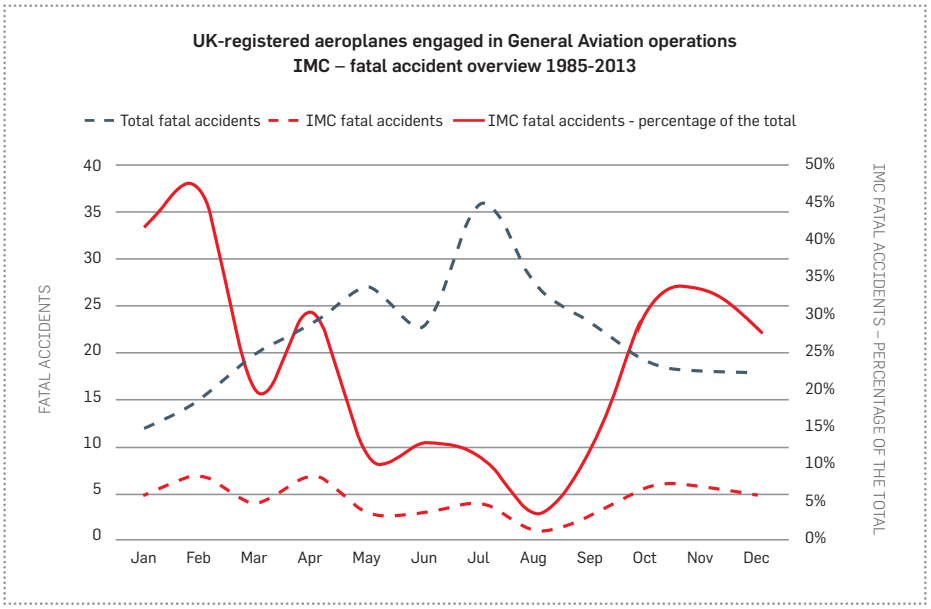
These accidents are all the more tragic as they often involve passenger fatalities. Why is this? It has been suggested that 'get-there-itis' is a major factor in such accidents. This may hold some weight as a revered and very experienced pilot cited it as a major factor in recently wiping off his undercarriage during an attempted landing. However, it is just one hole in the many already lined

KNOW YOUR INSTRUMENTS

The PPL syllabus contains a requirement to train in simulated IMC conditions and execute a 180° level turn in those conditions during the Skill Test. This is due to a series of fatal accidents from loss of control in IMC. GA fatal accident statistics and research show that the average time from VMC to total loss of control in IMC averages out at three minutes. In my experience it takes significantly less time than that for a student with no instrument training to become disorientated and lose control!

Analysing recent fatal accident data for loss of control in IMC, of the 13 resulting in fatalities, 11 had no instrument rating whatsoever and little or no instrument appreciation training during their licence training.

Instrument appreciation has improved this somewhat, but the fact remains that unintentional entry into IMC is hugely disorientating for pilots of any ability and could result in loss of control.



up. Plug just one hole and the accident is unlikely to happen. From the fictitious example you'll see that nearly all the mistakes were made on the ground. Indeed, the phrase "controlled flight into terrain" suggests that the pilot has adequate flying skills. The mistakes were all human factors. Decision-making, interpretation and understanding – even before start-up.

So how can we prevent this? We all read the AAIB reports and make mental notes not to make the mistakes made in them, we all plan meticulously for every flight, we all adhere to our routes, flight rules and weather minima, don't we?

What else can we do? How about basic acceptance of human fallibility? If you know that you will make mistakes during a flight, you will plan for them and have adequate contingencies. Also, fly each flight as if it is the first time you have flown it, even if it isn't, and you'll find your planning and execution will be far more comprehensive.

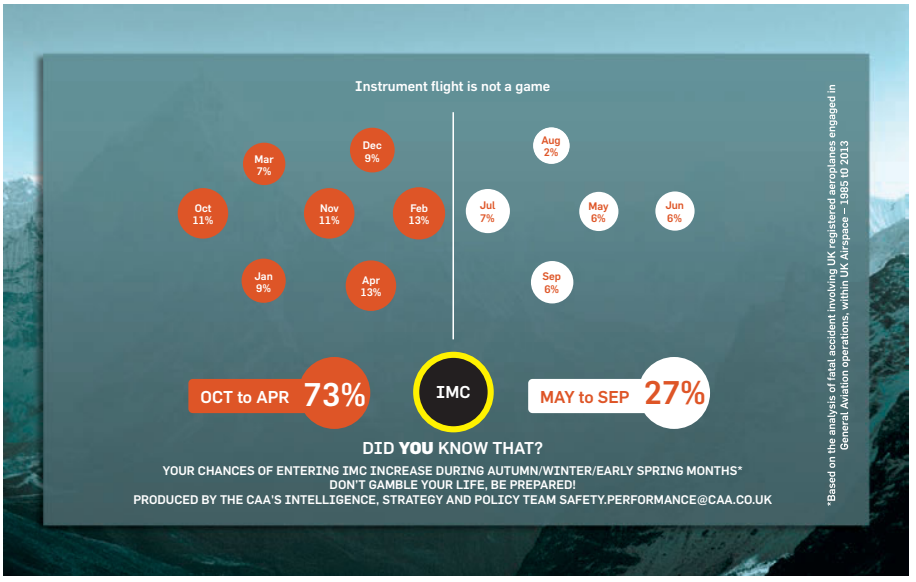
If you are planning to fly with variable weather, plan as if the whole flight will be in the worst that is forecast. For example, if there is a PROB30 of low cloud and thunderstorms it is likely that the visibility is generally set to be unlimited and the conditions, albeit a bit bumpy, will be fabulous apart from the odd heavy shower. Plan your diversion routes, at least in your head, so that they will not take you near high ground in a lowering cloudbase.

This is all stuff you can do on the ground during the planning stage, but one of the highest causal factors for this type of accident is lack of understanding of weather. The Met Office are doing some fabulous courses on aviation weather, *http://www.metoffice.gov.uk/training/industry/aviation/general*, which I'd thoroughly recommend. It's also worth reading CAP 667 – it's sobering stuff.

As decision-making is also a causal factor, think too about contacting your local flying school for some dual flying in minimal conditions. VMC minima in uncontrolled airspace under 3,000ft and 140kt is clear of cloud, in sight of the surface and 1500m visibility – that's 300m less than IMC minima for take-off and landing.

Also, and it's something that can be forgotten or neglected, do keep in practice if you have an IMC or IR(R), no one wants to be practising those skills when they need them for real. Even though your flying skills may be up to scratch, as was demonstrated by all those pilots who flew into the ground under control, your decision-making capabilities may be less so. If you plan on a tablet device using something like Sky Demon or similar, ask yourself if you would conduct or continue the flight if the device failed. They are not installed or approved and if you neglected to charge the battery or the device crashed mid-flight you might find your decision-making capabilities fatally tested.

Finally, don't be tempted to say "I couldn't have planned and conducted that flight any better". You might just be telling yourself a porkie! CU



ABOUT THE AUTHOR

Steve Morley is the owner of Blackbushe Aviation, a flying club and school based at EGLK. He is an instructor for PPL, IR(R) and CPL and an examiner for PPL and IR(R). When not instructing, he flies his PA28, G-BICW, which he owns with two other pilots.

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IT'S A FINE LINE

1. It's human nature to make errors from time to time, it's how you deal with them that makes a difference
2. Enforcement team Robert Webb and Des Nelhams – "we'll work with people who admit their mistakes"

Many pilots might think the enforcement team is all about prosecutions, but these days there are other solutions they prefer

PICTURES BY SIMON FINLAY/BRIAN BARR/ CAA | WORDS BY HELEN KRASNER

CAA Investigations and Enforcement Team… the words may strike fear into the hearts of GA pilots. These are the people waiting to prosecute poor unsuspecting private pilots for inadvertent infringements of controlled airspace, or something else. That's what many of us believe, isn't it? To shed more light on the situation, I have been speaking to the people at the sharp end of the CAA's enforcement policy, the investigators themselves.

Robert Webb and Des Nelhams are both ex-police officers – detectives with the Metropolitan Police. Along with four colleagues, also former 'boys in blue', the CAA's investigation team has an astonishing 180 years' combined professional sleuthing experience. That knowledge is used to full effect when sifting through evidence of alleged breaches of the Air Navigation Order (ANO) – civil aviation's rule book.

The team investigate allegations that range from low-flying aircraft, to forged medical certificates, illegal public transport and prohibited dangerous goods being carried on an airliner. The allegations can come from the public, the police, NATS or CAA colleagues. The investigators always have a mixed bag of open cases. The CAA's enforcement approach means that the investigation is not focused solely on finding enough evidence to sustain a successful prosecution. As Robert Webb explains: "A criminal prosecution may not be the most appropriate course of action".

"The range of enforcement action we can take against an offender runs from advice in a telephone call, a warning letter, a simple caution, a conditional caution or, ultimately, a prosecution", says Des Nelhams. "In fact, many incidents don't come to us at all, they are dealt with elsewhere within the CAA, such as by the new GA Unit or by the Flight Crew Standards Team."

Each case is viewed on its own merits and when it comes to an individual pilot, much depends on his or her attitude to the offence – with a willingness to co-operate with the investigator being a key factor. A pilot who acknowledges their role in an offence, and who appears keen to learn lessons to avoid repeating the misdemeanour, is likely to be treated more leniently than someone who does not co-operate.

As Robert Webb points out: "We all make genuine mistakes. If someone is prepared to say 'I got it wrong, I need to brush up my skills', then we can work with them. Maybe they need to sit down with one of our examiners for a conversation, or perhaps they need an early revalidation flight. Either way, we are more likely to deal with it outside of the courtroom. However, if someone doesn't admit they've done wrong, if there's no acceptance of the breach, then we are more inclined to prosecute. And then there are some cases where the incident is just too serious for the CAA to take a lenient approach, however co-operative a pilot is."

The Investigations and Enforcement Team, who also have a highly experienced barrister on board, work very closely with other parts of the CAA. Across the organisation the ethos now is to deliver a joined-up approach to regulation that will achieve the best outcome for aviation safety, and that includes how the CAA deals with unlawful activity. If safety can be improved through a certain course of action, then that course will be a priority.

This all sounds very positive, but how does it work in practice? What would happen in the case of airspace infringements by GA ➔

> If someone is prepared to say 'I got it wrong,' then we can work with them

pilots, for example? After all, these form a large percentage of the Enforcement Team's caseload. According to Robert and Des, minor infringements have always been dealt with by colleagues in the licensing department, while they get their hands on all the serious stuff. But what about infringements that lie between those two extremes? We discussed a hypothetical example – though based on an actual incident – where a pilot took off from a small airfield, then flew too high and ended up breaching the London CTR. The pilot was not contactable by radio; one aircraft had to be prevented from taking off and four others couldn't land. Not a good situation, as I'm sure we would all agree.

Once upon a time, such a case would probably have resulted in a prosecution. Now, however, there is collaboration across the CAA before a decision is made whether to prosecute. Perhaps a training flight with an examiner to practise navigation techniques would be more appropriate. Des Nelhams says: "The final decision will ultimately depend on a number of things – how serious the incident was, how long the pilot has been flying, what he/she said when interviewed, how contrite he/she was, and so on."

Robert and Des highlighted the impact of 'aggravating features' as they call them, such as the aircraft's transponder being turned off. Apparently, they have had cases of people entering controlled airspace, then realising they were in it and turning off the transponder in the hope that they wouldn't be seen. This merely makes the situation worse as they are no longer visible to other aircraft or air traffic control, thereby rapidly increasing the chances of an airborne collision. "That sort of action is putting other airspace users in danger and cannot be overlooked," Robert says. "The ANO is ultimately there to protect lives. Very few people go out to deliberately break aviation laws, so we are simply asking people to take responsibility when they get things wrong. That way we can all continue to make flying safer for everyone."

The Investigations and Enforcement Team may still have a way to go to overturn years of distrust from the GA community. But, certainly in the case of Robert and Des, it won't be for want of trying. CU

> Very few people go out to deliberately break aviation laws

Policing the skies isn't just about GA. The team also investigates allegations that include forged medical certificates, illegal public transport and prohibited dangerous goods being carried on an airliner – no one would want these on board an aircraft they're flying in.

Turning off the transponder if a route infringes airspace can be tempting, but a dim view is taken...


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CHANGE? IT'S IN THE AIR

Since the GA Unit started the rules for light aviation are being revised, and there's a good reason why

MAIN PICTURE SIMON FINLAY | WORDS BY RACHEL GARDNER

Back in the Spring of 2014 few would have believed how quickly a wind of change could sweep through general aviation – regulations have been rolled back seemingly monthly to making flying simpler for all, and there have probably never been so many rule revisions so quickly in light aviation.

When the new General Aviation Unit assembled for the first time in response to the Government's GA Red Tape Challenge it was tasked with maintaining a sole focus on recreational flying, something that had never been done before.

Having long been accused of rolling out the red tape at the slightest excuse, the GA Programme's job was to roll it up again. The group was not simply given oversight of the existing rules and regulations, but told to begin reforming them straight away.

Some of the big initiatives, such as the General Aviation review of the Air Navigation Order, have already been covered elsewhere in *Clued Up*, but, a total of 128 projects have so far been instigated under the GA Programme. Some have already been delivered, while the rest are still being pushed through

Collectively, though, the intention of these projects is clear – to reduce regulatory burden and support the creation of a vibrant and dynamic general aviation sector. Here are a few more examples of the reforms already brought in, as well as some of those coming down the track.

- The number of PPL exam questions has been reduced to the 120 specified by the European Aviation Safety Agency (EASA). The work was carried out by an industry and CAA group and the new papers were introduced on 15 October.
- A joint CAA-industry review of the aeroplane private pilot licence training syllabus has taken place to ensure it is relevant for today's world. The helicopter private pilot licence training syllabus will also be reviewed. Details will be submitted to EASA as an alternate syllabus before it is rolled out in the UK towards the end of next year.
- Licensed aerodromes are now free to introduce pilot-controlled lighting systems. This was previously reserved solely for the emergency services. (Unlicensed aerodromes had been using pilot-controlled lighting technology for a number of years.)
- The Instrument Rating training requirement has been reduced from full screens fitted to the aircraft to a pilot-worn vision limiting device.
- A review of the process undertaken to obtain a private pilot licence in the UK has been undertaken and published. This now needs to be taken forward.
- A more proportionate policy has been published for instrument approaches at aerodromes or landing sites without an approach control service. Work is ongoing with industry stakeholders to expedite initial approvals at a number of GA airfields. This should be implemented towards the end of summer 2015.

THE LIGHT AIRCRAFT CO.

Left: Testing process for experimental aircraft in the UK should become simpler, benefitting small-scale aircraft designers and manufacturers

Top: One microlight company has just been given design, production and flight test approval, which will allow it to sell its aircraft as finished 'factory-built' under the wider GA Programme

Bottom: A total of 128 projects have so far been instigated under the GA Programme to reduce regulatory burden and support the creation of a vibrant and dynamic general aviation sector in the UK

- There has been a relaxation of the rules concerning the use of handheld radios in aircraft.
- A GA Policy framework has been developed to deliver a better, transparent and more proportionate approach to regulation. This has already allowed the first paid passenger flight in a Spitfire.
- Aircraft owners can now choose whether to use EN 228 Mogas fuel in their aircraft where approved.
- All single-seat microlight aeroplanes up to 300kg Maximum Take-off Mass have now been deregulated for airworthiness and noise purposes.
- There is an in-depth review of GA fees and charges to ensure they are coherent across the charging schedules and proportionate to the degree of necessary resource expended.
- A simplification of the initial testing process for experimental aircraft in the UK is planned. This will benefit small-scale aircraft designers and manufacturers, as well as encouraging the growth of aerospace excellence in new design concepts. A CAA consultation was launched on 17 November with the aim of reducing the red tape and financial burdens associated with securing airworthiness and operational approval for new light aircraft designs.
- U.S./Canadian approved modifications can now be installed in a non-EASA aircraft in the UK without separate UK approval.

As well as reforming the UK's national rules, work is ongoing to pursue changes in Europe. Tony Rapson, Head of the GA Unit, is also chairman of an EASA general aviation reform group. In fact, EASA has committed to creating 'simpler, lighter, better rules for GA' as shown by the recent vote on Aircrew Regulation.

The unit has also built on some previous positive work to enhance engagement with GA representative groups, associations and the Government to maintain a co-ordinated approach to reform. This has resulted in setting up the General & Business Aviation Strategic Forum and the re-established 'GA Partnership' has already begun providing considerable support.

When formed, the GA Unit was dedicated to providing effective regulation that supported and encouraged a dynamic GA sector, and it aims to continue making a key contribution to fulfilling the Government's aspiration for general aviation to enjoy a safety regulation system that imposes the minimum necessary burden.

So there are more improvements on the way. CU

E-GO AEROPLANES

ABOUT THE AUTHOR

Rachel Gardner is the recently appointed CAA's GA Programme Manager. She completed an integrated frozen ATPL course and has flown privately for 14 years in the UK, U.S. and Australia. Rachel has several years of experience in delivering complex programmes in the aviation industries.

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HECK, LET'S JUST GET GOING...

Thanks to human factors it's easy to let the approach to flying slip over time – without even realising it

PHOTOGRAPHS BY SIMON FINLAY/BRIAN BARR AND CLAIRE HATTON | WORDS BY CLAIRE HATTON

It's in the nature of pilots that we want to do things well. We're trained from day one to use checklists thoroughly, to fill in paperwork accurately and adhere to rules and regulations. If people were uncomfortable in this fairly strict environment they wouldn't last very long in training.

So anyone who does persevere will have demonstrated an ability to abide by the rules and perform to a high standard, both in their flying and pre-flight planning and procedures.

But what happens, then, when we fledge? Escape the clutches of our instructor/examiner and are free to fly off on our own? Do we still try to perform the best we can, just to satisfy ourselves? Or do our standards slip a little, perhaps even without us realising it?

Anyone involved in GA understands what we're up against pretty much every time we fly: weather delays, waiting for the pumps to be available, aircraft tech issues, ATC delays, people bringing aircraft back late, which makes you late for your booking. Sometimes it feels like hard work just to get going and then we can feel pressured into rushing. We might subconsciously be trying to find ways to make up the time, maybe cutting the odd corner here and there along the way. If our standards slip a little, it's likely we'll be tempted to do the same the next time because it worked out all right before. So the next time the weather is just a little bit worse, we might go because 'we were okay last time, so it'll probably be ok'. Next time the aircraft is a bit overweight... 'we'll get away with it because we've done so before'.

But 'getting away with it' wasn't the standard for the PPL Skill Test. I don't believe anyone approaches their Skill Test with that attitude. Most people want to do their absolute best to impress their examiner and not be embarrassed by a shoddy performance. So why would we accept

> You can be pressured into situations that your gut instinct tells you are far from ideal

anything less subsequently, when taking those most important passengers – our own family and friends – on a flight? Surely they are far more important than our instructor or examiner, yet there is a risk of circumstances making us skimp on preparations and thoroughness once we have our licence.

It's time to be aware of human factors coming into play – and there are many that influence you every time you fly, some of which creep up on the unwary and bite. Imagine a scenario at a flying club near you...

You've organised a family or friends flight and everyone's excited at the prospect of flying together. They might not have been in a light aircraft before and you might feel slightly nervous now the day has come. You're a little flustered by coping with people in the flying club who aren't normally there and the weather isn't as perfect as you would have liked, even though the forecast said it should be fine. Anyway, your passengers have driven a long way to the airfield, perhaps even taken a day off work to come, so you can't let them down by saying it's cancelled. So in your mind, you're going.

There isn't a set of weighing scales to hand, so you try to assess people's weights – embarrassing having to ask in front of other people in the flying club. And if you do ask, are they telling you their weight accurately? It's unlikely to be completely accurate, fully clothed, with coats, cameras, and handbags. Do you know exactly what your own weight is, complete with all your flying bits and bobs?

Time is ticking on. They were a little late arriving so you get them a coffee while you sort yourself out. How much fuel can you take? Well, how much is already in the aircraft? Probably too much. How many people have we got in this PA-28? We should do a mass and balance calculation. Can't really remember how to do one, it's been a while since the last time, erm... get the figures from the aircraft docs. How much fuel was in it again?

They've finished their coffee and they're eager to get going. Looking at the time, you're not going to have long enough to get where you want to go if you hang around much longer. Don't want to be late back for the person who has the aircraft booked after you (your old instructor, who used to hate it when his aircraft was late back).

The weather's a touch worse, but you look around and other people still seem to be flying, so it must be okay. It'll be all right, we just need to get going. Better just phone the destination to check their weather. Get the VFR Guide out. Hmm, how long was their runway? Should really do a performance calculation, but there's no time for that now. And they've had a few showers going through, too.

Before you know it, and with the best of intentions, you are getting airborne in an overweight aircraft in marginal weather and likely to be landing on a wet runway where you'll be lucky if you manage to stop before the hedge at the other end... and your excited passengers are blissfully unaware of all this, reassured by the fact that you hold a pilot's licence and therefore you know exactly what you are doing.

Well, you did on the day you passed your Skill Test.

Human factors are always busily at work in general aviation. You can be pressured into situations that your gut instinct tells you are far from ideal, but there is a real danger of overriding this instinct with an even stronger feeling of 'get-going-itis', which is very hard to overcome. When you read the accident reports it's sometimes obvious what could have been done to avoid the outcome; the well-known phrase 'breaking the chain' means that simple actions done correctly could have prevented the accident from happening.

All we can do in our everyday flying is to try to be conscientious and be aware of all the influences at work on us. At least that way, we know we've given it our best shot. CU

Distractions, distractions... they can be all around the airfield and they happen to everyone at some stage – question is, will the subconscious try to find ways to make up any lost time?

ABOUT THE AUTHOR

Claire Hatton started instructing in 1999 and holds a frozen ATPL with 2,700 hours experience. She has worked at Manchester, Caernarfon and Liverpool teaching PPL through to Multi-Engine, CPL and IR. She is also the author of a flying instructors' manual.

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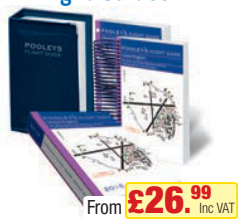

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HAS GPS KILLED THE VOR?

1. A ground station, the part of the VOR you don't see

Not quite – their numbers might be being reduced as they reach the end of their life, but they're not quite dead yet

MAIN PICTURE PHIL COLLIER OF NATS | WORDS BY IRV LEE

Our aviation world is changing in several ways, as any UK GA pilot qualified for more than a year or two must have noticed. Over the next few years, if you are a regular or even occasional VOR user or trainer, you need to be aware of, and perhaps make provision for, the changes that will ultimately significantly reduce the number of ground VOR installations across the UK.

Traditionally in articles, acronyms are expanded at first use, but with 'VOR' it really doesn't help, and could even confuse. VORs, VHF Omnidirectional Range – a post-World War Two ground-based navigation invention for defining airways routes, or providing published instrument approaches at airports – have been part of the commercial aviation and instrument training world for decades. Pilots could both fix their position reasonably accurately and use them for en route navigation or approaches to land.

Surprisingly for some recently qualified pilots, use of VORs took more than 50 years to enter the PPL syllabus, finally getting there at the very end of the 20th century. Before then, the PPL world simply had to stick to visual navigation and dead reckoning, and first met radio navigation in IMC Rating courses.

The coincidence of the VOR transmitters exceeding planned operational life overlaps with a period of technological advancement that has allowed the commercial aviation industry (and its associated training) to escape the 20th century into the Global Navigation Satellite System (GNSS – 'GPS' to you and me) navigation and associated instrument approaches of the 21st century.

Let's be clear, VORs are not going to disappear from the UK completely or from any training syllabus in the foreseeable future. A project managed by NATS has already budgeted a lot of money to replace and then maintain the end-of-life VOR hardware at 19 strategic existing locations around the country.

The objective behind the proposed remaining locations, when viewed as a whole, is to provide a backup VOR navigation network for en route traffic over the UK. Analysis suggests this new VOR hardware at the 19 selected (existing) locations could still provide coverage to give a safety backup to commercial aviation over the UK in case of deliberate or unintended GPS signal failure at 3,500ft and above.

'Backup'? Yes, the airline side of aviation that funds VORs' maintenance and replacement now uses certified GPS kit for GNSS en route navigation and approaches in the UK, not VORs, as Performance Based Navigation (PBN) is their future. Any DME (Distance Measuring Equipment) transmitter co-located with a VOR today will remain in place, whether the VOR itself is replaced or removed. Modern commercial flight decks' backup systems can fix position with signals from multiple DMEs in case of GPS signal failure.

Whether replaced or removed, the

> VORs are not going to disappear from the UK completely

2. It has served well (and confused many pilots) for decades, but the days of VOR knob twiddling are ending
3. and 4. No contest – VOR and GPS, but if the latter goes down, you can still rely on the old ways

geographical positions of today's VORs will retain an official identifier. In almost all cases this will be today's three-letter identifier, the exception being when a VOR without a co-located DME (for example, Perth) is removed. In such a case, a suitable five-letter IFR reporting point will be assigned to ensure the physical position is retained for the future in the UK AIP, and hence in GPS databases.

The small number of NDBs (Non-Directional Beacons) managed by NATS for en route navigation will also be removed, but most NDBs today are owned and managed by individual airports. Instrument-rated pilots are starting to see a growing number of new LPV approaches (Localizer Performance with Vertical Guidance) at provincial airports around the UK, encouraging more GPS-based training for instrument ratings including the UK's Restricted version (replacing the IMC rating) and the full ICAO qualification.

The transition to fewer VORs will be managed to minimise impact, but it is clear that thought will need to be given to redesigning some training or operating practices that have always assumed excellent VOR signal coverage at lower levels. At the higher levels of radio navigation training suitable for careers with airlines, anyone being trained purely on old technology (VOR, NDB, DME) now, with little emphasis on certified GPS, is going to get a rude awakening if they succeed in gaining a job as the industry has moved on. It is also likely that the EASA instrument rating test will have a mandatory GNSS-based approach in the not-too-distant future, forcing trainers to upgrade and re-emphasise.

As the number of VORs reduces over the next few years, this has implications for the training industry, especially within General Aviation. The GA organisations are already aware of, and have accepted, the coming reduction of VORs, each removal subject to impact assessment. A NATS team has already visited a number of PPL training organisations to engage with them on minimising impact and discuss alternatives as nearby VORs are considered for removal.

Certainly those of us training in the South East of England have become spoiled for choice, always within range of many VOR signals. In foreseeable future years, VOR signals will still be found and usable over the UK, but PPL trainers may have to give some thought to when and exactly where in the training regime radio navigation is taught. For example, PPL schools far removed from a VOR ground position might have to examine or perhaps even re-route traditional VFR navigation routes to ensure the aircraft arrives in suitable position where signals can be received, in order to include VOR within the course.

There are alternatives to VORs. Unknown to many, the basic PPL syllabus gives equal prominence to GNSS (GPS) training for radio navigation as it does to other methods. Some schools have aircraft equipped with old technology and no certified GPS, which leads to the common mistaken belief that GPS is not in the PPL syllabus. The usual reason for not having GPS in a PPL course usually lies with the training schools, who either choose not to train with it, or simply do not have the equipment in the aircraft to do so.

VOR RATIONALISATION

NOTAM will, of course, be issued prior to any VOR being replaced, as this will require it to be 'off-air' for up to three months while the 1980s electronics are upgraded with modern state-of-the-art equipment.

The removal of outdated VORs has already started, Cranfield (CFD) being the first to be decommissioned and Dean Cross (DCS) following before the end of 2014. An impact assessment has been made for Machrihanish (MAC), but at the time of going to press there is no firm removal date in 2015. The following VORs to be assessed for withdrawal in 2016 are Glasgow (GOW), Perth (PTH), Turnberry (TRN), Inverness (INS) and Benbecula (BEN). Along with extra information, the current UK VOR decommissioning plan out to 2020 is detailed in the AIC, but it is, of course, subject to change.

A small number of en route NDBs will be assessed for removal, the only one currently with a target date is New Galloway in 2016.

As most qualified pilots fly with some form of GPS nowadays, we can move PPL and instrument flying training into the 21st century by embracing the techniques, skills, and relevant threat-and-error management aspects of GPS equipment as part of basic radio navigation, even for PPL students.

Aircraft are likely to become better equipped soon with the requirement for capability to use 8.33KHz radio frequencies, and any school or aircraft owner wishing to move to GNSS training within the PPL or Instrument Rating (full, en route or restricted) courses might find it more cost efficient to include simple certified GPS equipment at the same time as the new radios are installed.

NATS, of course, will continue to work with the training industry and continue to communicate to all pilots the current status of the VOR rationalisation project. The FlyOnTrack website (*www.flyontrack.co.uk*) will give the pointers needed to find this information over the coming years, along with other related topics relevant to our flying, such as the UK's Future Airspace Strategy, something we shall hear more of in the future. CU

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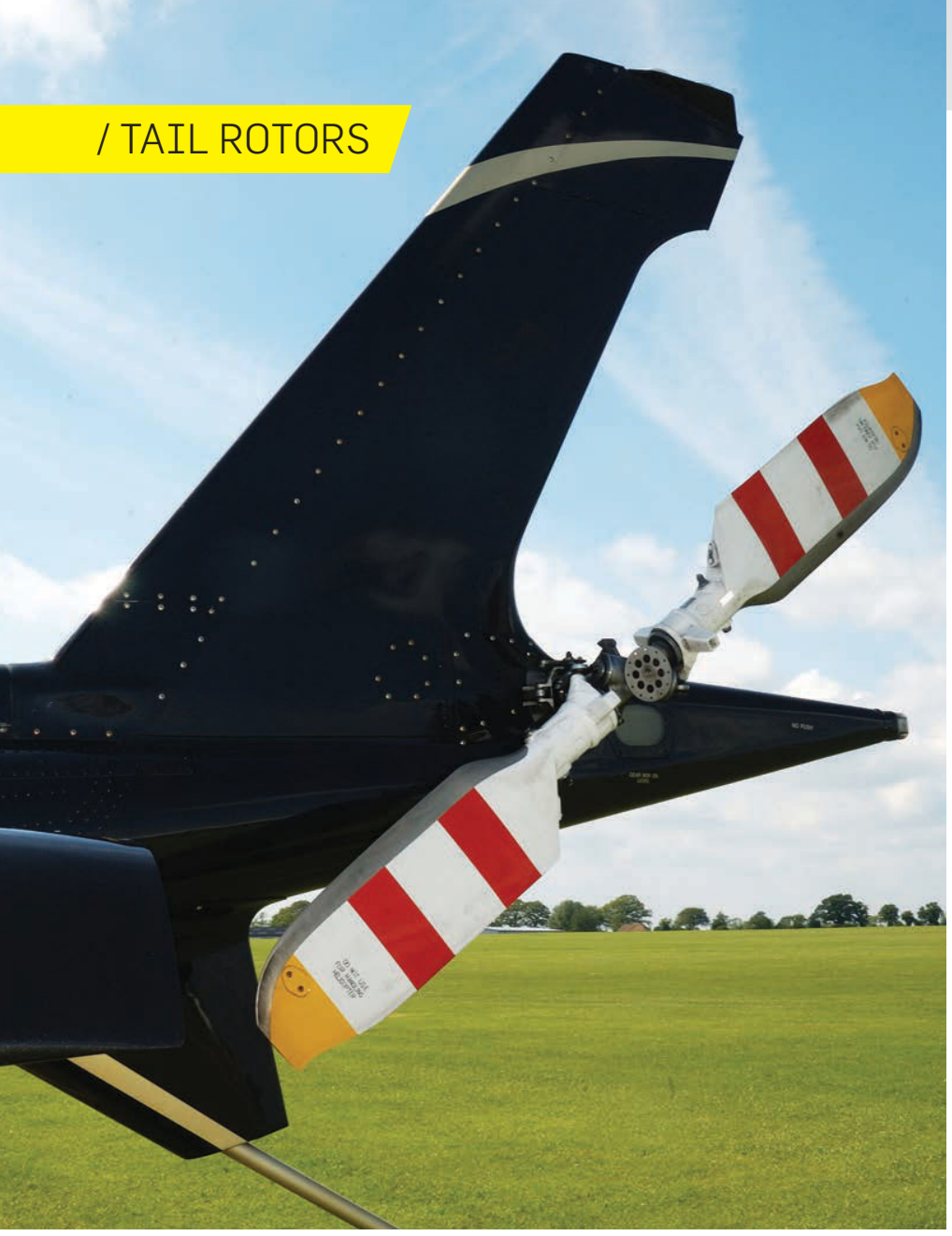

WHEN THE TAIL **TAKES OVER**

Loss of tail rotor effectiveness, or LTE, is a dangerous condition, but just what is it and what do you do about it?

ALL PHOTOGRAPHS BY KEITH WILSON | WORDS BY NICK GRIBBLE

In my day it was lumped under the title 'airmanship', but for an unfortunate pilot whose Hughes 500 ended up on its side in the trees it was, according to the accident report, due to a "loss of tail rotor effectiveness".

When I learned to fly in a Gazelle in 705 Squadron, Culdrose, in the early 1980s, LTE simply wasn't on the syllabus. Nor was it for the pilot of the Hughes, judging by the AAIB report, which stated: "The pilot candidly commented that he was not aware of the LTE condition and when he gained his PPL (H) in 1984 and during subsequent training, which included practical and written tests, he did not recall it being covered in the training syllabus." Pilots of my generation (i.e. those of us who have less than ten years before we have to give up flying single pilot commercially) find ourselves mostly in an instructional or examining capacity nowadays and we're mostly very cynical when it comes to the matter of LTE since "if it didn't exist in the '80s it probably doesn't exist now". Helicopters have been around for long enough now that we know what the pitfalls are and this new-fangled LTE is surely just putting a name to an airmanship error? Well, yes and no.

So yes, it was called airmanship in those days. We were well aware that the tail rotor wasn't always that effective and we were primed and ready for the consequences of losing yaw control. And we were lucky; those poor pilots who were trained on aircraft such as the Enstrom A had to put up with a tail rotor that rotated the 'wrong' way, i.e. the front blade, rather than going up into the descending airflow from the main rotor, went downward, thereby losing a good proportion of any lift that might otherwise have been available. This was corrected in later versions, but the A model is still around and I've seen more than one person do a ground loop on arriving at the landing point having pulled in the power and not had enough pedal to counteract the subsequent yaw.

Now this isn't LTE as in the context of this article, it's more a lack of sufficient tail rotor control from a design perspective, but it serves to illustrate. Tail rotors are only as powerful as they need to be to do the job; a rapid rate of yaw is not something that pilots want or need since anything more than about 30°/sec makes us dizzy after a few seconds and is not to be encouraged. The consequence of this is that a tail rotor that may not have much power can't cope if it loses the ability to generate an airflow for whatever reason.

The AAIB attributed a fatal helicopter accident in 2003 to loss of tail rotor effectiveness and recommended that the CAA publish, as widely as possible, guidance to pilots, resulting in GASIL 1 of 2004 and ➔

Tail rotors are only as powerful as they need to be to do the job; a rapid rate of yaw is not something that pilots want or need since anything more than about 30°/sec makes us dizzy after a few seconds and is not to be encouraged. The consequence of this is that a tail rotor that may not have much power can't cope if it loses the ability to generate an airflow for whatever reason

Uganda

Shot for just sixty pounds

Man makes miraculous escape from roadside bandits

It was a routine trip that turned into a nightmare. The two-hour drive from Matany to Soroti in north-east Uganda is known for its terrible road conditions, not its terrible danger.

Driving slowly to avoid pot holes, the man – whose name remains unknown – saw four figures ahead of him. Edging towards them on his motorbike the terrifying reality unfolded. All had AK47's and were ready to shoot.

The bullet hit him in the upper-right arm, shattering the bone and immediately rendering it useless. Thumping into the dirt, he was certain he would now be killed.

Instead the bandits stole the cash from his wallet, amounting to the equivalent of just £60, then disappeared.

On hearing the gunshots, nearby locals reported the incident to the nearest army post, who later found the man and took him to hospital. As he writhed in pain, the medical centre cleaned and disinfected his wound. To save his arm – and his life – extensive surgery was needed. But specialist treatment was a six-hour drive away in the country's capital.

There simply wasn't enough time. The hospital made a call to MAF.

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Above: Loss of tail rotor efficiency occurs when the airflow through the tail rotor is altered or disturbed. General guidance to avoid getting into it includes avoiding combinations of crosswinds at low airspeeds, uncommanded yaw, large and/or rapid collective and/or yaw inputs at low airspeed, and low speed in turbulence

FODCOM 1/2004, among others. There is also guidance now in AIC Pink 066/2013 and EHEST's HE1 Training Leaflet (*http://easa.europa.eu/essi/ehest/2010/10/leaflet-safety-considerations/*), all of which describe LTE and give guidance as to how to avoid or exit it.

General guidance to avoid getting into it includes avoiding combinations of crosswinds at low airspeeds, uncommanded yaw, large and/or rapid collective and/or yaw inputs at low airspeed and low speed in turbulence. Getting out of it generally requires gaining airspeed and reducing power wherever possible.

Back in the day we'd call it 'tail rotor stall', if we gave it a name at all, and that's a pretty decent way of imagining what's going on. Without wanting to get deeply into the aerodynamics of it, what's usually happening is that you've got a boot-full of pedal and then, for some reason or other, there's a rapid requirement for more power or there's a loss of airflow, whether that be from a gust of wind, blanking from the fuselage, disturbed airflow from the main rotor or a pitch input, and the tail rotor simply can't give any more.

Call it stalling if it makes it easier to visualise and you can easily imagine that if the tail rotor isn't producing as much power as you need then you're going to rotate, and if you're in the hover when this happens you can neither reduce power nor gain airspeed unless you're at altitude, and even then you'll have an exciting few seconds and will learn the colour of adrenaline.

Modern thinking is that it's not really stalling of the tail rotor, but when you're explaining it to new students and those who aren't fortunate enough to fly helicopters it's a good metaphor and it teaches good airmanship, and it comes to the same thing. What do I mean by good airmanship? Well, always think about where the wind is and what effect it might be having on the tail. Think about where the downwash from the main rotor is going and be aware of the amount of pedal you've applied. Don't put yourself in a situation where you've got low airspeed, the power pedal a long way forward and a crosswind. If you've ever found yourself doing a spot turn and running out of pedal then you've been closer to LTE than you might like to think.

I nearly killed myself during training when practising zero-speed autorotations as a very junior midshipman on 705 Squadron; I left the transition to a normal auto (nose forward to increase airspeed) too late and instead raised the lever to go around. Bad mistake. The recovery from my error required even more loss of height and left me shaking for ten minutes after I'd put the thing back on the ground.

As a consequence, whenever I find myself in a similar environment nowadays I get a shiver up my spine and I know that I have to do something about it and fast. The trouble is that most helicopters are so powerful and capable that they give the illusion that they're now immune to a lot of the problems that we used to have. Take the EC135, for example: it's almost impossible to demonstrate incipient vortex ring because as soon as you pull power it climbs out of it; this isn't supposed to be possible according to conventional wisdom since pulling power is supposed to put you deeper into vortex ring. It also has an approved rate of turn of 60°/sec (under certain conditions), which is far faster than you would ever want to turn, which can lead new pilots into a false sense of security.

So then (and now I'm preaching to the old and bold), just because we weren't taught about LTE and just because you have a powerful new machine doesn't mean that it doesn't exist; it's just been given a fancy name. It's been around all the time as one of those things that we were brought up to be aware of because we had aircraft that were gutless or had poor tail rotor authority, so make sure that the youngsters know about it and, despite your inner voice saying "there's no such thing as LTE", calling it an airmanship issue just doesn't cut the mustard any more. And to those of you who still don't believe it exists, I know where there's an Enstrom A available for hire, and you're welcome to join me. CU

ABOUT THE AUTHOR

Capt Nick Gribble started his career flying anti-submarine Sea Kings in the Fleet Air Arm, leaving as a QHI/IRI after eight years to avoid going nowhere. Since then he has flown Search and Rescue in Ireland and the Outer Hebrides, light helo charter and instruction in the South of England, and to the rigs from Aberdeen. Seven years as a Flight Operations Inspector with the CAA followed and then, having spotted a potential gap in the market related to Instrument Flight Procedure design, he set up gCAP in 2003 and now consults for the helicopter industry.

TACKLING LTE

In the case of the Hughes incident, the AAIB said: LTE occurs when the airflow through the tail rotor is altered or disturbed, rapidly altering the thrust produced by the tail rotor.

The disturbance to the airflow can be caused by the downdraft from the main rotor, the main rotor blade tip vortices, or by naturally occurring turbulence or wind.

Flight conditions more likely to induce LTE include: high power settings and/or slow forward airspeeds, typically where translational lift is in the process of change and where the relative airflow is within plus or minus 15° from the 10 o'clock position for helicopters with anti-clockwise main rotors. For these types there is a greater susceptibility to LTE during turns to the right. Helicopters with clockwise main rotors are more susceptible to LTE when the relative airflow is within plus or minus 15° from the 2 o'clock position and during turns to the left.

Further information: The EASA PPL (H) syllabus, Flight Exercise 18 (d), covers loss of tail rotor effectiveness.

The dynamics of tail rotors/loss of directional control is also covered in the PPL(H) Theoretical Knowledge (both Principles of Flight and Operational Procedures sections).

EASA's statement on LTE: Theoretical and flight training should be conducted by approved training organisations and instructors having appropriate experience and knowledge of this phenomenon.

The Agency further recommends that any PPL(H), CPL(H), ATPL(H) and Flight Instructor training courses include sufficient and dedicated training on LTE and recovery actions.

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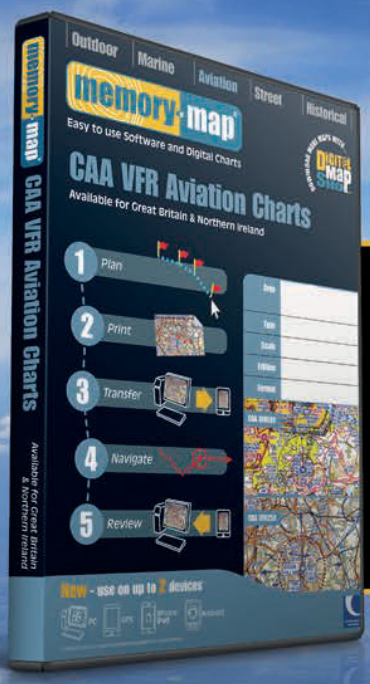

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GETTING THE BASICS

Confused by the Flight Information Services or not sure you're getting the Service you need? Here's how to be well served

ALL PHOTOGRAPHS BY SIMON FINLAY AND BRIAN BARR | WORDS BY DARREN LEWINGTON

"G ABCD is 20 miles north, 4,000ft passing west abeam Gloucester, can you give me a Basic Service and do you have any conflicting traffic?"

This particular pilot has plied this route for more than 20 years in a couple of different aircraft, following the reciprocal track a day or two later. His dulcet tones are familiar to the ATC staff, as is his seemingly innocuous request. Technically, the answer to his question, however, is "Errr... not really!" This perhaps highlights that the 'new' UK Flight Information Services are still causing a bit of confusion among the GA community.

They're not actually as new as you might think. Introduced back in March 2009 in a bid to standardise Flight Information Service provision between civilian and military units, the services have had a few tweaks since introduction. They meet the ICAO requirements, but are unique to the UK. Ask for a Basic Service in Europe and you'll probably be met with a "say again?"

So what can you get? Where can you get it? Is it what you really need?

BACK TO BASICS

The clue really is in the name. Replacing what we formerly knew as Flight Information Service, Basic Service will be provided by all ATC Units (Callsign 'Radar' or 'Approach') that operate outside controlled airspace and all AFIS stations (Callsign 'Information'). Provided to everybody, whether IFR or VFR, VMC or in the cloud, all you can realistically expect is probably the weather. Some units, especially those with full ATC, might be able to tell you about danger areas or closed aerodromes etc., but don't expect much more! On a gin clear day when everyone's airborne, it's little more than a callsign collection service and you won't get it at all from an A/G service (Callsign 'Radio').

1. and 2. ATC Units will be as helpful as they can, but the trick to getting the best from them is to know what the services offer and what you want – and listen out

What you should not expect on a Basic Service is specific traffic information. You might be told about generic stuff, like "XXX gliding site is active" or "intense activity in the vicinity of XYZ". At best, you may be told if another pilot is estimating the same position at the same or a similar time and altitude, but if you want more, you need a different service.

However, here's where it gets a bit complicated. Some ATS units might identify you by giving you a squawk. This helps them monitor your progress, but you shouldn't assume they will be, or that a different service is being provided. Furthermore, if an ATS unit is providing you with a Basic Service and the controller or FISO thinks that there's a definite risk of collision they should actually pass you specific traffic information after all. Why? Well, in addition to the vast amount of paperwork a mid-air collision creates, Controllers and FISOs have a legally defined 'Duty of Care' to you as their customer. It is, in fact, these legal obligations of individuals and companies that form the basis for the services. In an 'uncontrolled' environment, ➔

however, it is recognised that not every eventuality can be covered and they need to exercise their professional judgement to suit the circumstances.

By its very nature, application of this is open to a fair amount of interpretation. While controllers are actively discouraged from passing specific traffic information under a Basic Service – so that the services are applied consistently – the interpretation of 'a definite risk of collision' can be somewhat subjective. Without radar (e.g. Cranfield, Shoreham, Carlisle, Redhill and sometimes Gloucester, Cambridge, Coventry and others) they'll probably be more inclined to tell you about aircraft at the same level. Lookout and avoiding action remain the pilot's responsibility. You'll probably only be told once. Not comfortable with this? Traffic Service might be the answer.

TRAFFIC, TRAFFIC

Similar to what used to be 'Radar Information Service', Traffic Service will only be provided by units with access to radar equipment. There's no point asking "XYZ Information," they don't have the kit or qualifications to help you with this. The AIP will tell you which aerodromes have radar and the NOTAMs will tell you when it's not available. Provided to both IFR and VFR flights, ATC will 'identify' you with a squawk or, in some cases, a turn, and generally give you traffic information on relevant aircraft coming within 3nm and 3,000ft. If the other traffic is passing behind or diverging this might be omitted and, in theory, you'll be passed information that is pertinent to you in sufficient time for you to think about avoiding action. Here's the nub: if avoiding action is needed, it's still your responsibility. You will not be given avoidance advice on a Traffic Service. Hazy day, busy airspace, this is probably the safety blanket you need.

> Interpretation of 'a definite risk of collision' can be subjective

DECONFLICTION SERVICE

Now only available to IFR flights (in IMC or VMC), the controller will give you headings and levels with a plan to achieve the appropriate 'deconfliction minima'. It's their job to try to assist you in not bumping into other aircraft by generally keeping you 3 or 5nm laterally and/or 1,000 or 3,000ft vertically from everyone else. The distances will depend on what equipment they have. This is the only service under which avoidance advice is given. Outside controlled airspace, this is still not guaranteed and ultimately it remains the pilot's responsibility to avoid a collision.

PROCEDURAL SERVICE

Again, this is now the domain of IFR flights only. Usually provided by airfields without radar, or when radar is not available, the controller will allocate routes, timings and levels that provide standard deconfliction minima (most often 1,000ft vertically) between other aircraft on a procedural service. You may also be given traffic information on other Basic Service traffic if a confliction exists but, as always, collision avoidance is your responsibility.

BENDING THE RULES?

The basic premise of the services was that we all stick to the rules and no one gets confused about what it is they're getting. However, in the 'bandit country' that is uncontrolled airspace, this doesn't always work and the level of service you request and receive is the 'contract' between you and the controller. Sometimes, ATC might ask you to take a particular course of action, such as 'not below/above' a level or to route via a particular point (e.g. north of the Danger Area) for co-ordination purposes – if you agree, you'll be expected to stick to the agreement. These types of 'agreement' are generally for short-term tactical reasons.

SERVICE LEVELS

Controllers should endeavour to give you the service you request. Practicalities and pragmatism need to be considered though. If it's a clear, cloudless day and it has taken you ten minutes to get your call in on the frequency, the controller's workload is likely to be too high for the more sophisticated service levels. By the same token, if you find yourself unexpectedly in the murk, you can request to change to a more appropriate service.

The trick for all parties is finding the balance. Know the services, know what the unit you're talking to is capable of providing and think about the situation you're in and you should have a reasonable chance of getting what you need. Your pre-flight planning really needs to include a thought process about the optimum service, and what your contingency is if that's not available. CU

3. Know what the unit you're talking to is capable of providing and think about the situation you're in and what service you need. Controllers should endeavour to give you the service you request, but practicalities and pragmatism need to be considered

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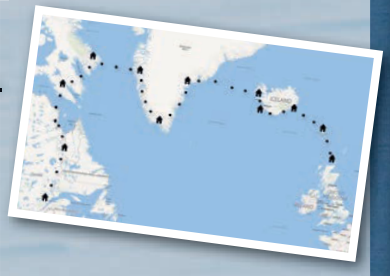

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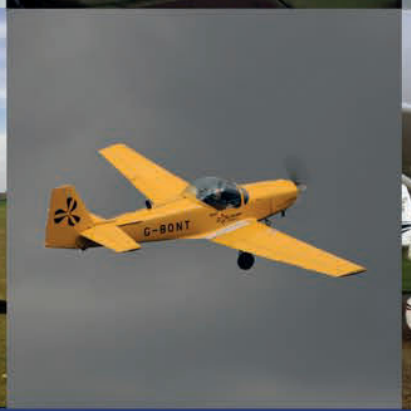

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01

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Why did diesel D-EESE ditch?

INCIDENT DETAILS

Aircraft Type
Cessna F172M

Date and Time
November 15 2013 at 16:30

Pilot's Flying Experience
CPL, 32 years old, 809 hours,
783 on type
Last 90 days, 205 hours
Last 28 days, 43 hours

THIS IS AN INTERESTING REPORT because it relates to a Cessna F172M that had been retrofitted with a diesel Thielert engine (now Technify Motors GmbH). Retrofitting a diesel engine is something that some aircraft owners and flying schools are considering as the cost of AVGAS continues to increase.

The 172 (D-EESE as in diesel) was on a photographic sortie in 2013 (the AAIB's report into the accident was released in September 2014). The pilot started his aerial work over the Lough Shellin area of County Westmeath but ended up ditching in Lower Lough Erne after the engine failed.

The pilot didn't see anything abnormal in his pre-flight checks and, after normal engine power checks, took off at 1030 hrs and climbed to an initial operating height of approximately 2,000ft. At about 1625 hrs, on completion of his task in the Belturbet area of County Cavan, the pilot selected climb power (100% load and 2,300rpm) to cruise-climb back to 2,000ft.

However, the load display on the combined engine instrument display was reading only 74-79%, despite there being no other warnings or cautions and engine oil pressure was still indicating in the green. The pilot was concerned, so he discontinued the climb and levelled off at about 1,200ft agl, reducing the engine load to 60% as he did so.

After a few minutes, as he assessed the situation, he saw that the engine oil pressure had dropped from green into the amber sector; he transmitted a PAN. This was soon followed by a MAYDAY call as the oil pressure dropped into the red and he saw that both airspeed and altitude were decreasing.

After conferring with his passenger, he decided that, in the absence of suitable fields, he would ditch in Lower Lough Erne. Having selected an area of the lough, the occupants noticed blue smoke passing both doors but they could not recall whether the propeller was still turning. The ditching was carried out successfully and the aircraft remained upright.

The pilot and passenger could not open the doors due to water pressure, so they evacuated via the left window. As they swam ashore, they were met by local passers-by who walked with them to a nearby house where the emergency services attended.

What's surprising is that the AAIB has been unable to determine the date of the diesel engine retrofit (or the organisation) that carried out the work. The engine had flown 694 hours since new and 91 hours since a 'last shop visit', the nature of which is also unknown.

The TAE 125-01 engine, also known as the Centurion 1.7, is a four-cylinder turbocharged diesel engine based on an automotive engine. It is liquid-cooled and has a wet-sump oil system. The constant speed propeller is driven by an integrated reduction gearbox and an electronic FADEC (Full Authority Digital Engine Control) system monitors and controls engine and propeller operation.

After the 172 was recovered from the water, the FADEC was removed and its non-volatile memory downloaded. Several parameters, including engine load, rpm and fuel and oil pressures, were recorded continuously and it was observed that the engine oil pressure started to reduce some 15 minutes before ditching. The pressure was almost zero at the point of ditching and the rate of reduction was roughly linear. The remainder of the engine was sent to the manufacturer for a tear-down inspection.

They reported that the turbocharger main bearing was badly degraded. In addition, one of the bolts securing the oil pump in the engine sump to the integrated oil pressure gallery was found backed off to a noticeable degree, while its adjacent bolt was found to have very little torque remaining – in short, the oil pump was loose. In addition, the 'o' ring seal associated with the loose bolt was found to be broken. Either or both of these defects could result in a loss of oil delivery and pressure to the turbocharger. The manufacturer is not certain whether the broken 'o' ring caused the bolt to lose torque or vice versa. CU

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02

Europa stalled on base leg

DURING FLYING TRAINING it's necessary to demonstrate a stall in the final approach configuration and in a turn on to final because the focus on looking at the runway can draw pilots away from monitoring their airspeed. In the case of G-GBXS, an Europa XS, evidence in the AAIB's report (August 2014) suggests that the airspeed decreased during the turn on to base leg at an airstrip at Common Farm, Wymeswold, Leicestershire, "probably resulting in a stall and subsequent loss of control".

The pilot had chosen to fly a low-level circuit to land back at the farm strip from which he had just departed, most likely in response to an engine problem. Control was lost during the base turn and the aircraft struck the ground in a steep nose-down attitude, fatally injuring the pilot and passenger. There was insufficient height to effect a recovery.

A locally based pilot (Witness A) had spoken to the pilot and passenger on the day and had watched the take-off from the airfield gate. He considered that the take-off and initial climb looked and sounded normal but as the aircraft made a left turn crosswind, it rolled abruptly to the left by about 70°. The witness believes he saw large elevator and aileron inputs as the aircraft recovered to an approximately wings-level attitude. It then proceeded on a downwind heading. He continued to watch the aircraft, which now appeared to be operating normally, until it passed from his view on the downwind leg. He then left the airstrip. At about 1900 hrs, the wreckage of the aircraft was found in a field adjacent to the south-eastern end of the airstrip. The impact attitude was 25° left-wing-low and 80° nose-down.

INCIDENT DETAILS

- **Aircraft Type**
  Europa XS
- **Date and Time**
  August 21 2013 at 13:17
- **Pilot's Flying Experience**
  LAPL, 56 years old, 460 hours,
  104 on type
  Last 90 days, 20 hours
  Last 28 days, 1 hour

G-GBXS was built in 1998 and had flown 1,328 hrs at the time of the accident. The aircraft was issued with a Permit to Fly on August 12 2012. The aircraft was equipped with a stall warner, consisting of a tube mounted in the wing leading edge, a pressure switch and an electric buzzer. Results of flight tests conducted on G-GBXS for the renewal of its Permit to Fly gave a clean stall speed of 54kt and a flaps-down stall speed of about 46kt. The stall warner activated approximately 7kt above the clean stall speed and 11kt above the flaps-down stall speed.

The GPS and a FLYdat engine monitor were recovered from the wreckage and both held data used in the investigation. The stall warner was tested and operated satisfactorily. The airspeed indicator calibration was tested and found to be within 3 to 4kt in the speed range from 40 to 70kt.

From the GPS data of where G-GBXS was on the downwind leg, investigators worked out that to avoid significantly overshooting the runway centreline, the pilot would have had to have accomplished the turn in a lateral distance of around 240 metres. Assuming an entry airspeed of 59kt, this would have required an average angle of bank of 38°. The result of applying this bank angle would be a load factor of 1.14, resulting in an increase in the aircraft's clean stalling speed from 54kt to 61.6kt, and an increase in the flaps-down stalling speed from 46kt to 52kt.

The first sudden roll excursion observed by Witness A during the crosswind turn was consistent with a low-speed stall, from which the pilot recovered.

GPS data showed that the airspeed was approximately 10kt above the clean stall speed during the downwind leg but on the base turn the airspeed decreased significantly. It is likely that the pilot would have been looking out during the base turn and concentrating on aligning the aircraft with the runway. If the pilot's attention was focused on looking out and successfully completing the turn, he may not have been aware of the decreasing airspeed and the risk that posed. CU

03

Loss of directional control on landing

THE PILOT, who was undergoing a tailwheel conversion course, flew four approaches and landings that were described by the instructor as of a high standard. The instructor then briefed the pilot to fly two solo circuits. The pilot said he made a normal approach and a three-point touchdown but, during the ground roll, the aircraft ground-looped. It yawed left through 360° before coming to a stop, during which time the right-hand wing touched the ground and was damaged. The pilot could not explain the ground-loop, which followed a normal approach and landing. His instructor suggested that he may have opened the throttle after landing, although the pilot had no recollection of so doing. CU

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04

Lack of planning and reliance on GPS

THIS ACCIDENT HAPPENED 11nm south-east of Bristol International Airport while the TB10 was making its way back to its home airfield at Henlow. The pilot had left Henlow on a Friday to visit friends near a farm strip near Taunton (and entered 1nm into Luton's zone on the way down there).

He was due to fly back to Henlow on the Sunday. However, the pilot obtained only minimal meteorological information before the flight home, which led him to believe that conditions were suitable. In actual fact, poor weather conditions were forecast along his planned route. When the aircraft encountered this poor weather, it started circling and descended to a very low level. It came within close proximity of a tower, forcing the pilot into an avoiding manoeuvre. This placed the aircraft in an unusual attitude at low height and in very poor visibility, a situation the pilot had neither the training nor experience from which to recover.

Eyewitness accounts from people working on the tower (at an abbey) state that the aircraft made a sudden manoeuvre that appeared to be a deliberate action by the pilot to avoid the tower. From the recorded data and witness accounts, the aircraft descended in a more or less continuous right-hand turn to a very low height in poor weather.

The investigation considered that either navigation problems or the poor weather itself (or a combination of the two) were the most likely reasons for circling so low. It was an unfamiliar area for the pilot yet he hadn't planned on a chart or prepared a navigation log for the flight and was therefore dependent on his tablet computer. Even in fine weather, his ability to navigate without the computer (and no chart as backup) was uncertain (as a Luton airspace infringement incident on the Friday on his way down illustrated).

The AAIB's investigation tried to explain why the pilot embarked on the flight when poor weather conditions had been forecast. There was time before the flight to obtain the latest weather forecast and reports from airfields en route, and the pilot had the knowledge to do so.

He probably regarded his tablet computer as his main source of weather information, but he did not download any weather pertinent to the accident flight. The farm owner had Wi-Fi, but the pilot did not ask for access to it, nor to use the farm's own computer.

The apparent lack of other navigation planning is also notable, such as the planned route on the tablet, which remained unchanged since the outbound flight and was still subject to the waypoint location error. In fact, there was no evidence to suggest that the pilot had carried out any pre-flight preparation at all, other than a telephone call to enquire about the weather at Luton, but nothing for the entire length of his route.

The recovered GPS track showed that the pilot was, at various stages, unable to make progress along his desired route, and he may even have started to turn back. With only basic instrument flying training and no recent practice, it is unlikely that the pilot would have been able to fly and navigate out of the situation using instruments alone. It is probable that he started a descent with marginal ground references in an attempt to gain better conditions below the cloud, while probably being unaware at the time that the poor visibility extended to ground level.

The avoiding action described by witnesses would have been an instinctive reaction by the pilot when faced with a possible collision. It is likely to have been quite a violent manoeuvre, causing the aircraft to enter a dynamic pitching and rolling manoeuvre with an upward vector. The pilot had neither the training nor experience to recover from such a situation in the little height available. The proximity of the accident site to the tower and the nature of the accident site itself suggests that the aircraft entered a climbing, rolling manoeuvre which resulted in the aircraft's nose dropping before it entered a steep final descent. CU

INCIDENT DETAILS

- **Aircraft Type**
  Socata TB10 Tobago
- **Date and Time**
  September 30 2013 at 10:51
- **Pilot's Flying Experience**
  PPL, 66 years old, 332 hours
  (of which 34 were on type)
  Last 90 days, 9.5 hours
  Last 28 days, 3 hours

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Cessna 152
Westfield Farm, 7 miles SSW of Cranfield Airport
May 19 2014

Approximately 45 minutes into the flight, and flying in the cruise at approximately 2,300ft, the Cessna's engine started to run rough and the rpm started to slowly reduce. After confirming the engine indications were normal, and the mixture control was 'rich', the pilot applied carburettor heat for 15 to 20 seconds. The engine rpm reduced with the carburettor heat on and recovered when it was off.

After a further three to four minutes the engine rpm reduced again and the pilot couldn't maintain height. The throttle was moved fully forward and the pilot confirmed the magnetos were at the 'both' position and the fuel primer pump was closed and locked. A 'Mayday' call was made to Cranfield Approach, who had been providing a Basic Service, and the pilot positioned for a field landing.

During the approach he noticed telegraph poles in the field and aimed for a second field. Although the touchdown was about one third of the way into the field, the pilot was unable to stop the aircraft before it ran into bushes and a ditch. The cause of the loss of engine power has not been established.

Replica Sopwith Triplane
Old Warden Aerodrome
June 29 2014

The aircraft was participating in an air display flown by a qualified test pilot. He provided the following handling notes to the investigation. The Sopwith Triplane, in common with aircraft of the era, cannot tolerate any crosswind component on landing and must be landed exactly into wind. The approach is normally flown steeper than what would be considered normal in a more modern aircraft, with sideslip used to reduce excess height. The nose of the aircraft obstructs the pilot's view forward and down. Handling of the Clerget rotary engine during the approach, landing and go-around is very different from that of a more modern engine, and requires considerable manipulation of the air, fuel and ignition controls throughout.

The pilot took off from Runway 03, but during the display the wind backed and increased so he decided to land into wind across the centre of the airfield. On approach, before the airfield boundary fence disappeared from view, he assessed that his projected flightpath looked correct for a touchdown well clear of the fence.

Video footage showed the aircraft rate of descent increase momentarily several times during the approach. The pilot said he was performing engine management tasks and did not notice the loss of height. No longer able to see the fence, he continued towards his initial aiming point but the flatter approach angle resulted in the aircraft's left main wheel striking the top rail of a tubular steel gate in the boundary fence.

The pilot estimated the impact occurred at about 50mph and the aircraft immediately pitched down onto the ground, ending up vertical, resting on the engine and the leading edge of the top wing. The pilot made the aircraft safe and was quickly assisted from it. The pilot considered he escaped injury because he was wearing a properly adjusted four-point harness.

Cessna 152
Sleap Airfield
July 23 2014

Following a normal glide approach from downwind, the 64-year-old student pilot flared slightly late, resulting in an early touchdown and bounce. After a second bounce, the nosewheel struck the runway, damaging the propeller and nose gear. The pilot, who was practising for a Skills Test, thought he should have flared a little earlier and allowed excess airspeed to wash off before touchdown. He also noted that a go-around might have been an option after the initial bounce. His instructor reported that the landing was on all three wheels together at what appeared to be a slightly faster speed than normal, after which the aircraft may have been subject to a pilot-induced oscillation.

Cessna 152
Sturgate Aerodrome
April 13 2013

Prior to the flight, the 86-year-old pilot had been briefed by the aeroclub duty pilot that the wind had been recorded gusting up to 20kt, but appeared to have subsided. During the subsequent flight, the pilot experienced blustery and unstable flying conditions. In the later stages of the approach the pilot reported experiencing significant turbulence and, at approximately four feet above the runway, the aircraft "dropped to the ground without warning" and landed heavily. As the pilot taxied back to the parking area, the aircraft appeared normal. However, closer inspection of the nosewheel revealed damage to the wheel and bearing.

Cessna 152
Netherthorpe Airfield
April 1 2013

The 33-year-old student pilot attempted to use the controls to hasten touchdown after a bounced landing but the aircraft landed heavily on its nose gear, which collapsed. The pilot described feeling a need to land the aircraft in the reducing runway length available, so he moved the control column forward to try to expedite the landing. His instructor commented that, had the pilot selected and held a landing attitude or executed a go-around, the accident might have been avoided

The AAIB commented that the "urge to complete a landing following a bounce or misjudged flare can be strong, particularly for inexperienced pilots and/or where the available runway is limited".

Cessna F172M Skyhawk
Derby Airfield
5 June 2014

The pilot joined the visual circuit at Derby downwind for Runway 28. He flew a normal 60kt full-flap approach into a 15 to 20kt headwind. Encountering wind shear on short final, the aircraft sank rapidly and the pilot was unable to counter the sink before the aircraft struck power lines across the approach path.

The cables snapped but remained tangled in the propeller, causing the aircraft to yaw to the left before it struck the ground short of the runway threshold. The impact was nose-low, right-wing-

/ INCIDENT REPORTS

low, with the cables still tangled in the propeller and aircraft.

Before the flight from Glatton, near Peterborough, the pilot obtained weather information for East Midlands Airport, about 10nm to the east of Derby Airfield.

The forecast was for a surface wind of 16kt from 260°, with good visibility and scattered cloud. There was a 30% probability between 1200 hrs and 1600 hrs of winds temporarily increasing to 19kt and gusting to 29kt, after which it was forecast to abate. At 1120 hrs on the day of the accident, East Midlands reported a surface wind of 10kt from 280°, and at 1150 hrs a wind of 11kt from 290°. The flying school based at Derby reported that the wind, while noticeable, did not restrict normal flying training taking place.

Cessna 175B Skylark
Near Slinfield
April 24 2014

The pilot (an ATPL holder) was intending to depart from Slinfold for a local flight; the wind was light, from 220° at 5kt, favouring the grass Runway 22, which has a length of 650 metres. He taxied to the start of the runway with flaps set at 20° for a short-field takeoff. The roll was normal until, approaching 45kt, acceleration appeared to cease and the speed remained steady.

A nose-up attitude was progressively adopted but the aircraft would neither accelerate nor lift off and the stall warning sounded. The pilot realised he was approaching the point at which he had lifted off on a flight earlier that day and decided that the aircraft's performance was degraded. Abandoning the takeoff, he closed the throttle and applied full braking but realised he would probably fail to stop before the end of the runway.

He shut down the engine before the aircraft left the runway and rolled into a ditch at about 5kt, detaching the nose gear backwards and the propeller struck the ground. It came to rest with the mainwheels in the ditch.

The pilot could not offer a conclusive explanation for the lack of performance but believed that carburettor icing might have been responsible. He had applied carburettor heat for about ten seconds as part of the pre-take-off power checks, but a period of about five minutes had elapsed between then and the departure attempt.

Cirrus SR22
Bembridge Airport
April 12 2014

After flying in from Fairoaks in Surrey to land at Bembridge, the touchdown on the main wheels resulted in a bounce followed by a second bounce on the nosewheel. The pilot applied power to go around and climbed away, but although the engine appeared to be running smoothly, the aircraft did not achieve its normal performance. He decided to return to Fairoaks instead of re-attempting a landing at Bembridge, but the aircraft would only reach about 80% of its normal cruise speed. After landing, it could be seen that the propeller had struck the ground and there was also damage to the nose landing gear and spat.

Tiger Moth
Rendcomb Airfield
May 2 2014

While landing, the aircraft bounced and flipped inverted, causing extensive damage. The pilot acknowledges that he had failed to set up the aircraft's attitude correctly on landing.

Ercoupe 415D
Pent Farm, Kent
May 14 2014

The owner-pilot was positioning the aircraft from its home airfield at Manston, Kent, to new hangarage at Pent Farm. Although his licence and medical were in-date, his certificate of experience was not, so he was accompanied by a Qualified Flying Instructor. The pilot positioned the aircraft downwind for a left-hand approach to Runway 07 (a grass strip of 840 metres) and, in his opinion, turned a little too early on to base leg and then had difficulty seeing the strip. As a result he passed through the runway centreline as he turned finals; he regained the centreline and the approach seemed normal if, in retrospect, "a little too fast".

He believes he then flared for touchdown somewhat late and the aircraft bounced as it hit a bump and then bounced again as it hit another. On the third bounce the nose landing gear collapsed. The pilot believes his lack of recency had probably led to a number of misjudgements during the approach to a field with which he was not familiar. Having bounced once, he believes he should have handed control to his instructor.

Piper PA-28-151 Cherokee Warrior (modified)
Leeds Bradford Airport
June 1 2014

With external and pre-start checks complete, the pilot primed the engine and operated the starter, but the engine would not start. He made two further unsuccessful attempts, after which smoke came from the engine cowling. Switching off the electrical equipment, the pilot and passenger evacuated and the fire was quickly extinguished.

The aircraft operator investigated the incident, aided by CCTV footage which showed the pilot making the multiple start attempts that culminated in the engine fire.

The investigation recommended that the pilot receive refresher training to cover all aspects of the private pilot's syllabus, but specifically emergency procedures and pilot actions in the event of an engine fire. On completion of the training, the pilot would be required to complete a check flight before being approved to hire the organisation's aircraft once more.

Piper Tomahawk
Hinton-in-the-Hedges
June 5 2014

Following a heavy landing an instructor instigated a go-around, but the aircraft drifted left of the runway and struck a hedge along the airfield boundary. The instructor had recently received his instructor rating, and on the morning of the accident attended an interview and undertook a checkflight in a PA-38 for a position as a flying instructor with the flying school.

The instructor was offered, and accepted, the position and asked to fly

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with a student in the afternoon. The instructor reported there was a crosswind of 10kt from approximately 10° to 15° to the right of the runway heading. The first circuit was uneventful, but during the second circuit the student had difficulty maintaining the approach speed of 65kt. Passing over the numbers on Runway 24, engine power was reduced to idle and the flare was carried out slightly high. The airspeed decayed very rapidly and the aircraft made a hard touchdown before bouncing into the air and drifting to the left of the runway.

The instructor took control, applied full power and attempted a go-around while trying to correct the drift to the left. The instructor said that, despite checking that the carburettor heat control was fully in and applying right aileron and rudder, he could not correct the drift or gain sufficient airspeed to enable the aircraft to climb out of ground effect. The aircraft eventually became stuck the hedge on the airfield boundary along the side of the runway.

Pulsar
Wing Farm, North Warwickshire
May 6 2013

The pilot reported that he flew from Wing Farm to Bicester on the morning of the accident to carry out a cross-country flight in a motorglider. After a 4.5-hour flight in the motorglider, he cleaned and put the glider away, then departed in the Pulsar at approximately 1730 hrs.

The wind was from 200° and on arriving at Wing Farm he positioned for a landing on Runway 29, which required a curved, left-hand approach to remain clear of a number of trees. The sun was low on the horizon.

The first approach was flown slightly fast and the pilot decided to go around. On the second approach he selected full flap which, with the recommended approach speed, resulted in a slightly nose-high attitude. The combination of the nose high attitude and the left bank for the approach meant that the pilot did not realise that the crosswind had caused him to drift toward a tree on the right side of the approach.

The aircraft flew through the top of the tree, damaging the wings and propeller. The pilot landed straight ahead in the field adjacent to the runway. He believed the accident occurred due to tiredness and his decision to land into the sun.

Robin CEA DR400/120
Near Ross-On-Wye
April 15 2014

The Robin DR400 had been airborne for about ten minutes when the engine stopped and could not be restarted. A forced landing was made into a ploughed field but the nose landing gear collapsed. It was found that very little fuel remained in the tank and the fuel quantity indication sender was defective. In addition, the metal strip used to dip the tank had the potential to give a false indication.

Vans RV-6
Gloucestershire Airport
April 21 2014

The aircraft had landed on Runway 04 at Gloucestershire Airport after a normal approach. During the rollout, Air Traffic Control (ATC) instructed the pilot to take the next exit on the right, but as he was about to respond the aircraft swung to the right and left the paved surface. It completed a 360° groundloop before coming to a halt back on the runway. The pilot taxied back to the hangar. It was found that part of the left main wheel spat had detached and the left landing gear leg was bent. He believes that lack of experience on type, coupled with being momentarily distracted by ATC, allowed the swing to develop out of control.

Vans RV-7A
Goodwood Aerodrome
May 31 2014

The pilot said he made a normal landing on both main wheels, but towards the end of the ground roll, the nose leg collapsed and the aircraft skidded to a halt. The pilot described the condition of the grass runway as 'soft' and believes it is possible that the nosewheel struck a divot.

The Airfield Manager informed the AAIB that aerodrome staff carry out a detailed assessment of the grass runways every day and, if the surface is considered to be in a poor condition, will either close that area of the airfield or not permit it to be used for touch-and-go landings. On the day of the accident the condition of Runway 32, on which the pilot landed, was assessed as: "Surface firm to soft with a few puddles. Land left or right of centreline 14/32 due surface condition." Touch-and-go landings were permitted.

Zenair
Easter Airfield, Ross-shire
July 1 2014

Shortly after take-off for a local flight the canopy blew open and shattered. The passenger was able to hold down its remains to stop it flapping and the aircraft landed back at the airfield without further incident. There were no injuries and, other than the canopy, the aircraft was undamaged. The canopy latch locking pin had not been properly engaged and allowed the latch to vibrate loose in flight.

Ikarus C-42
Leicester Airport
April 11 2014

After take-off, the pilot could not reduce power from the take-off setting. He climbed overhead the airfield before intentionally stopping the engine and carrying out a glide approach. An area of 'sink' caused the aircraft to land heavily short of the runway. The throttle linkage had fouled a hole in the centre console side panel, causing it to jam. This was a problem known to the agent/distributor for Ikarus, who had issued a recommended Service Bulletin (SB) 28 in 2010 containing details of an inspection and modification to overcome it. G-DASS did not have the modification.

Zenair CH-701
London Colney Airfield
June 22 2014

The aircraft landed heavily after what the pilot felt was a normal approach. During the ground roll the nosewheel collapsed. After leaving the aircraft the pilot discovered that the left wing rear attachment had failed. He thought this was probably caused by the rapid deceleration after the nosewheel collapsed. The pilot considered the heavy landing was as a result of misjudging the height of the flare in unusually light wind conditions.

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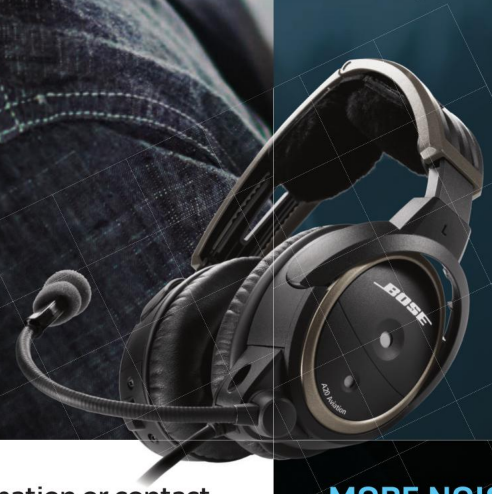

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