

Instrument Pilot

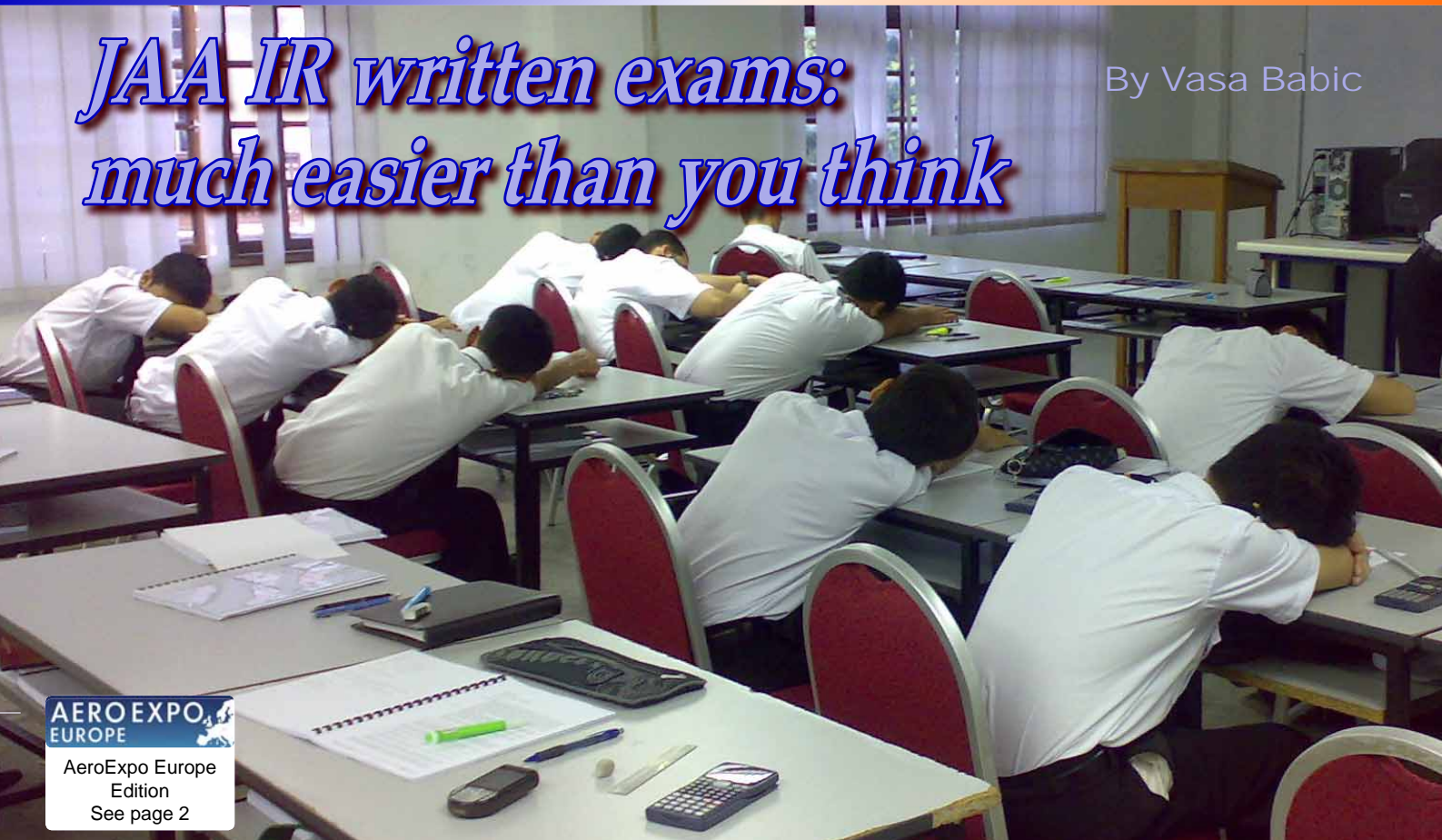
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JAA IR written exams: much easier than you think

By Vasa Babic



AEROEXPO
EUROPE

AeroExpo Europe
Edition
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- 1 The JAA IR theoretical knowledge (TK)
2 exams are a major reason why only a
2 tiny handful of PPLs ever acquire a JAA
2 instrument rating, and why so many private
2 piston aircraft in Europe are operated on the
2 N register. Historically, the requirements for
2 the exams seemed pretty onerous:
5 ☹ There's a very large volume of material
7 to study, with much irrelevant jet and
9 airline content;
10 ☹ You must take an approved course at a
10 cost of approximately £1,500;
10 ☹ You must do four to six months of home
11 study at 15 hours/week;
11 ☹ You must attend two weeks of classes
14 at a TK school;
16 ☹ You must sit seven individual exams;
20 ☹ The exams are available only at the CAA's
Gatwick HQ, once every two months.

In addition, TK schools have tended to emphasise the time and difficulty involved for PPL/IR candidates with work and family commitments. The reality today is that the JAA IR exams are much easier and much more accessible than the 'historical' perception.

What do I mean by 'easier'?

A significant minority of American private pilots pass the FAA IR written exam, generally without much difficulty, so let us use this as our reference. The emphasis I put on the number of questions is not intended to trivialise the exams or the study task – simply to have an objective measure of workload and content.

Figure 1 (on page 3) shows a comparison of the JAA and FAA IR question banks. The rows are the seven JAA IR Exams; the 'M' and 'T' identify the groups of papers available on a Monday versus a Tuesday in the schedule. The JAA numbers are from the question bank provided by a UK school; the FAA numbers are my estimate of how the question bank for the single FAA IR exam maps onto the JAA's seven TK subjects.

How useful is this comparison? The FAA multiple choice questions have three answer options, the JAA ones have four; however, the FAA questions

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For reports on meetings, conferences and other activities attended in the last 12 months by directors and members of the executive on behalf of PPL/IR Europe members, see www.pplir.org – Lobbying

JOHN PAUL MCELVEY

3.2.1959 – 22.2.2009



Paul McElvey died instantly when his glider crashed in South Africa on 22nd February, just two weeks after celebrating his 50th birthday. Seven years ago he and his family moved to Devon but every few months he commuted back to Johannesburg in connection with his work. His pastime was flying, and there is no doubt he died doing what he loved, in the country he loved. On behalf of **PPL/IR Europe**, Jim Thorpe has sent our condolences.

AeroExpo, 12th - 14th June 2009, Wycombe Air Park (EGTB)



Following our success in 2008, **PPL/IR Europe** will be returning for AeroExpo 2009 where we will have a stand and will be running the full seminar programme.

Our two main objectives from the event are to:

- ☞ meet with current IR/IMC rating pilots who are not members and encourage them to join
- ☞ meet with PPLs and encourage them to consider an instrument qualification

We would also like to hear from our current members. Please call at the stand and let us know what we are doing well and also your ideas for improving services to members or attracting greater membership, especially from continental Europe.

By the time IP goes to press, the stand staffing rota may well be complete, but please don't hold back and contact memsec@pplir.org with any offers of help. Those who volunteered last time really enjoyed the sense of involvement with **PPL/IR Europe** and the wider aviation community.

Accommodation and dinner arrangements are on offer for **PPL/IR Europe** helpers and members. Contact memsec@pplir.org to arrange. The AeroExpo web site for 2009 is at www.expo.aero.

***** STOP PRESS *****

English proficiency endorsements for FAA private pilot licences

There is an update on the website giving a definitive ruling from the FAA confirming that the LPR can be obtained without going to the US. There is also new information on how this may be done in practice in the UK.

◀ P 1 tend to have more tricky choices, where knowing all the facts can still leave you wondering about the right answer, whilst the JAA answer choices are more plainly right or wrong.

The time available in the exams is pretty generous in both systems. The pass mark in the JAA exams is 75%, and 70% in the FAA one; however, once passed, the JAA exam mark has no meaning for a non-career pilot; no-one will know or care whether you passed with 75% or 99%. For FAA IR candidates, a very high pass mark is needed to avoid a lengthy oral test from the examiner: these have been known to last several hours.

Finally, although the JAA exams have a much larger question bank in total, the seven papers can be taken in up to six sittings with four attempts at an individual paper. This means that, in principle, the maximum number of questions you must study for a single sitting is lower than for the FAA's single exam although few, if any, candidates bother to spread the papers out over more than two or three sittings. Therefore, the JAA exams are structurally no harder than the FAA ones. Of course, a key issue is the difficulty of the actual questions. How comparable are they? I'll try and answer this by going through each of the JAA papers in turn.

Aircraft general knowledge

The JAA content includes flight instruments, autopilots, de-icing systems and electrics. The topics are all relevant to GA pilots but some of the detail is not. The FAA content is flight instruments only.

Performance and planning

Both the JAA and FAA content is practical stuff on using charts, making performance calculations, preparing flight logs and ATC flight plans. The FAA let you use an electronic flight calculator, the JAA only a circular slide rule and a non-aviation calculator. It's irrelevant, you don't need fancy calculations in either, and I never used my circular slide rule in any JAA exam.

Navigation

Both the FAA and JAA content have two major topics, radio navigation aids and systems, and general IFR chart work. Both include some slightly obscure topics, like microwave landing systems. The JAA syllabus also includes a lot of material on the workings of radar and some GPS and RNAV basics. Otherwise, the main difference is that the JAA course goes into more depth on the technical details of radio aids and instruments.

Human performance and limitations

The FAA exam only covers spatial disorientation and optical illusions whereas the JAA course is a book's worth of material covering flight physiology and flight psychology topics. The actual content is pretty straightforward, so I suspect the large number of questions is partly to make it harder to memorise the answers. Nevertheless, it is one of the easiest exams.

Meteorology

Depth rather than breadth is the main difference between the FAA and JAA exams. Both cover the theory and the practical use of information resources but the JAA theory is much more detailed.

Air law and operating procedures

Both the FAA and JAA cover similar topics. The JAA includes more 'how the system works' detail (for example, on methods and rules ATC applies for separation) and the FAA focus is on 'what you must do'.

IFR communications

This topic is covered by a small number of key questions in the FAA exam. The JAA syllabus stretches it out into an entire exam but it needs only an hour or two of work to assure a pass. This is, practically speaking, a 'free' paper; but it is worth studying properly, because the content is very useful.

The major difference between the two systems is that there are some areas of significantly greater depth in the JAA syllabus, which lead to a much larger question bank. Question for question, I think the 'difficulty' of both systems is comparable. If anything, the volume of JAA questions probably overstates the exam workload: very many questions are variants of the same theme and many are reasonably straightforward and intuitive. A greater proportion of the FAA questions seem designed to be 'difficult' and there is much less repetition of themes in the more condensed FAA question bank. I should emphasise that the JAA syllabus no longer includes any of the airline and jet content which used to irritate PPL/IR students in the past.

In summary, I think each day of JAA IR exams is, in principle, about one to one and a half times as much work as the FAA IR exam. I express it this way because most candidates will prefer to split the JAA papers into two one day sittings, two months apart. Certainly this is a significant difference, but does the extra workload explain the vast difference between PPL take-up of the IR across either side of the Atlantic? I don't think so; I believe the real problem lies with the combination of the JAA syllabus size and the 'traditional JAA study process'.

Figure 1

Question bank comparison: JAA vs. FAA IR theory

	JAA	FAA
Aircraft general knowledge (M)	250	150
Performance and planning (M)	160	150
Navigation (M)	380	200
Human performance and limits (M)	640	25
Meteorology (T)	740	150
Air law and operating procedures (T)	360	200
IFR communications (T)	130	25
	2,660	900

The JAA study process

How does one study for an FAA aviation exam, or a JAA PPL for that matter? In general, you firstly read some books (and/or watch DVDs or use computer-based training) and then you practise multi-choice questions. The training materials are closely aligned to the questions you will be tested on. It's a pretty straightforward and efficient approach. However, for the JAA advanced exams (ATPL, CPL, IR) there is a traditional study process which defines, day-by-day and hour-by-hour, that topic X should be studied during hour Y on day Z, and that test papers N and M should be completed, posted, marked and returned before progressing to the next element of the course. In addition, the volume of study material is significantly greater than the actual volume of tested material (in terms of the question banks). Of course, at an academic level, teaching the syllabus 'properly' is worthy and admirable. But where the syllabus has excessive depth, it is also time-consuming and frustrating. Take the example of the following JAA IR question:

The voltage regulator of a DC generator is connected:

- A) in series with the shunt field coil,
- B) in parallel with the shunt field coil,
- C) in series with the armature,
- D) in parallel with the armature.

In extremis, one could prepare for this type of question in two ways. Either you could learn enough about DC generators to successfully answer any question about them at this level of detail, or you could just learn the answers to the three questions on DC generators in the question bank. In practice, I don't think either approach is right. The syllabus is too broad to learn everything without reference to the question bank, and the question bank is too large to just learn the answers. However, in my opinion, the problem with the 'traditional' process is that it tries to teach the course in the 'learn everything' way, and then reverts to the 'practice the questions' method for cramming before the exams. This means that traditional courses are time consuming and complicated: organising the binders, schedules, test papers, answer sheets, instruction notes and study directions is a challenge in itself. Hence, although the JAA IR question bank is between two and three times larger than the FAA's, the JAA study process multiplies the workload even further, perhaps by a factor of two, leading to the course requirement for hundreds of hours of home study and two weeks of classroom time.

Does it have to be this way?

The view of TK schools in the UK used to be that PPL/IR candidates needed every minute of the typical approved course 'distance learning' and classroom time. For candidates converting an FAA or other ICAO IR, although JAR-FCL exempts them from needing to do an approved course, the schools would typically insist they do one anyway, on the assumption that most could not cope with the JAA exams unaided.

The reality, of course, is quite different. If US PPLs can successfully study for 900 FAA IR questions on their own, by reading materials and practising exam questions, surely European PPLs can study for the 1,300 JAA questions on a given exam day, and repeat the process two months later? In 2008, this point was proved by a group of PPLs from FLYER magazine's web forum, who approached CATS of Cranfield and arranged to take their 'paperless' IR course, based on online study material, progress tests submitted and graded instantly, and access to a web question bank. Instead

of two classroom weeks, CATS arranged three Saturdays to meet the JAA minimum requirement of 20 hours of classroom time. What these candidates found was that reading the study materials and practising the question bank was wholly adequate preparation for the JAA IR exams: they achieved a near perfect first-time pass record. Inspired by this, one FAA/IR applied at the last minute to sit all seven exams in one go, studied for about six days and scored an average of 95%. The irony with the JAA IR exams is that, although they have the reputation of being difficult, very few people ever fail them and most study far more than they need to just pass: scores above 90% are quite common.

Subject	Result	Mark(%)	Attempt
AIRCRAFT GEN KNOWLEDGE (IR)	PASS	90	1
FLIGHT PERF & PLANNING (IR)	PASS	94	1
NAVIGATION (IR)	PASS	93	1
HUMAN PERF & LIMIT (IR)	PASS	93	1
METEOROLOGY (IR)	PASS		
AIR LAW & ATC PROCEDURES (IR)	PASS		
IR COMMUNICATIONS (IR)	PASS		

JAA exams made easy

The JAA IR exams are not more difficult than the FAA IR exam that thousands of American PPLs, of all ages and from every walk of life, pass every year. There are simply more of them, so they take more time. You might prefer a traditional course, and many pilots find the two classroom weeks very worthwhile and enjoyable; but if this doesn't work for you, online courses are available which are much more like studying for an FAA IR or JAA PPL: you read the materials fairly briskly, practice all the computer questions, and then go back to study difficult points as needed. Although there are seven papers, IFR communications is trivial; Human performance is relatively easy; and Performance and planning is a practical test of using charts and tables. Aircraft general knowledge has a fair amount of fact learning, as does the radio aid content of Navigation, but Air law and Meteorology are the only really 'heavy' papers. However, once you've read the

study material, you can click through the entire question bank for each in a few hours to focus on the obscure facts and difficult topics. The cost of the courses has come down to nearer £1,000. An FAA IR conversion candidate will need to sign up for a course, but the school should exempt you from any formal requirements (it's at their discretion). It is a bit of a nuisance to have to go to Gatwick, but the experience at least is a pleasant one. The CAA building is easy to get to from the airport train station, it's a nice environment and you are with a handful of other IR candidates; the atmosphere is friendly and supportive. The Monday and Tuesday exam days mean intensive weekend study will be fresh in your mind.

Just do it!

The barriers I mentioned at the start of this article used to be a pretty high hurdle for most private pilots; just the exams days and classroom fortnight could be half a working person's annual holiday. What has changed recently is that there is recognition in the schools that 'ordinary' PPLs are perfectly capable of performing well in the JAA professional exams. The courses have become much more flexible and accessible as a result, with computer-based question banks as a very efficient learning tool and the option of greatly reduced classroom attendance. Although I've emphasised some of the depth and detail in the JAA syllabus, the great majority of the course is relevant and useful to private IFR flying. Where it isn't (how shall I put this?) you have the option of emphasising question practice over formal study. Look at the courses on offer, choose one that suits you, sign up and book an exam date two months from now. Do some reading and practice questions at evenings and weekends, and you'll pass. It's as simple as that.

The UK schools offering IR courses are listed below. I can unhesitatingly recommend all three; do call them to discuss your needs, they can all be flexible around the basic course outline described on their websites.

AFT: Atlantic Flight Training (Coventry)
www.flyaft.com/ground_modules.html

CATS: Cranfield Aviation Training School
www.cranfieldaviation.com/

GTS: Ground Training Services (Bournemouth)
www.gtserve.co.uk/



'Email me when you make your first IFR trip'

By Graham Duffill

I did my IR with New Horizon Aviation in Providence, Rhode Island last August. It followed that game of consequences that is flying: I have paid for this lesson so I might as well finish; I have a licence and need to fly places to keep it up; the weather is scary, better get an IMC; that doesn't work outside the UK and may disappear anyway, better get an IR.

All this in 170 hours total time. I was a well-qualified student with minimal in-saddle hours. I left the USA with my flying instructor, Radek Wsyslowski, saying: 'Email me when you make your first IFR trip.' Back in Britain that seemed something I could potentially put off for ever. A year after getting my IMC I had not actually flown in IMC on my own. But I knew that I had to use my new qualifications to keep them.

IFR flight planning for real

I joined *PPL/IR Europe*, read the forums and contacted a few members. How do I get charts, what software do I need for flight planning, how do I file an IFR flight plan in Europe? It's a very complex world out there and a long stretch from my simple US phone service.

Through the forums I discovered the web interface (Autoplan IFR see www.autoplan.aero/) which Christoph Edel wrote to check your planned flight plan against the Eurocontrol computer. How to get it to return a route that you want seemed to be an art. If I asked to go from Dover to Amsterdam it would give me the most direct route across the North Sea. Outbound I can select the shortest sea crossing DVR to KOK, but inbound KOK to DVR is not accepted unless I 'trick' it by inserting some mandatory way points. Completely baffling and not a word of instruction or explanation anywhere.

Then I discovered I could file the plan via the Austro Control website called Homebriefing (see www.homebriefing.com). The US, which you might expect to be an online service, pushes you to a telephone filing route while Europe, which you would think might still be telephone based, is online or fax.

Next problem, how to find out the procedures from White Waltham, where my Comanche is based, for joining the airways? Asking around the instructors produced the same non-answer: 'Just get airborne and call-up Farnborough...' I called Farnborough on the telephone. They were extremely helpful and told me to expect to join at Goodwood. They also suggested I call Heathrow to file my flight plan.

I took the chance of a business meeting in Antwerp to opt to fly the journey IFR. My routing was GWC, DVR, KOK, direct



Antwerp. There could not be a simpler flight plan, as I am sure you all appreciate; however, getting this took an eternity and some patient handholding by both Christoph and Jim Thorpe.

Valuable mentoring

Should any of you doubt that you can offer valuable mentoring to a newly FAA qualified PPL/IR pilot do not underestimate how basic our questions can be. I even had to double-check with Jim which way Zulu time went. All the unanswered little questions pile on the stress: if I file for a 13:00 departure what happens if I am late; what happens if Farnborough can't find my flight plan? An answer verified by someone experienced is an issue that has been checked-off and filed, not left hanging open in your mind consuming valuable worry space. Like Homer Simpson, I only have so much disc space available and when it's full, stuff I may need gets pushed off the edge.

By the time I line up on Waltham's quaint grass runway 25 from a former era I am so out of my depth that I know I will be dealing with everything that happens to me on instinct. The first thing that happens is Farnborough get confused when I call them up at 2,000 feet as I depart White Waltham and ask for my IFR clearance to Antwerp. North passes me to South, which passes me back to North. This wastes valuable time and at 150kts in murky conditions I am rapidly approaching Odiham's airspace, which I am quickly reminded to avoid.

When Farnborough finally get sorted out and locate my flight plan I am given the clearance: 'Cleared into controlled airspace, climb to 4,000 feet.' After four years of flying below the 2,500 foot ceiling London TMA, this was an epiphany. OK here we go, I thought, pulling the yoke back - into the forbidden zone. As soon as I hit FL040 the instruction is to climb to FL050 and then FL070. I have to go where I am told, which also means climbing into cloud.

I cannot tell you how terrifying it was to be alone enveloped in dark, turbulent cloud, heading upwards to heights unknown, feeling totally powerless to do anything other than as I am told (and

not at all sure what that will be). I also notice at this point that the manifold pressure is dropping worryingly low. I had applied 25 for the climb, but it had now dropped to 20 and was continuing its way down. What was going on?

I reached FL090 at Goodwood and was given an easterly heading towards Seaford. Seeing the cloud begin to lighten and then popping out of the top of the cloud at FL070 had been a great relief. In brilliant blue sky I felt relatively safe, apart from the worrying manifold which had settled at 19. I cannot remember how many frequencies I had passed through – Farnborough North, Farnborough South, London Control – and for the first time I was level and not reacting to an instruction.

The engine spluttered

So, top of climb checks. Fuel change, radios, engine – I applied carb heat and the engine nearly spluttered to a halt. I quickly deselected carb heat, gulped and my first thought was that I was very glad that I didn't have the family in the back. I applied it again. The engine spluttered and choked. Carb heat off. Somewhere to my left below the cloud there was Seaford and I reasoned I had plenty of altitude to glide there. Carb heat again, more rough running.

Then I realised that mixture was still fully rich as I had not had a second to lean it out. The Comanche's EGT was not working and the only way to lean is by the old fashioned method of screwing it back until the engine note changed. It came back, back and even further back. I knew that as we go higher we can lean further, but it was now almost all the way out and the engine note had not changed but my nerve said enough. I tried carb heat again and it ran rough for a few seconds, but less than before.

I applied it twice more before it sounded normal. It seemed I had had a near escape with icing and I guessed that properly leaned the problem might not return. The manifold was also remaining constant so I guessed that it too was altitude related. (A quick note of explanation: The Cessna 170 I had flown in the US up to FL080 had fuel injection; the only complex I flew there was below 4,000 feet and I had never flown the Comanche above FL040 in the UK before).

I would like to say that at this point I relaxed and looked out of the window, but I couldn't. Instead of giving me a nice direct route to DVR, hopefully clipping the edge of the Gatwick zone, ATC were doing the opposite and vectoring me out over the channel flying parallel with the coast. They were extremely busy barking out an endless stream of messages to the unseen heavy metal heading into and out of the LTMA and I had the distinct feeling that I had crashed a party at which I was not wanted. Like a child at an adults-only party, I was being sent into the back garden to play where I couldn't get under anybody's feet.

The Comanche has a basic Century autopilot which would hold course and keep the wings level. Unfortunately while I was in the US it had been in for its annual and, told the directional gyro needed replacing, the group had opted for the cheapest model that was not coupled to the auto-pilot and had no heading bug. I kept an increasingly long list of last-assigned headings so as to remember where I was supposed to be going. Each time I relaxed my hold on

the controls to check the chart the right-wing dipped and the aircraft started to make a right turn. I had already been pulled-up by London Control for forgetting to change QNH to the standard pressure setting, so I was flying with all the concentration of a student on an IFR exam.

The disc had been full

When I got the end of the British coast I was given a direct to KOK, handed over to Belgian control and the world suddenly got a lot quieter. I wondered if the radio had broken as I got out my approach plates and did the best I could to fly accurately and plan for the arrival at Antwerp. It wasn't long before I started getting descent instructions. The city of Brugge passed to the left and I was vectored towards Antwerp before being put on a final heading at 2,000 feet with the town centre on the nose and told to make my own way VFR and contact Antwerp approach.

I assumed that I had been lined up with the runway and at three miles should be able to see the airport. I scanned the horizon – nothing. Antwerp approach was equally puzzled why I could not see them. Then I finally got it – way to my right. I still don't understand the logic of the approach path I had been put on, but as there seemed

to be no other aircraft in the vicinity I told approach I would join overhead and descend in the normal circuit pattern.

I had made it, but how competently? The flight itself had been, as far as I know, conducted perfectly normally from outside perception (apart from forgetting to set 1013mb). But let's look at the tell-tales. I had left my mobile phone which was my lifeline to all my meetings in the car at White Waltham. That was probably open, as probably was the house front door. I had lived through a totally overloaded high-stress

situation in which my concentration had tunnel-visioned onto the essentials. The reality was that I was in the sort of position where I could easily have left forgetting to fuel the plane or landed with the gear up. I was not really safe because my normal all-round thinking had been severely attenuated. The disc had been full.

My off-blocks time had passed

Leaving the next day was also a whole load of stress. Firstly, security demanded my licence which was in my flight bag in the plane and we had a little stand-off while they refused to let me go airside to get it either accompanied or unaccompanied. Fortunately they finally saw the ridiculousness of the situation when I produced a bit of paper with my landing fee on it. The Avgas station was unmanned and it took half an hour to get served and paid, by which point my off-blocks time had passed. I called up for clearance and after some questioning if I really wanted to go IFR (it was a very nice sunny day) I got a clearance via the NICKY 2 departure. There was no reference to this on my plates, but I kept quiet and reckoned turning to the NICKY VOR on departure would do it and, if not, we would sort it out in the air. Maybe this was wrong, but I felt under pressure to get away and calling out: 'Sorry guys, haven't got a NICKY 2 departure plate,' just didn't sound right. My departure via NICKY went uncommented.

Climbing to FL100 through a cloudless sky I kept

P 7 ►



An irreverent look at ATC

By Adèle Stephenson



When we learn to fly, our hands are full and our ears are trying to keep up with the constant talk in our headsets. The last thing we are going to do is query any instruction from the ground. Air traffic controllers – or those providing a flight information service – are earthbound gods and we would never dream of querying anything they say or not trying to carry out their instructions to the best of our ability.

It makes the task of an instructor difficult when standing up in front of a class of student pilots and pointing out that these earthbound gods are only human and should be accorded both politeness and scepticism within the bounds of R/T procedure and phraseology. And, like all humans, some are better than others. The big difference between Them and Us is that we are on the move in a hostile environment ('if God had meant men to fly etc...') whereas they are comfortably seated and stationary.

Braking action now 'good'

A human element which was only just within the bounds of flight safety presented itself to our crew one snowy night when we were approaching our destination and were told that the braking action was poor. We needed 'good' at this particular airport and advised ATC accordingly. We were immediately invited to hold as the action was due to be re-assessed and BINGO it was suddenly 'good'. The First Officer – who was flying the aircraft – and I exchanged glances but down we went. It was a fine, clear night. As he rounded out for touchdown, the landing lights picked up a completely unbroken carpet of white ahead of us. If the runway lights hadn't been standing above the snow sheet we would not have been able to distinguish the runway from the grass either side. It was too late to go around. We touched down and with some very natty footwork we remained on the runway.

Only later did the light dawn. This airport was under constant threat of closure due to a bigger neighbour which was not too far away. Indeed, this neighbour was our first diversion. Too many diversions to the neighbour would reinforce their argument that the smaller airport was not needed.

A year or so later I was approaching this airport again, once more at night and in snow although the weather was considerably worse than on the first experience. Once again the braking action was given as 'good' and once again the First Officer (a different one) was flying the aircraft. I warned him that the runway

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◀ P 6 sneaking the mixture lever out as I went. It was much less busy than the London departure and I went straight up to 10,000 feet with time to think and monitor the instruments and gauges. Transferred to London Control across the channel I was asked if I wanted to proceed IFR which I affirmed. The same sequence of events happened as on the way out and I was duly sent into the back garden when I had hoped for a direct DVR-MID routing.

I probably flew half an hour longer on each leg than if I had gone VFR. Finally, approaching Goodwood, London Control said that Farnborough were too busy to take me (it was Friday afternoon) and that I had a choice of being vectored 'a long way north' or continuing VFR. It would have been foolish to refuse what was virtually an instruction and I had a new problem as the newly-fitted PT switch was beginning to fail so I was never sure when I was transmitting. I was given a series of descents until at 3,500 feet I was dropped out of the IFR system and told to descend below 2,500 feet and make my own way.

Will I do it again – of course!

Going IFR had cost me more money, the filing procedure had taken up a stack of time and working to an off-block time with no real idea what happens if you turn up late and all the other unanswered questions had frazzled my mind to the point where I could not guarantee I was safe. Will I do it again – of course. But I hope my experience helps illustrate how you can help people like me work out how to plan and conduct IFR flights in the real world. Just checking the homework would be a great reassurance. Helping put together an IFR flight check-list would be of great benefit. And, if you are going on a brief IFR trip alone, it would be great if new members like me could come along to learn and absorb the procedures in practice quietly from the right-hand seat. Finally, if anyone is burning to respond to this article pointing out all the things I should and should not have done, please do so - I need to know for next time.

Graham can be contacted on graham@digitalpc.co.uk



◀ P 8 might well have snow on it and we should be prepared for a very late go around. It was not the same this time, however. The centre of the runway had been cleared, about the right width for a wheelbarrow or bicycle and the braking action for either of these pieces of machinery would no doubt have been good. We did another natty piece of steering and survived unscathed. A further commercial triumph for ATC.

Tailwind, what tailwind?

Less of a triumph for one of our aircraft at an airport with a very short runway was ATC's anemometer giving an incorrect reading. It was night, very dark and with some turbulence. Our team were vectored in and advised that the wind was straight across the single runway (it often was, at that place). The captain elected to land with less than full flap which was a correct company procedure but permitted to be a matter of preference in a crosswind – it gave better aileron control but I always used full everything on the basis that I would hit any obstructions at a slower speed. It turned out that the wind reading was incorrect and he had a slight tailwind – not easy to detect in those conditions. The aircraft touched down late, aquaplaned on a damp surface and reverse pitch could not be obtained. They slid gently off the end and into a hedge. Everyone stepped out and the company was delighted to receive a handsome insurance cheque for an aircraft that it had never liked anyway. The equipment in the tower was criticised in the subsequent report but ATC was commended for sending the passenger bus out 'to meet the aircraft'.

Talking of tailwinds, unless ATC has accurate wind readout and announces a runway change, it is up to pilots to clear their throats and say 'by the way, there appears to be a tailwind on the approach' (Hint, Hint). I am fortunate enough to be doing some ab-initio instructing at an airfield where, first thing in the morning, no one flies but ourselves. This enables some non-standard training. One of the things we do is a downwind approach – but not a landing. As the student sees the correct speed on the ASI but the ground whizzing past at an unaccustomed rate all the while he tries and fails to get a decent rate of descent going, it drives the point home that a forced landing MUST be made into wind and with FULL flap to get the lowest possible touchdown speed. This is readily acknowledged in the classroom (in one ear and out the other) but the point is never forgotten once seen in practice.

On one engine...didn't find this funny

Some airports only have one ILS runway, so it will inevitably be downwind sometimes. If this point hasn't registered and one isn't ready for immediate and positive descent when the glideslope comes in, it will vanish downwards leaving one trying desperately to chase it at an ever-increasing rate of descent.

British ATC is the jewel in the crown – apart from the odd rotten apple, one of which I was unfortunate enough to encounter on my last instrument rating renewal, flying a light twin.

The examiner had booked us in for a couple of approaches. He had told me that we would be using Airport A for the approaches then sprang Airport B on me when I arrived – we were departing from Airport C. My last flight into Airport B had been 10 years previously but I knew their unhelpful reputation. My study of the charts was of a necessity perfunctory and I hadn't flown this particular aircraft before nor the type for very many years. I was therefore going to be working hard. The wind was light and variable at the chosen airport and they were using the ILS runway (single runway). First we were given an extended routing to expedite the arrival of another aircraft – OK by me as I slowed down and managed to rattle off a few checks.

They then gave us a heading for the ILS and in the same breath told us to complete the turn on and, as they were changing runway, to break off at a certain altitude, turn on to a certain heading, climb to a certain altitude, go to the beacon and commence an ADF approach in the other direction. I was on one engine at the time and didn't find this funny. I told them to standby, ignoring the obvious irritation at the other end. After calling established, I repeated back the break off altitude. When we reached it I started to turn in the general direction required, asked them to repeat heading and cleared altitude and said (not requested) that I would be entering the hold. They had to play ball. It was necessary to enter the hold because I had no idea if we had the approach plate for the opposite direction and, if so, I had to look at it and brief both the examiner and myself. The entire episode was motivated by the ATC wish to get rid of us as quickly as possible – after the initial landing traffic there was no one else around.

If that had been one of my first renewals I think I would have been totally thrown because in those days I was programmed to do whatever ATC wanted and now I'm bloody-minded if the controlling appears to be unsafe or unreasonable.

The ATC voice is of secondary importance

It becomes an unsafe experience when student pilots, in particular, are asked to do something which jolts them from their known and safe zone – like a late missed approach with a turn, for example. Matters are then likely to go awry because although they know that 'fly the aircraft' is the priority, it is difficult to hear that small voice against the insistent one of the controller in the headset. Getting across that unless you are about to hit something imminently the ATC voice is of secondary importance is difficult. It is necessary to point out to the student that ATC will have an alternative plan, such as getting the other aircraft to make a missed approach, or turn, or stop climbing – in other words they will get the other aircraft to miss YOU if you don't or can't respond as requested. FLY THE AIRCRAFT. It takes time to get the spare capacity to be aware of the bigger picture. It can only be pointed out to students that this should be an objective for later on. For instrument students the best solution if ATC throws a spanner in the works is always to dive into the holding pattern to get one's mind and paperwork and plan of action sorted out before proceeding any further.

But in 99% of cases British ATC always answer calls, are marvellously helpful in both normal and emergency situations and never argue with your decisions. If the decision is truly bizarre they may make a suggestion and it will probably be extremely useful.

Continental ATC – 'Standby!'

Continental ATC are different – for a start English is not their first language. The French are past masters in either ignoring your call completely or saying STANDBY then going off for a four course lunch somewhere. There is also 'military traffic' which prevents any naughty ideas of yours from coming to fruition – like a direct routing, for example. One of the Paris airports specialised in complicated departure routings and, having briefed to within a cubic inch of one's total brain capacity and lined up for take-off, ATC would say 'After departure turn right on to heading 360'. Phew! That made life easier. On reaching home one would find a noise violation filed for having overflowed half-a-dozen noise-measuring points. This became such a regular occurrence we were required to report changes to departure routings in the post-flight paperwork. I began delaying my right turn slightly, having sorted out where the noise-measuring points were, with ATC screaming 'Turn right NOW'. My reply was 'Company regulation' which it wasn't. But 9▶

The 'new' Chairman's corner

By Anthony Bowles



First I pay tribute to my predecessor, Jim Thorpe. Jim has worked untiringly for our organisation over the past few years culminating as Chairman for the last two and his very important membership of EASA Committee FCL.008 (see his report in IP72). As Jim explained at the recent Shoreham meeting, there are now real prospects of a more attainable PPL/IR; while practical flying standards will remain as at present, the proposals envisage that the theoretical knowledge requirements will be much simplified. The proposed en route instrument rating will provide a useful stepping stone towards the full IR from the basic PPL. While in some respects not a substitute for the approach privileges presently enjoyed by UK IMC rating holders, a final outcome along the lines of the current proposals (and there are many regulatory hurdles still to be overcome) should generally find favour with the IMC community. It will also provide an opportunity and a challenge for *PPL/IR Europe* to which I return later. Meanwhile Jim is taking something of a rest by setting himself some challenging flying targets for later this summer. He remains a member of the Executive Committee and FCL.008 as well as continuing his role as one of our technical specialists.

By way of introduction, I am a lawyer, moving towards retirement but seemingly not ever quite getting there. I got my PPL when I was 25 and my IR some four years later. In those days, mode A transponders and DME were just coming into fashion and formal position reports at each waypoint were still required. 90 channel comm. radios were becoming obsolete but still often seen as the No 2 box. King 720 channel comm. sets were beginning to arrive across the Atlantic and were much admired for their compactness and reliability compared to the heavy old valve sets. How much has changed since then – the dark ages compared

with the glass cockpits and other gizmos of today!

Events and participation

It was good to meet a number of members at Shoreham and I hope to have the opportunity of meeting more of you at AeroExpo 2009 at Wycombe in June. *PPL/IR Europe* will have its stand as last year and once again is assuming responsibility for the lecture programme. I shall be round and about the stand on Friday afternoon and for much of Saturday so please come and say hullo. More than that please tell me what you look to get out of our organisation; like all similar organisations we do need input in various forms from the membership. Much of the Executive Committee members' time and effort is devoted to participation in a number of regulatory committees whose work is not always immediately exciting. But it is clear that our perseverance in attending these is paying off; we are now a force in aviation circles, whose views are listened to and, I believe, respected. Much of this committee work has been done hitherto by Paul Draper, Jim's predecessor as Chairman. Paul now needs to wind down this commitment so I am looking for members who may be interested in taking this on. There is room for more than one! Please contact Paul pauld.pace@btclick.com if you would like more information or may be interested in helping out.

Always room for volunteers

More generally, there is always room for volunteers whether for a specific function that *PPL/IR Europe* is involved in, such as AeroExpo, or activities that go on throughout the year behind the scenes. Do not be bashful in coming forward if you have particular skills to offer – please e-mail me at P 10 ►

◀ P 8

it would take them time to find out. Our boss, an excellent Jersey pilot who spoke fluent French, was summoned with many others to a meeting in Paris to discuss noise violations. Looking round the room he saw representatives of every airline he had ever known with just some notable exceptions. Not a single rep from a French airline.

German revenge and Dutch humour

The Germans are horribly accurate on determining speed – get a few knots fast or slow on the required speed at Frankfurt and a schoolmaster/school ma'am voice rises in pitch. But a training captain colleague of mine was taking off from a German airport with a trainee First Officer when a generator dropped off line. On looking up at the overhead panel his headset slid back. The

F/O was late on the mandatory turn and they both missed the automatic frequency change. When order had been restored, German ATC evidently decided that these unsafe idiots must be carefully disposed of and gave them headings for every inch of their way to the edge of German airspace. 'I felt a bit small' said my friend.

The Dutch like to add humour to their perfect command of English. When one poor soul, unfamiliar with Schiphol, asked if he should follow the yellow van, the reply was 'You can if you wish. But he is the bird scarer...'

Editor's note: in the interests of fairness and balance, please send contributions involving an irreverent look at GA pilots from an ATC perspective to theeditor@pplir.org.



chairman@pplir.org and I will let you know what the possibilities are.

This year Stephen Niechcial is organising what has become the traditional nine day European tour. In previous years, we have been to Greece, Tunisia and Sicily, Morocco and Spain, and last year to Scandinavia. The tours combine a mixture of flying days alternating with sightseeing days and spouses/partners are very much encouraged to ensure we do not tell too many boring flying stories. This year's tour is East European orientated, starting in Prague on 18th September (see page 16). Those members with modest European flying experience are particularly encouraged to apply; more experienced members will provide any necessary guidance on flight planning, weather interpretation etc. These are convivial gatherings with plenty of opportunity for members to do their own thing if they wish.

September meeting in Prague

I said earlier that the proposed new EASA PPL/IR and en route IR creates opportunities for us in Europe; although the bulk of the membership is UK based, we have a significant European

membership and we need to do more to interact with them and indeed to gain more European members. The Czech Republic has a thriving light aircraft industry yet we only have one Czech member. Being at the forefront of the drafting in FCL.008, we will be in a unique position to explain the new licensing regime both in the UK but particularly in Europe. I am planning to arrange one Executive Committee meeting a year in Europe linked with local activities with our members and potential members. The first of these regional meetings will be in Prague on 19th September – more on this next time.

For members who are not able to come to Wycombe but who have ideas to put forward, then please e-mail them to me at chairman@pplir.org. I don't promise to adopt them all but they will be considered.

As I flew north to Carlisle after our Shoreham Saturday meeting, at FL120 in the sunshine above scattered cumulus, just north of Popham, I was given DCT Pole Hill with only one subsequent short vectoring in the Manchester area. Now that is something that would not have happened back in 1975!

Good flying.



PPL/IR Europe AGM at Shoreham

Saturday 25th April saw Shoreham Airport anticipating the arrival of a hoard of **PPL/IR Europe** members for the AGM. We had 64 pre-registrations with seven aircraft scheduled in on the Friday and 31 on the Saturday morning, between 10:15 and 10:45am, plus 11 cars. On the day we had several cancellations and registrations with 63 actually attending the meeting (including two from Jersey and one from Ireland). Shoreham helped by offering a substantial reduction on landing fees.

We were fortunate to have two excellent guest presentations:

John Page - TAA UK Ltd based at Denham (www.taauk.net/), specialising in training for glass cockpits and Cirrus - talked about the developing capabilities of glass cockpits and the need for pilots to handle them with care. He showed us a cockpit video of flying a Cirrus with both Perspective by Garmin and Synthetic Vision.

Mark Samson - a training captain for an AOC piston twin operator, available for JAA and FAA training based on the South Coast (www.faapilot.co.uk/Site/About%20Me.html) - talked about the realities of single pilot commercial operations. He regularly flies a non-pressurised twin and it was quickly apparent that as single pilots flying privately we could learn a lot from his experiences.

Jim Thorpe - who retired as Chairman at the AGM – updated those present on progress in the EASA committee FCL.008 on the European instrument rating (see page 2 of the last issue, also as reported on our website forum at <http://www.pplir.org/pplir/>). See right hand column for a special thank you to Jim on behalf of **PPL/IR Europe**.

Finally, **Anthony Bowles** introduced himself as our new Chairman - see page 9 for his first *Chairman's corner*.



Thank you to Jim Thorpe

Jim was a slightly reluctant Chairman; he was concerned that those who had supported the organisation thus far in their various roles would continue to do so, to which they agreed. I should tell you that it was also the 'politics' of his new role about which Jim expressed most concern when he agreed to become Chairman but, as you will see from comments below, he soon overcame that.

He set about gaining new members via such initiatives as the **European Instrument Pilot** book and AeroExpo 2008, both of which have increased our exposure and increased membership which is very welcome. And Jim has continued his own initiative of progressing GPS approaches for GA. It was a great pity that, as a result of sickness at Gloucester ATC, they were pipped to the post in being the first one established in the UK, which honour went to Shoreham; however there is no doubt that had Jim not initially pressed the case with the CAA and others we would still not have the principle established.

In addition, as reported in detail in the last issue, Jim has become the Europe Air Sports (EAS) representative on the EASA sub group FCL.008 dealing with the vital issues of the future of the instrument rating and a European form of the UK IMC. It has taken us some time to show EAS, via our membership, that we are credible partners who wish to contribute our knowledge to such issues and Jim has now demonstrated that he has the political skills to engage effectively notwithstanding his earlier reluctance!

And in addition to all this he has managed to continue his keenness to see long range tours offered; indeed he has recently returned from a tour in Australia as well as persuading others to run them.

So after two years as Chairman, Jim leaves us in good order. He has agreed to continue on the Executive, dealing with the various areas to which he contributes and we are very pleased about that.

Paul Draper



IFR weather planning

By Peter Holy

Part 1 of 2

The history of aviation weather goes back some decades. In recent years it has been revolutionised by the huge amount of freely available weather data out on the Internet. As a result, the weather sources which most private pilots learnt about during their training lag well behind what is now available.

The Internet has also changed which weather services are popular. The old-style wide-area forecasts such as AIRMETs and SIGMETs are still taught and examined, and in FAA-land have a bit of a history of carrying a strong legal weight, but very few pilots seem to use them nowadays.

There are also widely disseminated misconceptions as to which kinds of aviation weather are 'official', 'authorised', etc. There may be countries whose national aviation law requires the acquisition of specific weather data but I am not aware of any. In the UK and in the USA, nothing specific is prescribed. The pilot merely needs to obtain (paraphrasing) sufficient information for the safe conduct of the flight. This enables a pilot to safely use a much wider range of weather data than just what is available according to the official training material.

Unless indicated otherwise, this article is written for the pilot of an aircraft which is not comprehensively de-iced and has an operating ceiling below 20,000 feet. The writer flies such an aircraft: a Socata TB20GT with a TKS de-iced propeller.

The context here is flight on Eurocontrol airways routes under radar control which requires the full IR. This article does not attempt to address IFR flight using the UK IMC Rating, which is normally done in UK Class G, occasionally asking for a Class D transit. In this case, icing is rarely an issue except in the winter but the pilot is rarely able to climb to VMC on top due to the low base of controlled airspace (mostly Class A) combined with the lack of an enroute IFR

clearance. This kind of flying is often seen as the most difficult kind of IFR especially in the winter where the pilot is trapped in icing conditions at low enroute levels.

Private pilot weather requirements

The best known weather data comprises aerodrome-vicinity actual reports (METARs) and forecasts (TAFs). METARs and TAFs are produced under ICAO obligations by each national weather authority and are freely available on the Internet for every significant airport in the world, and can also be obtained from pilot briefing facilities at most major airports. The UK PPL pilot is also taught to consult Met Office Forms 214 and 215 which show UK winds aloft and a surface analysis.

The above is OK for VFR flight below cloud; in fact a VFR-only pilot could quite safely brief from just the TAFs and METARs (a string of enroute airports, plus the two ends and the alternate). Provided he sticks to some straightforward rules (one example might be: 1 hour before and after the planned time, the cloud base needs to be 1,500ft AGL and the visibility better than 5,000m) he will be fine most of the time. Of course, the majority of flights planned some time in advance will end up being scrapped but that is a feature of 'VFR-only' flight.

The next stage is VFR flight which exercises the VMC-on-top option. A UK PPL holder cannot do this unless he holds the IMC Rating or an Instrument Rating. Interestingly, I have been advised in writing by the CAA that the IMC Rating is valid for this purpose worldwide, unless locally prohibited. In this case, the weather planning is amazingly similar to a full IFR flight (see below) because the objective under IFR is also to remain VMC on top when enroute, though of course there is the additional requirement for VFR conditions at the two ends and the alternate and this

requires a very careful appraisal of the weather there. However, since a great deal of full-IFR flight happens to be wholly in VMC, this leads to the amusing observation that if VFR controlled airspace transits were everywhere as predictable as ICAO airspace classification implies (everywhere except Class A is good for VFR) there would be much less need for an IR for long flights across Europe.

Then we have IFR...

IFR strategy

IFR is the holy grail of pilots flying distances because one can penetrate IMC if required, there is an implied whole-route clearance (controlled airspace and national boundaries become largely irrelevant, resulting in much less stress) and the flight has the automatic use of instrument approaches. Many non-instrument pilots think that instrument pilots fly around in IMC but nothing could be further from the truth; instead one can hilariously observe that the very hard to get IR enables one to spend 99% of one's flight time cruising in sunshine, wearing a T-shirt and shorts, with ATC doing nothing but helping along the way! However, one price to pay for the membership of this highly organised and predictable flying club is a need for a more detailed weather picture, due to a number of factors:

- ☞ IFR flight is done under tight radar control; ATC allow deviations 'due weather' but getting the clearance can take time especially if a climb or descent is requested. ATC will almost always accommodate your weather avoidance requests, but your emergency authority is there to be used if the alternative is penetrating weather that endangers the flight;
- ☞ the Eurocontrol airway system does not support the idea of flight below the airway minimum enroute altitudes

- (MEAs) even where terrain clearance or conflicting traffic are not an issue;
- ☞ the airway MEAs (or, more practically, the levels at which traffic is supported by the IFR/ATC system) are mostly above FL070;
- ☞ the static air temperature at FL070+ is usually freezing (in northern Europe, even in the summer) so any IMC carries a risk of structural icing;
- ☞ the aircraft usually has little or no anti-ice equipment;
- ☞ the aircraft usually has no radar so cannot see embedded CBs etc if flying in IMC (a Stormscope is a good piece of kit but considered not sufficient by many);
- ☞ the aircraft operating ceiling is not high enough to get above frontal weather cloud tops;
- ☞ flight in IMC can be turbulent, and frightening for passengers who do not understand what is or is not safe;
- ☞ flight in significant turbulence needs to be below V_A i.e. slow, especially if in IMC.

In the absence of good pre-flight planning, and if one gets 'behind the aircraft' when airborne, it is quite easy to get cornered into a dodgy flight in freezing IMC or in something worse. This is irrespective of how good an instrument pilot one may be, and does not relate to the navigation/autopilot equipment available. And by the time one has decided that the ice is building up enough to be a problem, one has lost enough of one's climb performance to climb above the clouds. Slow or poor cockpit decision making does not help but nothing can be done about aircraft performance. European ATC has no access to enroute weather data and will have no idea that the blip on their radar is in serious trouble until it is urgently asking for a descent to below the freezing level. If this happens above significant terrain, or one flies into an active CB especially at too great a speed, it could be fatal and this has happened many times.

The smart way to play the game - at least this is what I try to do - is to keep all the options well open as far ahead as possible:

- 1) Climb up decisively to VMC on top;
- 2) Remain VMC on top for the whole route. Keep the decision-making firmly in the cockpit and climb further as required to remain VMC; this is generally easy because one can see 50-100nm so the reduced climb performance of non-turbocharged aircraft in the FL100-FL200 region is not a problem. With convective clouds, a climb may not be an option so a request for a

left or right heading change is made. Conversely, if one filed for say FL160 and the tops turn out to be much lower or there are no clouds, one can ask for a 'stop climb' and fly at a level which gives a good speed, economy or even avoids the use of oxygen (FL100 is popular for this);

- 3) Remain VMC on top until the last possible moment. The gotcha here is extended ATC holding after a descent into freezing IMC, but holds are extremely rarely assigned to GA flights and at the only times I have got them they were at or near my enroute cruise level.

At each stage, as always in aviation, there must be a viable escape route: from the climb one can descend back down (and scrap the flight) if VMC is not reached; enroute one can turn back if too-high IMC is encountered in all useful directions; and at the arrival phase one is descending anyway.

Some pilots will disagree with the above rather conservative strategy which for me results in the scrapping of about 25% of pre-planned flights. They would respond that extended flight in IMC does not usually result in significant ice accretion; that a Stormscope is sufficient for avoidance of hazardous weather; and that cancelling a flight, or turning back due to cloud tops being above the operating ceiling, is excessively cautious. I choose to fly VMC enroute for the reasons given above, but have to admit that this approach is feasible because my operating ceiling is 20,000 feet which does the job most of the time. With lower aircraft performance, I would be forced to accept a greater perceived level of risk.

Conversely, with higher performance, things get a lot easier. At the top end, a jet with an operating ceiling of 40,000ft, de-ice, weather radar, a climb rate of +5,000fpm and - on the big ones - CAT3 auto-land doesn't need to know very much about 'GA weather'. Its pilot needs surface winds, temperatures and visibility, and a few other bits. Almost every scenario is a GO and they deal with whatever weather is encountered, using radar in terminal areas and flying above most of it when enroute. Even with turbocharged piston aircraft, the higher TAS figure (say 200kt) produces significant airframe heating which eats into the temperature band in which supercooled water exists (in non-convective cloud, typically 0° to minus 15°C) and consequently less ice gets picked up. Some turbocharged piston pilots look at the significant weather charts and if no CBs are

forecast, they fly.

Risk management in aviation is a very individual thing...

Weather source overview

☞ METARs

These report actual aerodrome-area surface conditions and are valuable just before departure, not only for checking the actual conditions but also for getting an idea of which way the conditions are changing and for establishing whether the forecast (the TAF) is accurate.

☞ TAFs

These are aerodrome-area forecasts of the surface conditions, and usually include useful data on the cloud base and the type of cloud including hazardous conditions e.g. CBs. TAFs for enroute airports may superficially appear to be of limited value to the IFR pilot but a forecast of +TSRA is highly relevant because the stuff will have tops well above the operating ceiling of any piston aircraft, and such data may indicate the predicted timing of a front passing through the area.

☞ MSLP

This chart - also called 'surface analysis' - shows surface pressure isobars and most versions of it include the positions and types of fronts. The isobar spacing indicates the wind strength and direction. Gleaning additional information requires expert knowledge but it is a very easy chart to use for a 'go' / 'no go' decision; a simple strategy of taking one look at it and not flying through any front will avoid the vast majority of hazardous weather.

☞ Ascents/tephigrams/soundings

These are specialised data presentations: forecasts extracted from the 3D computer models of the atmosphere, which are used by professional forecasters. Although the axes on the different chart types can be scaled in different ways, the three names are largely interchangeable in terms of value to a pilot. There is a great deal that can be gleaned from these charts: cloud base, cloud tops, stability (the likelihood of heavy vertical development e.g. CBs) and much else if you are an expert who does this for a living. However, the essentials like vertical cloud extent and temperatures can be read directly off the chart. The 'METAR' (actual data) version of this chart is produced from the ascent of a balloon probe, launched generally at 00:00Z and 12:00Z at a number of locations around Europe, and this can be very useful in certain conditions e.g. where the air has obviously not moved much between the ascent time and the flight time. The ascent data can be found on the

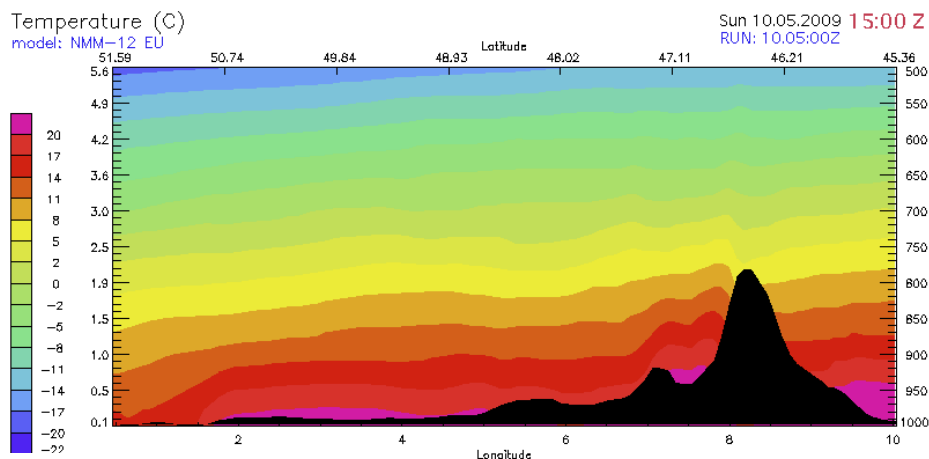
University of Wyoming website at <http://weather.uwyo.edu/upperair/sounding.html> (select Europe then Skew-T) and on the University of Cologne website at www.meteo.uni-koeln.de/meteo.php?show=EnWeWe, see example chart below.

Other Products

There are countless websites which present US Global Forecasting System data (GFS). I use the NOAA one at www.arl.noaa.gov/READYcmet.php which offers a variety of presentations including soundings. One of the more interesting ones is Meteoblue at <http://my.meteoblue.com/my/> which can plot the weather along a straight line route, see example right. There are also more traditional products. For example the significant weather chart, although I have lost a lot of faith in that one since some spectacularly wrong forecasts revealed that it shows hazardous weather only and does not give a real indication of where IMC/cloud tops might be.

In Europe, and particularly in the UK where the Met Office sells its more advanced weather data to specialist commercial weather providers, it's not easy to get the more advanced data one needs. Fortunately the GFS data provided by the US is available worldwide and, in the tradition of much American taxpayer-funded material, is accessible via many free websites where the data can be viewed in various graphical presentations. All the more advanced weather products mentioned in this article

Example map along a route running roughly from London to Milan showing temperature at altitude. Note high ground of the Alps is clearly shown. See <http://my.meteoblue.com/my/>



are derived solely from GFS. A lot of data which the Met Office keeps to itself is actually passed (under ICAO obligations) to other countries and some make it available online.

IFR weather data and the 'go' / 'no go' decision

My weather planning strategy involves getting detailed weather for the terminal areas (departure, destination and alternate airports) plus cloud tops data enroute. The flight would be scrapped if either of the following are true:

- 1) Unacceptable weather in the terminal areas e.g. a lot of freezing IMC to climb through or embedded CBs. As to what

is 'unacceptable weather', that is a separate debate. I would climb or descend through several thousand feet of stratus below 0°C, provided the icing escape route was preserved by the 0°C level being at least 2,000ft above the MSA.

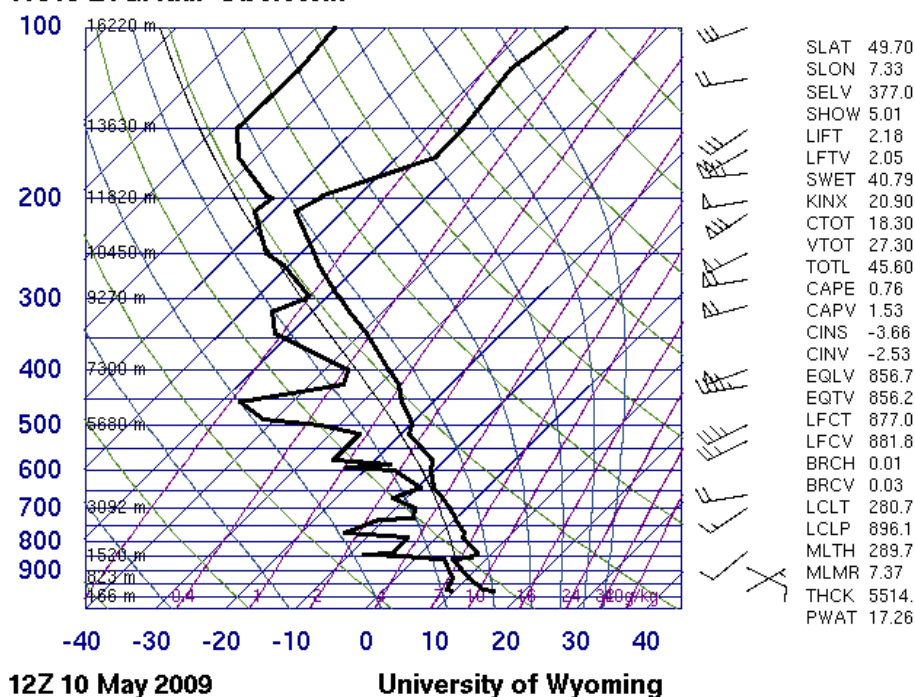
- 2) Enroute, the tops of any 'organised' IMC are likely to exceed the aircraft operating ceiling. This is less of an issue than might appear. To date, I have not scrapped a single flight due to this except in frontal conditions or large scale air mass thunderstorms. Once airborne, I have never had to turn back or divert. As regards 'organised IMC' an example might be stratus tops at 5,000ft, with a PROB30 TEMPO forecast of CBs somewhere down route; these can be visually avoided with ease but obviously only if one is not sitting in IMC.

Legal issues

The issue of 'known icing' has been subject to different legal interpretations over the years, and I will keep this very brief. Under FAA rules, a mere area forecast, or visible moisture below 0°C, do not alone constitute known icing. This is just as well, since the FAA rules were written for American aviation weather services which are vastly superior to European ones. Under JAR/EASA there is no 'flight into known icing' concept - in an aircraft without certified ice protection you must exit icing conditions if you encounter them, and you must plan flights sensibly for such a possibility.

In the second part of this article, to be published in the next issue of Instrument Pilot, Peter Holy explores the practical use of weather data in planning an IFR flight from Shoreham to Corsica. More information on IFR flying and Peter's Socata TB20 aircraft can be found on his own website at www.peter2000.co.uk/aviation.

10618 ETGI Idar-Oberstein



Example Skew-T diagram from the University of Wyoming for Sunday 10th May at 12:00z, taken at Oberstein in Germany. See <http://weather.uwyo.edu/upperair/sounding.html>



EUROSTUFF



By John Pickett

North Sea rig instrument approaches

We are all aware of ILS and NDB approaches but have you given any thought to the airborne radar approach (ARA)? We are used to flying an instrument approach to an airfield which is fixed. It does not normally move!

Imagine conducting an instrument approach at night, in bad weather, to an airfield that keeps on moving and where there can be movable obstacles in the final approach track. Flight crews from the North Sea rim countries, flying helicopters to oil rigs, are faced with these conditions as part of their everyday tasks.



Photo: Peter Bowater, Photo Researchers

In the UK sector of the North Sea there are over 300 helidecks. Whilst the majority of helidecks are fixed some are semi-submersible. The rig is attached to the sea bed but responds to the sea state. It will heave in a heavy swell. Supply vessels sometimes arrive at a rig whilst an aircraft is on the final approach. There are also moving cranes on some of the rigs together with chimneys used in the flaring process.

One of the current instrument approach procedures used in these North Sea operations is the ARA. The helicopter is navigated towards the helideck and then the rig is identified using the helicopter's weather radar display.

An approach procedure is flown on the weather radar with the final approach track offset by 10 to 20 degrees, designed to put the helicopter abeam whilst still maintaining a safe altitude and radar contact. This procedure puts the helicopter about 0.75nm from the rig enabling a visual landing to be made. In the event of not achieving visual contact at this 'decision point' the helicopter executes a climbing, turning missed approach procedure away from the rig.

Precision GPS approaches under EASA

Following on from the Newark, US incentive of creating a precision instrument approach using a GPS pseudolite satellite (see IP72 Eurostuff) EASA has published an NPA proposing the certification of GPS approaches using the same technology. This technology could revolutionise the application of precision approaches in Europe. Comments are due by 23rd June 2009. More details here: www.easa.europa.eu/ws_prod/t/doc/NPA/NPA%202009-04.pdf

More operators banned from Europe

The EU Transport Commissioner Antonio Tajani recently stated that 'Air passengers are entitled to feel safe and be safe'. He was commenting on the action of the EU which recently banned several countries from operating aircraft, aeroplanes and helicopters, into the 27 EU countries.

The operators from countries now banned are Benin, Angola, the Democratic Republic of Congo, Equatorial Guinea, Indonesia, the Kyrgyz Republic, Liberia, Sierra Leone and Swaziland.

Over 90 operators are banned from flying into Europe. The reason for this is that the parent country of the operator is unable to provide competent safety oversight. This banning follows an audit by the ICAO audit team and ramp inspections of antiquated aircraft in Europe.

The audit shows that the country either does not have the staff, or the staff are not competent, to provide effective safety oversight. In addition to the banning of these countries' operators, the EU advises travellers worldwide of the 'blacklist'. Travellers can then make an informed judgement as to whether they are prepared to fly in aircraft of a particular operator. In addition other countries outside the EU can use the list to keep unsafe foreign operators from flying into their country. The FAA also has a banning procedure similar to that of the EU but a difference is that it categorizes the quality of the safety oversight and the operator. Caveat emptor!

Confusion reigns over SID phraseology

Edition 15 of ICAO Document 4444 (PANS - Air Traffic Management) introduced new procedures and phraseology associated with aircraft carrying out Standard Instrument Departure (SID) and Standard Arrival procedures. Following a consultation with industry and a safety assessment of the effect of the changes, the UK CAA amended CAP 493 to comply with the ICAO changes as from the 12th March 2009. Since publication, the CAA has received a number of comments from both aircraft operators and air traffic controllers. In order to consider the comments the CAA has decided to withdraw the changes and is to consult further with the aviation industry. In the meantime when an aircraft is following a SID the word 'now' is to be added to climb clearances above the SID profile e.g. 'climb now FL120' means that the aircraft should climb directly to FL120, ignoring the vertical profile of SID.

Anaesthetics and flying

Professor Jeremy Stone, a Professor of Anaesthetics, has drawn together a team of renowned and competent pilots and trainers. But what has anaesthesia to do with flying? Professor Stone has identified, with the same vision that he brought to anaesthesia, the need for a totally focussed approach to flying training. He has drawn together the resources of several companies and individuals into a Welsh based training facility. Cardiff Heliport is the home of the new Veritair Aviation Academy Ltd (VAAL). Cleverly, Jeremy Stone has brought together like minded people to pool resources and maximize usage of assets. VAAL is a 'collective' of partners who own over £8.5 million worth of helicopters, flight simulators, IPR and mission part task training devices.



Photo: Veritair, www.veritair.com

VAAL is set to change the way that helicopter pilots go from 'zero to hero' according to Martin Ruddy the new Managing Director. VAAL started training with the first CPL (H) ground course on the 27th April 2009. At the same time, and in parallel, VAAL started PPL (H) training at Kemble in Gloucestershire.

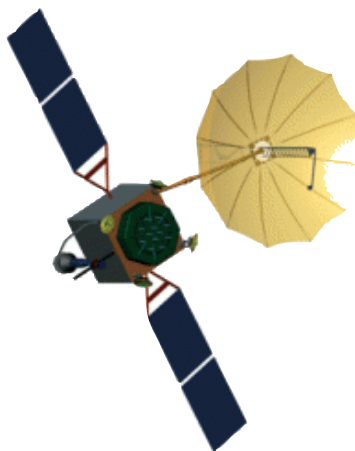
Distance learning, with intensive 'brush up' courses will shortly be available for the PPL/IR(H).

GPSIII progressing

Work on GPSIII, the next generation of GPS satellites is progressing on schedule. It is set to improve position accuracy, and therefore navigation accuracy. But a very important part is the provision of advanced anti-jamming capabilities.

Lockheed Martin in conjunction with partners ITT and General Dynamics says that it has successfully completed 19 out of the 71 Preliminary Design Reviews required by the US Air Force. The team at Lockheed Martin/ITT/General Dynamics is on target to produce the first two GPSIIIA satellites with a target launch date of 2014. The contract with USAF includes options for up to 10 additional satellites.

GPS III conceptual drawing, The Aerospace Corporation



A Romanian IR sir?

Romania is apparently entering the JAR IR training market with some highly competitive prices for training. More on this in *IP74*.

Good news from the European Parliament



The European Parliament recently approved a resolution to, in effect, insist that Member States recognise the contribution made by general and business aviation, and ensure their needs are properly taken into account in the regulatory process. This should enable GA to protect and promote its position better. The resolution includes various statements which recognise the importance of general and business aviation and encourage future legislation that is proportionate to this sector as well as facilitating access to airports and airspace given the competition with the wider airline industry. For full details of the resolution see www.europarl.europa.eu/sides/getDoc.do?type=TA&reference=P6-TA-2009-0036&format=XML&language=EN. The resolution concludes 'Instructs its President to forward this resolution to the Council and Commission and the governments and parliaments of the Member States'.

Lost? No, but temporarily unsure of position

We have all at one time or another been, NOT lost, but temporary unsure of our position. But how unsure can one become? Leicester County Council has recently spent some £6,000 installing GPS equipment in some of its vehicles. Nothing very unusual in that...except that the vehicles concerned are lawnmowers. They installed the equipment 'because gardeners keep getting lost in the long grass'. The GPS receivers will help staff combat an 'unprecedented amount of growth' on grass verges and playing fields!

Editor's note: I know its nothing whatsoever to do with aviation but it is unbelievable.



Security

Paul Webster writing in the magazine The Log quotes a situation at an airport where a police officer can pass through the security checkpoint with a CS spray, baton, handcuffs, gun and ammunition. But he is not allowed a can of soup, a bottle of water, or 'that most lethal weapon of mass destruction – a pot of yoghurt for his lunch'.



Pilots' talk

Compiled By David Bruford

Dates for your diary

12th - 14th June 2009.
AeroExpo, Wycombe Air Park (EGTB)

See page 2 for full details.



4th - 5th July 2009. PPL/IR Europe weekend meeting, Angoulême/Cognac, France

Combining gastronomy, tour of vineyards and a major cognac house (Hennessy) on Saturday afternoon, and tours of the ancient cities of Cognac and Angoulême on the Sunday morning. We will be staying at the Chateau de l'Yeuse (special discount rates apply). We propose Angoulême as the airfield for arrivals for lunch on Saturday as it is a designated customs/immigration port of entry with full IFR procedures, whereas Cognac is military and does not have customs facilities. Full details of the programme on the website. Organised by local member Willem van Rijk. Please address visit queries to Willem (vanrijkwillem@orange.fr) and expressions of interest and website booking forms to Steve Dunnett (meetings@pplir.org). NB the number of rooms is limited, so book now – deadline, Friday 26th June 2009, earlier if possible.

UK key airshow dates 2009

[aeroflight](http://www.aeroflight.co.uk/shows/showdate.htm)

www.aeroflight.co.uk/shows/showdate.htm including, in the next couple of months, fly-ins at Henstridge, Popham and Kemble and air shows at Abingdon, Duxford and Southend-on-Sea.

4th - 6th September 2009. Guernsey International Air Rally

The Guernsey Aero Club will be running their ever-popular Guernsey International Air Rally again this year offering the usual mix of fun and flying, with an optional navigation competition starting from Guernsey on the 4th and a themed 'Pink Punk and Posh' Hangar Ball on Saturday 5th. Other fun competitions will take place over the weekend and attendees will also have the chance to fly in an AN2 or Ultimate High's Extra 300.

So, a great time to visit the beautiful island of Guernsey, shop in the tax-free lanes of St. Peter Port and enjoy a unique bit of British history, with the added attraction of low landing fees, tax-free fuel, and all of it outside of the Eurozone, making a visit even better value. Details are available at www.guernseyaeroclub.com/rally or call +44 1481 265267.



18th - 27th September 2009. Autumn regional meeting in Prague and start of PPL/IR Europe East European tour

It is planned to hold an inaugural regional members' meeting in Prague on 19th September followed by a seven day tour. More information on the meeting in the next issue. The outline tour itinerary under consideration is as follows.

Friday 18th September
Saturday 19th September
Sunday 20th September

Monday 21st September
Tuesday 22nd September
Wednesday 23rd September

Thursday 24th September
Friday 25th September
Saturday 26th September
Sunday 27th September

Flight distances are shorter and earthbound stays longer than in previous years; however for the aerially restive there is no shortage of interesting excursions possible. To register an interest in the tour, please contact Stephen Niechcial SJNiechcial@hotmail.com who would like confirmation and deposits by the end of June.

EASA rules threaten US flight training schools

AOPA says the bread and butter of many US flight schools - foreign students - is being threatened by a European initiative that will make the attraction of a FAA licence far less attractive. EASA is proposing changes to its certification requirements that would essentially require US trained pilots to re-certify in Europe. 'While the training philosophies differ in Europe and the US, both groups of pilots have a similar goal, that of developing safe pilots,' said Andy Cebula, AOPA's executive vice

president of regulatory affairs. 'It is critical that EASA and the US formalize a bilateral agreement to reconcile the differences between this rule and the current US rules governing flight training.' AOPA protested the move in EASA's comment period which ended on 28th February. The group also asked the FAA to press for a bilateral agreement with EASA that will address the differences in flight training between the two jurisdictions that sparked this move.



LORAN-C among proposed US budget cuts

President Barack Obama's proposed budget for fiscal year 2010 calls for the decommissioning of LORAN-C, which could serve as a backup for GPS-based navigation in the future. The decommissioning is part of a cost-cutting measure which the government claims will save \$190 million over five years.

Today many pilots use GPS, but a few still utilise LORAN. There are currently a limited number of potential backups for GPS, LORAN being one of them. If the decommissioning goes forward, it is unclear which systems will be available in the event of a GPS failure. Questions remain about whether a backup is needed and if it could be LORAN.

Over the years the omnipresent DME system has been seen as a suitable emergency backup once the decommissioning of NDBs started (based on the fact that you just can't get parts for these WWII devices according to some operators); however apathy seems to be prevailing and no backup system is being actively proposed. Perhaps this is wise as by the time VORs, DMEs and NDBs are all decommissioned, Galileo will be in place and surely whatever could be influential enough to knock out the US's GNSS would not have the audacity to affect Galileo. Surely even solar flares respect the un-auditable power of the EU?

Sources within Eurocontrol favour the Russian GLONASS or Galileo as a back up but the whole matter may be academic as the decommissioning of LORAN has been rejected by the US Congress each time it has been proposed by recent Presidents.

Mode S

Mode S became the means of compliance for mandatory carriage and operation of SSR transponders with effect from 31st March 2008. However, a transition period will continue until 31st March 2012 to allow a period of time for those aircraft already fitted with Mode A/C transponders to be upgraded.

In December 2008, a Summary of Responses and Synopsis of Comments were published on the CAA Mode S website and outlined the intended way forward for introducing further proposals for transponder carriage and operation. In December 2008, the UK's CAA Board endorsed the way forward and a submission will now be made to UK's Department for Transport. This will allow for the introduction of a phased implementation

of mandatory SSR in specified controlled airspace, development of a process for formal application of transponder mandatory zones (TMZs) and revision of arrangements for gliders. It has been agreed that a difference will continue to be filed against the ICAO Annex 6 requirement for mandatory transponder carriage and operation for all international flight by GA until a consistent approach can be agreed with adjoining states. However, this does not remove the requirement to comply with the transponder requirements promulgated by those destination States.

SSR codes

There is still a widespread shortage of SSR Codes in the ICAO Europe area. The Originating Region Code Assignment Method (ORCAM) Group meets quarterly to discuss code conflicts but such resolutions are becoming harder and, in some cases, impossible to obtain because the number of codes available is simply not enough. Some 'City Pairs' trials have been undertaken in Germany with aircraft flying in a completely Mode S environment, this has allowed the aircraft to fly on the Mode S conspicuity code of 1000. Further 'City Pairs' are scheduled to take place between the Netherlands, Germany and France. At the moment, the code savings are minimal; however, as the Mode S mandated airspace expands code savings will increase.

In addition to Mode S, a system known as the Centralised Code Assignment and Management System (CCAMS) has been proposed. This will be a central server - linked to the Central Flow Management Unit - to which air navigation service providers will be connected and which will dynamically allocate codes to flights; thus making far better use of the limited number of codes available. The introduction of this system to European airspace is currently being discussed at Eurocontrol. It is seen as a complementary system to Mode S, being used until the widespread establishment of Mode S mandated airspace.

Monitoring ('listening out') codes

In order both to prevent and to mitigate the consequences of airspace incursions, pilots flying around the peripheries of certain controlled airspace, monitoring the relevant frequency but not requiring an air traffic service, should squawk a discrete SSR code allocated for the purpose, with Mode C selected (if available). This will allow an air traffic controller providing radar services

at each aerodrome who observes an aircraft which is displaying such codes and which is infringing or is likely to infringe their airspace, to make a blind transmission on the appropriate frequencies to attempt to establish the identity of the aircraft in order that the situation can be resolved quickly and efficiently. Pilots must be aware, however, that their selection of the discrete squawk does not mean that any form of air traffic service is being provided by a relevant controller. Use of the discrete SSR code does not prevent a pilot from requesting an air traffic service at any time should a pilot subsequently decide one is required. The code and any associated Mode C pressure-altitude reporting data must be considered to be unvalidated and unverified. Pilots will remain responsible for their own navigation and in particular for obtaining permission to enter controlled airspace and aerodrome traffic zones. Full details can be found in the UKAIP.

Implementation of continuous descent approach (CDA) sets precedent for general aviation



On 31st March 2009 in Geneva, ACI Europe, CANSO, Eurocontrol and IATA launched a joint action plan designed to reduce the CO₂ emitted by aircraft in Europe by over half a million tonnes a year. The plan, launched at the 4th Aviation and Environment Summit will implement CDA at up to 100 airports across Europe by the end of 2013. This would be broadest introduction of the process undertaken to date.

In a CDA aircraft fly a smooth approach into an airport rather than the classical stepped approach. This not only reduces fuel burn by between 50 and 150 kg for a short-to-medium haul aircraft, but also reduces CO₂ emissions by 160 to 470 kg per flight. CDA also reduces noise around the airport by between one and five decibels. With CDA in place at 100 airports in Europe, airlines will save 150,000 tonnes of fuel and 100 million Euros a year while reducing CO₂ by half a million tonnes. No doubt the desire for standardisation and perceived savings for light aircraft will mean that CDAs will, in time, be required for all IFR aircraft.

VFR traffic restrictions around Schiphol, Hilversum and Lelystad

If you are ever likely to be VFR around these areas then take a look at the Netherlands' AIP SUP 04/09 04 APR 09 before departure (<http://download.pilotundflugzeug.de/EH-eSUP-09-04-en-GB.pdf>). This AIP supplement introduces special rules zones (SRZ) Schiphol and Hilversum. These SRZs were created as a result of radar clutter due to the increased number of VFR flights with activated mode S transponder under the Schiphol TMA 1. The clutter has increased to such an extent that Schiphol Approach cannot properly provide air traffic control. Dutch aviation authorities have therefore decided to clear the area around Schiphol, including Lelystad and Hilversum, from traffic with activated transponders. For Lelystad and Hilversum, a 'transponder prohibited zone' is created. Around Schiphol, an SRZ is created. Aircraft with a mandatory mode S transponder are not allowed in this SRZ (with some exemptions).

In addition, in and below the VFR area Lelystad from GND to 3,500 ft AMSL the use of an active transponder is prohibited. The transponder must be switched to stand-by mode. Two-way radio contact with Lelystad Radio 123.675 MHz is compulsory for all traffic with destination Lelystad EHLE.

The mandatory requirement for the carriage of Mode S hasn't changed though, it's just that you're not allowed to use it.

94UL may be an adequate replacement for Avgas 100LL

Teledyne Continental Motors (TCM) has just completed a round of flight and test-cell trials that suggest that 94UL may be an adequate replacement for 100LL, whose existence is threatened by continued availability of tetraethyl lead. TCM says it will push for approval of 94UL as the leading replacement for 100LL. 94UL is essentially 100LL without the TEL additive. It meets vapour pressure and other Avgas specs, but without the lead, it doesn't match 100LL's octane, which is typically about 103 straight from the refinery.

Is 94 sufficient octane to avoid detonation on a hard, hot climb on a summer day? Teledyne said in a press conference that it hasn't expanded its testing into all corners of the flight envelope but four flight tests in a normally aspirated A36 Bonanza have revealed no cooling or detonation issues thus far. The company also said it doesn't

think Full Authority Digital Engine Control (FADEC) will be required to make the engines run properly on 94UL. TCM has not, however, conducted a standard FAA climb-cooling test, which is the regime in which detonation usually occurs. Further, said Continental, it's not opposed to car-type petrol as a replacement for 100LL provided that certain standards are in place to assure consistent specs with regard to octane, vapour pressure and especially oxygenate additives such as ethanol. Although pure ethanol has been approved for limited use in modified aircraft engines in Brazil, it's considered '...a bad actor (*sic*) for aircraft use because it's strongly hydrophilic, lacks the energy content of Avgas and causes corrosion in aluminium parts and degradation of soft seals and gaskets'. High-octane petrol does, however, meet basic octane requirements for normally aspirated engines. Owners who use it are finding it increasingly difficult to find petrol without ethanol blended in.

What about Continental's large-displacement turbocharged engines, such as the TSIO-520 and -550 series? Will 94UL work for them? TCM says stay tuned (a deliberate pun we wonder?); it hasn't done the flight testing to confirm that. Others who have, however, have had difficulty passing the climb cooling barrier without encountering at least light detonation. TCM began its alternate fuel testing about a year ago and it plans to push for standards approval of 94UL as the transparent replacement for 100LL. That application will be submitted in a few weeks and could be approved as early as next fall. However, that's just the beginning of 94UL's journey to becoming a certified fuel, if it ever does. It will still require FAA certification and approval and at least a paperwork shuffle so that owners can legally use it in some airplanes.

TCM's testing took place in an IO-550-B powered Bonanza, but it has done test-cell work with the 200-series engines, the O-470 and O-520 series. All of the above relates to US activities, as far as we are aware there is no similar research or developments being carried out in Europe.

Eurocontrol statistics and forecasts

European commercial traffic decreased by 8.5% in February 2009 in comparison with February 2008. The monitoring of the short-term forecast showed a further downward revision from the February 2009 forecast to a 5.2% ($\pm 3\%$) decline in flights in Europe for 2009. More downward revisions

are expected due to the weak levels of traffic and the airlines' capacity cuts.

The medium-term forecast for 2015 is now for traffic counts some three to four years behind the forecast published in 2008. The forecast is that there will be 11.7 million IFR movements in the Eurocontrol Statistical Reference Area in 2015, 16% more than in 2008. After the decline of 2009, the traffic is forecast to grow only slowly in 2010 (growth of 1.5%). In the later years, the growth recovers to more typical rates of 3.5% - 4.5% per year.

Preliminary data shows that delay from all causes per delayed flight increased to 31mins in February 2009 up from nearly 29mins in February 2008.

As further evidence of the unprecedented impact of the economic crisis, the latest traffic report from ACI Europe reveals a decrease of 13.6% in the overall passenger traffic at European airports in February 2009 compared with February 2008. The overall freight traffic among European airports recorded -23.5% in February 2009 when compared with the February 2008. The overall figure for movements at European airports decreased 13.2% in February 2009 when compared with February 2008.

Olivier Jankovec, Director General ACI Europe commented. 'The double-whammy of falling aviation and commercial revenues is hitting European airports more and more severely with each passing month. On top of that, the capital-intensive nature of airports means that we are also being squeezed by the ongoing paralysis in capital markets.'

He added. 'As if that triple-negative wasn't enough, the unjustifiable proposal to suspend the use-it-or-lose-it rule on airport slots will only make matters worse for congested hubs and regional airports alike. This is nothing more than airports being forced to subsidise airlines for not flying.'

[Well Oliver, perhaps now you can empathise with us poor GA pilots. I seem to recall many happy years of subsidising my aircraft as it languished in the hangar during most of the winter months while I didn't fly it. DB]

For those keen to ingest some more very interesting figures; the accumulated figure for passenger traffic January to February 2009 decreased by 12.2% compared with the corresponding period 2008. The accumulated figure for freight traffic during January to February decreased by 23.7% and movements decreased by 11.7% during the corresponding period when compared with 2008.

Avidyne's ADS-B traffic option



While ADS-B remains a long way down the wish list for gadget fans, avionics manufacturers have been forging ahead with active traffic and datalink systems. Avidyne has both, but to cover all of its bets, at the Aircraft Electronics Association show in Dallas, it announced an intriguing ADS-B add-on option for its popular TAS600 line of active traffic systems. Avidyne's Tom Harper said that the company believes that even in a world dominated by ADS-B (a world that still appears years away) there will always be a place for active traffic systems. Apparently some buyers have already expressed a desire to have the ADS-B option covered. The product will use the same antennas the TAS system uses and will allow composite display of ADS-B traffic along with the real-time TAS detection. Harper said no commitments are being made on delivery, but the company is accepting a \$2,000 deposit to 'lock in orders'. More on <http://www.avidyne.com/>

Talking GPS for aircraft



A Silicon Valley company has come up with voice-based GPS for aviation use. GiPSi Navigation Corp., of Menlo Park, California, says the GiPSi eliminates 'heads-down' navigation by enunciating the information a pilot needs in a 'clear human voice.' In fact, the GiPSi has no display. It communicates entirely by voice. In a news release the company said the \$395 device doesn't require extensive training and allows pilots to maintain situational awareness. 'The interaction is very intuitive. It speaks to the pilot. The pilot can focus on flying the airplane.' It works on a similar basis to modern phones and top-of-the-range cars

where the devices do not have to be taught to recognise an individual pilot's voice. An additional feature is that, as the flight progresses, the GiPSi logs flight movement with time-stamped altitudes, airspeeds, track and bearing deviations, along with waypoints. It can verbally notify the pilot of the aircraft's exact location and other types of information commonly found on GPS units www.gipsinavigation.com.

Flight Design new hybrid engine concept



Flight Design GmbH, the German creators of the popular CT line of light sport aircraft, used AERO Friedrichshafen to announce details of their work on a new hybrid engine concept.

The propulsion package consists of a standard Rotax 914 turbocharged engine to which is mated a 40hp (30 kW) electric motor. The electric motor is coupled to the propeller hub using a poly-V-belt drive that has no overloading impact on the crankshaft and, thus, allows the motor to transmit its power directly to the point where it's needed.

Since the basic Rotax is left mostly untouched, its 130hp output, combined with the electric motor's 40hp, provide for a combined 170hp output for the hybrid. The electric motor will be used for takeoffs and climbs, and makes use of its full capacity over a maximum five-minute span. In cruise, power comes entirely from running the gas engine at full power. Twenty minutes is required for a full recharge on the 25 kilos of lithium ion batteries that power the electric motor.

One of the features being touted by Flight Design is the added safety inherent with a hybrid. Should there be a failure of the combustion engine, power from the electric motor can supplant a stopped engine and provide sufficient thrust to stretch the aircraft's glide to an emergency landing. Flight Design expects to begin flight testing of its hybrid in one of its existing aircraft by the middle of 2009.

Roadable aircraft



The TerraFugia Transition previously reported in these columns as the 'roadable aircraft' that has attracted considerable attention at aviation shows in the last year, flew for the first time on 5th March, and its makers say they've changed aviation as a result. 'This breakthrough changes the world of personal mobility. Travel now becomes a hassle-free integrated land-air experience. It's what aviation enthusiasts have been striving for since 1918,' said Carl Dietrich, CEO of TerraFugia. While most 'flying car' concepts to date have incorporated detachable or trailerable wings, the Transition has electromechanical folding wings that convert the vehicle in 30 seconds. The company says production models will meet Light Sport specifications and be street legal.

Test pilot Col. Phil Meteer (retired) said the first flight went well. 'The first flight was remarkably unremarkable. I've flown several thousand hours in everything from Piper Cubs to F-16s, and the Transition flew like a really nice airplane.' The first example will be used for advanced flight and road testing while a production prototype is built. The second aircraft will go through the standards review process for Light Sport certification. TerraFugia says Transition will cruise 450 miles at 115 knots and is capable of highway speeds in car mode. A 100 horsepower Rotax 912S powers both the pusher prop in flight mode and the front wheel drive on the ground. The aircraft is not intended to be flown from roads, but to provide immediate transportation to and from airports. It may look a tad silly, but it's well worth a look at <http://terrafugia.com>.

Apparently the vehicle already has 50 customers on its waiting list. It is '...meant for a special kind of consumer,' says AOPA's Thomas Haines. 'If you need to drive and fly a short distance, it solves several problems, including finding or paying for a hangar.'



Beware the Haar, get an IR...

By Douglas Baillie

I distinctly remember planning a trip to see a business client in the north of Scotland that meant I would fly into Wick Airport, conveniently located in the extreme north east, close to the north sea.

The plan was to fly in a rented club single, a Piper Arrow. The weather forecast was good, with a well established area of high pressure forecast to remain over the region for at least the next few days before any frontal activity from the west might upset the great flying conditions.

On the day of my departure the winds were light and variable, the visibility good, and no forecast cloud or adverse weather expected.

The route was to fly out of Glasgow on a VFR flight plan direct overhead the Perth VOR, up to the Kinloss NDB and directly from there to Wick, with my alternates being Inverness and Aberdeen. As ever, I took on maximum fuel and made sure I also took along my Jeppesen charts and IFR plates, just in case I needed them.

Everything went well and I had plenty of time to admire the great views of the Grampian mountains and could see the Moray Firth and the coast from miles away. A lower airspace radar service operated by Scottish Military would keep me and them happy as I began to intrude into their low flying areas and firing ranges just north of Inverness. They gave me a transponder squawk and cleared me direct to Wick to remain on frequency until two way with Wick and well away from the bombing ranges.

Engulfed in mist and fog at 5,000 ft

About 20 miles out from Wick I suddenly and unexpectedly became engulfed in mist and fog at 5,000 feet. This is what we call

the Haar, a mass of damp warmish air drifting gently off the North Sea towards the coast and being uplifted by the land just off my port side. As the air cools it immediately condenses into water droplets, and hey-presto, no visibility.

I immediately reverted to instruments and continued straight and level maintaining my heading. The sudden arrival of this condition could easily panic a less experienced pilot who might have tried anything to get out of the fog. It would have been a mistake to try any kind of turn without visual reference, and without seeing anything at all, a possible recipe for disorientation and vary rapid loss of control, probably culminating with a spiral dive or spin into the sea.

By remaining wings level and maintaining altitude nothing had really changed. The aircraft didn't know anything about these potential consequences, but I did because I have an instrument rating and knew that the right thing to do is just keep on doing the same thing. Except now it was focus on the artificial horizon, altimeter, rate of climb and descent, heading, altimeter and airspeed indicator. And guess what? Nothing did change, except perhaps a very slight increase in my pulse rate.

RVR still good enough

A radio call to Wick - to explain what had happened to the weather - was made as I believe that communicating issues quickly helps a lot and knowing that someone else is there on the radio is very reassuring indeed.

And yes indeed, the Haar had already begun to make its presence felt at the airport, but the runway visual range was still good enough to consider an instrument approach.

So I pulled out the letdown plate for the live runway and began to position myself for a rather complicated DME/VOR approach. A quick check that I am at or above the sector safety altitude; that the DME is identifying OK; re-identify the Wick VOR; and check the QDM as correct for my approximate position. No GPS in those days.

Nothing appeared outside, so no interest there for me. Just keep flying the plane and guide it gently with nice rate one turns (no more than that), and on to the final approach track, descending according to the DME read out.

RVR now well below limits

Upon reaching my minimum descent altitude and decision height - still nothing but the Haar. Apply full power and climb away according to the published go-around procedure on the approach plate.

The controller confirmed to me that the RVR was now well below limits for anything, so no point in making another approach. Keep climbing and set a track to Inverness above sector safety altitude. Fly the QDR from Wick, eventually speak to military radar and make it safely to Inverness.

This can happen to anyone, whether they have an instrument rating, an IMC Rating or no instrument qualifications or experience at all. The weather doesn't care who you are. It treats everyone exactly the same.

Life saver

So if you don't have an IMC or instrument rating go and start to get one. It may just save your life one day. And probably when you least expect it. And by the way, ALWAYS take on board maximum fuel as you never know where you might end up.

Please fly safe and confidently.



*The Haar rolls in,
Image copyright Steven Fullerton*

