Instrument Pilot

The PPL/IR Europe Magazine | No. 56 | July-August 2006

ARTICLES

REPORTS

EUROSTUFF

REVIEWS

Peter Holy reviews the LS800 tablet computer. See page 20

PPL/IR EUROPE

Chairman's report PPL/IR Europe's AGM 6th May 2006

The level of activity in relation to legislative proposals has again increased this year and we have responded to most, either directly as PPL/IR Europe, or via the General Aviation Alliance.

There are many proposed airspace changes and we have commented where possible. The CAA is undertaking a review of the process for handling proposed airspace changes and we are looking into that. We are also engaged in the GPS approach trials, initiated by Jim Thorpe but only recently acted upon by the CAA. We are concerned that N Registered aircraft are excluded from them and representations have been made on this.

I attended the AGM of Europe Air Sports in Cologne in March. Many European groups were represented and many common issues addressed. We have just submitted a major paper in response to the DfT consultation on the proposed extension of EC1592, powers of EASA to cover licensing and operations etc. and are linked into the workings of the EAS group dealing with the new licensing proposals potentially affecting "non complex" aircraft up to 5.7 tonnes.

The Future

Much of the "power" in relation to matters affecting our flying has been ceded to the EC and we must recognise that. Accordingly States and National Aviation Authorities are acting as subcontractor to EASA in relation to many matters they previously dealt with directly and it is very important that we fully engage, mainly via EAS, with what is happening in the overall European context.

We also need to keep in close contact with Government Departments (in the UK's case, the DfT) dealing at a national level representing us within many sub groups of the EC. This we are doing and I can report that relationships are good and constructive comment is well received.

The new SESAR (ex SESAME) project is now in the definition stage, both huge and complex, and entails a major change in ATM methods. If the forecast doubling of air traffic by 2020 actually occurs, the current systems will not cope. New systems are being promoted by the EC (via Eurocontrol) and interested industry and although we have little chance of a real voice except via IAOPA, it is essential we are involved or we might be "squeezed out" of the new system altogether; EAS is also addressing this issue.

A final point on overall European matters relates to the issue of Foreign Registered Aircraft which may affect many of you. The DfT has not responded on the results of the consultation undertaken last year. I believe there is intent to exclude N Registered aircraft from being

P 18 ▶

"Much of the "power" in relation to matters affecting our flying has been ceded to the EC"

Getting the most out of your Garmin GNS 430/530

By Steve Dunnett

> "The day is in two sessions, with presentations in the morning and hands-on practice in the the afternoon"

Camflight

Camflight is the trading name of a one-man training organisation based at Cambridge Airport, which specialises in training courses for private pilots in the new generation of navigation aids and advanced avionics. In particular, Camflight at present offers one day courses on using the new generation Garmin GPS/NAV/COM navigators.

Having flown for the previous 15 years using conventional NAV/COM avionics in rental aircraft, I have recently acquired my own PA28 equipped with a Garmin 430. It soon became apparent that the kit had the potential to offer considerably more than just the 'Direct to' mode of navigation I found myself using, so I was keen to find out more.

Arwyn Jones is a 747 captain for BA who nevertheless maintains an active GA interest, including being a CFII and regularly flying a Cirrus SR22. He has developed a long-standing interest in the development of advanced navigation avionics that are being fitted in light GA aircraft. Having attended a number of training courses and seminars in the USA, he recognised that the power and safety of this new generation is not being utilised to the full, in particular by UK pilots with limited access to similar training opportunities. Camflight was founded in 1999 to address this need and provide a focus for his interest in GA pilot training.

The courses are run as full day affairs, typically about once per month, and organised according to interest at somewhat short notice to be fitted in between the gaps in his long haul airline schedule. In spite of extensive overlap, each course tends to focus on either the 430 or 530, dependent upon demand, rather than try to mix the two sets of users together.

Numbers are limited to no more than six participants on any one course to allow the maximum opportunities for individualised training, interaction, discussion and full access to the equipment during the practical session.

The Garmin 430 course

So off I set on a raw March morning. The weather was foul so I had a six am start to drive over from Cardiff to Cambridge, rather than fly as originally planned. As it turned out this worked to my great advantage, since of the four fellow pilots booked for the day, I was the only one that did not cancel. With no grouching to mar his enthusiasm for the subject, Arwyn therefore provided me a whole day of 1-to-1 supervision (reflecting one of the great strengths of the university co-located in the same city as Cambridge airport), which was needless to say fantastically valuable for me.

The day is organised into two main sessions, with the morning being based on seminar-style PowerPoint slide presentation, and the afternoon a practical session with detailed hands on manipulation of the Garmin box. The morning session started with the principles of GPS (which was skipped through quite fast as I am better on the theory than the practicalities), followed by the basic operations of the NAV and COM sides of the Garmin box, buttons and their functions, and a more thorough discussion of the different navigation pages. There are two features of the presentation that are worthy of mention. First, Arwyn is highly interactive with a small audience, so that although the presentation is structured we freely went off on tangents to explain, clarify and probe many different aspects of GPS and equipment use. Secondly, although all the information is in the manual, it is not always easy to find in its formal layout, nor is the practical utility always made clear. The presentation was peppered with short cuts, mnemonics and how to get the maximum use out of the kit while helping you to avoid getting bogged down with the complexities.

Tricks of the Trade:
Checking NAV integrity
The second page at power on, which I usually flip straight past with a double Enter, provides an Instrument Panel Self-Test. The Garmin box signals standard settings to remote instruments (principally the HSI/CDI display) and you should confirm the OBS heading, the CDI showing half left/no flag, the glide-slope half down/ no flag and DME 10nm/150kts/4min to destination. This automatic integrity check should replaced the Tune - Ident – Set – 10º left and right – 180º rotate To and From checks presently required at the IR renewal, or indeed strictly before any instrument flight.

Docking station

After a brief lunch in the Marshalls Cambridge Airport staff canteen (just how you would imagine a works canteen!), the afternoon session was dedicated to the practical class. Camflight provides several docking stations that provide power source and connections for either Garmin model. Attendees are encouraged to bring their own box in from the airplane, so it will be already configured as you like it (or you can reconfigure your own options there and then depending on some of the discussions of the niceties of the AUX pages).

Alternatively, local models are borrowed for those without the hardware on hand, as I was on this occasion. All afternoon was then spent simulating flights over departure, airways, arrival and approach routes, how to quickly seek and transfer en route and destination NAV and COM frequencies, handle diversions – and more critically getting back onto flight plan after an

ATC-induced excursion – and calling up and activating approach and arrivals procedures. The emphasis was on getting to know and practice the effective button sequences needed to drive the equipment, i.e. to transfer needs effortlessly into practice without the (to many of us) familiar experience of the box getting stuck where we don't want to be!

Tricks of the Trade:
Entering flight plans
Always enter a new route into a vacant route slot in the Flight Plan Catalogue (Press FPL button then turn small knob one click clockwise) as opposed to entering or editing a route in the '00' (or active) Flight Plan that is first displayed. The entered data will be saved in the FPL Catalogue, regardless of what happens while you are building it (such as a power interruption or making any other errors in data entry that breaks the sequence). Then transfer to the Active FPL ('00') once the whole route is entered.

Follow the Flight Plan

If there is one underlying theme of the training day, it is the advice to get away from the 'Direct To' mode of navigation. The power of the Garmin kit can only begin to be appreciated when working in Flight Plan mode. Only then can you achieve the multiple features of direct transfer of COM and NAV frequencies, re-routings, en route decision points, summoning up SIDS, STARs and approach procedures be readily available, and (for those with the equipment) incorporate fuel planning, consumption and range calculations.

Tricks of the Trade:
Jumping waypoints
ATC gives you direct to a waypoint one or two steps down your flight plan. Rather than using the D→ (Direct to) button and entering the waypoint de novo, use D→ (the cursor is automatically active), rotate the large knob to highlight the FPL window, then the small knob to highlight the later waypoint in the FPL, Press ENT twice.

Consequently, a significant proportion of time during both the theory and practical sessions was spent on entering, modifying and navigating the Flight Plan pages, including how to modify them in flight with changing ATC instructions, weather, diversions etc. This included both extended consideration of procedures and simple mnemonics to aid recall – my favourite being the DME (see box) to get you back on plan after getting way off-track, whether due to following the ATC dance or to confused fingers in all the button pressing.

Tricks of the Trade:
'DME'
ATC has sent you off on a load of vectors to remote waypoints, which you have followed using the D→ (Direct to) button, taking you way off flight planned route. On clearance to 'resume own navigation' you need to instantly return to the active flight plan: Since the first option on the Menu list on the Direct to page is to return to the flight plan, simply key in turn 'Direct to – 'Menu' – 'Enter'

Not everything about the kit is perfect of course. The protocols I found most confusing related to arrivals routes and procedural approaches, in which (as far as my understanding goes) the combination of the Garmin software and Jeppesen database are limited to requiring/assuming certain sequences of turns which can go awry if the flight requires deviations from the standard approach. One example was a demand to undertake more than one hold at the fix before launching down the final approach track. On the basis of the training, I would not feel confident in using any of the arrivals procedures in active mode, rather than simply having them called up on screen for visual reference while following the paper plates.

And another 'Gotcha', in which Arwyn described VLOC as the 'KILL' button. The danger occurs when flying to a beacon (e.g. 'CAM' at Cambridge) on the inbound course of an ILS which is tuned and idented, but the unit is left in GPS tracking mode rather than pressing VLOC to make active the ILS localiser and glidepath. On some installations, this can blindly fly you into the ground thinking you are following the ILS localiser with a centralised glide-slope, while actually still en route to the CAM GPS destination and without any vertical navigation or any warning flags showing. I have taken on board the advice to have 'Set VLOC' as one of the essential items on my Pre take-off and Arrivals check lists.

Conclusions

I have come away from the course with an even greater appreciation of my Garmin 430 and what it can do. Many of these new lessons I have retained, and I am sure that I can now use more of the features, more reliably. At the same time, I have already forgotten even more of the practical tricks and procedures to which I was introduced, and like so many other aspects of my instrument flying, the biggest challenge is to get sufficient practice and maintain currency for the whole to be maintained at the high standard to which I aspire. I am already ready for a second full day of refresher training – and that is for just one bit of kit in a full panel!

I can strongly recommend Arwyn Jones' Camflight course to everyone using new generation Garmin navigators in their panel. For those new to the kit, like me, the day was an efficient and effective introduction and challenge to get better use of the equipment we have, presented in a stimulating and approachable package. I consider it to have been £145 incredibly well spent. I anticipate that even those far more experienced and expert than myself would still gain many indicators from the presentation and discussion to develop their own practice – indeed, Arwyn himself confesses to still having occasional surprises – not so much in discovering unknown features of the kit, as in continuing refinement of the procedures to be used in putting it all together effortlessly in the practical cockpit environment.

For further information on future Garmin 430/530 courses, contact:
Arwyn Jones, Camflight, Cambridge Airport:
Website: www.camflight.com
Email: arwyn@camflight.com
Tel: +44 (0)1223 891829

> "VLOC is the 'KILL' button... this can blindly fly you into the ground thinking you are following the ILS localiser with a centralised glide-slope"

By Matthew Stibbe

Matthew Stibbe is editor of ModernPilot.com, the free online magazine for pilots

Out with the old: FAA says goodbye to DF

The FAA proposes to scrap all 54 direction finders and related approaches in all states except Alaska. Citing old equipment and the availability of better alternatives such as VOR, ADF and GPS, the FAA hopes to complete the move by next March.

Eclipse 500 nears certification

At the time of writing Eclipse is within shouting distance of certifying its Eclipse 500 very light jet after more than 2,000 hours of testing but supplier delays had caused some delay to the hoped for end-June date. At the EBACE trade show, company CEO Vern Raburn commented that "there are no technical risks left, only schedule risks" on the path to certification. However, he added, "it's never done until it's done."

The company has, however, released the final performance figures for the Eclipse 500. It misses just one target: range. NBAA IFR range will be 130 nm short of its 1,280 nm target. On a more positive note, top speed is 370 knots and useful load is 200 pounds over the original target. According to the company, only two customers have asked for their deposits back as a result of the missed target.

VLJs ups and downs

The Sport-Jet made its maiden flight in May. The single-engine, four-seat very light jet competes with Diamond's D-JET and Cirrus's as-yet-unrevealed personal jet with a projected price of around $1m. Performance goals include 340 knots at 25,000 and a 900 nm range. Unfortunately, the company suffered a setback when the prototype crashed on takeoff for its 25th test flight. Both pilots were unharmed.

Diamond, the Austrian plane-builder, announced that the D-JET made its maiden flight on 18th April. The flight lasted one hour and six minutes and explored the slow flight envelope, reaching a maximum altitude of 12,000 feet. "We are absolutely delighted with this flight", said Christian Dries, the company's CEO, who flew the chase aircraft. "The test flight went exactly as planned. What more could you ask for?" Diamond is currently expanding the envelope and has already flown the plane up to 280 knots and the design limit of 25,000. The five-seat, single-engine jet is expected to cost less than $1m.

Over at Aviation Technology Group, the Javelin two-seater fighter-like VLJ continues testing and the manufacturer has announced a number of improvements including a larger wing to reduce approach speeds and an rear-hinged canopy for easy access to the cockpit. The $2.8m two-seater jet can climb at 10,000 feet per minute and cruise at 0.90 Mach (525 KTAS).

At the higher end of the very light jet spectrum, Cessna's Mustang fleet nears 1,250 flight test hours and their first customer demonstration aircraft has had its maiden flight. Embraer, who are the world's fourth-largest aircraft manufacturer but a relative newcomer to the business jet market, has cut first metal on its Phenom 100 VLJ.

DayJet gets ready for take-off

DayJet, based in Delray Beach, Florida, is planning an air taxi service using Eclipse 500s. Their first aircraft is on the Eclipse production line and awaits completion and certification. They have ordered 239 aircraft but will launch initially with a service between five Florida cities. Passengers will book using a website. They'll specify the route - which city pair - and the earliest time they can leave and the latest time they can arrive at their destination. The wider the window, the more flexibility DayJet has to reduce the cost by loading another passenger or picking someone else up en-route. The night before departure you get an itinerary with the exact departure time and route and they expect you to 'check in' at the airport's FBO or private jet terminal no later than half an hour before departure. It offers the general public the kind of convenient travel that PPL/IRs have been enjoying for a long time. The five-seat, single-engine jet is expected to cost around $1.36m

State background checks pending in New York

Since 9/11, many individual states considered carrying out background checks on student pilots but such moves were held in abeyance as federal regulations came into effect. However, New York's state senate is again considering a New York state-only background check on student pilots. With pilots from Europe already required to jump through a series of expensive hoops to train for licences and ratings in the US, such a move may make training in the Empire State less attractive.

Rumours of Cessna Light Sport Aircraft and 'Cirrus-killer'

As the Cessna 172 passes its 50th anniversary, rumours grow that Cessna is considering both a 'Cirrus-killer' and the company has announced an interest in the emerging Light Sport Aircraft category with a decision expected in early 2007.

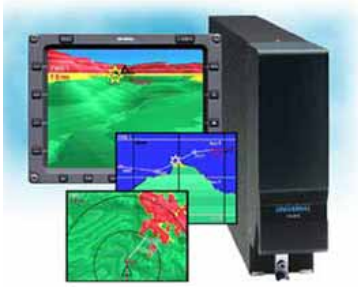
General Aviation Fractional Ownership scheme

While NetJets and the like are very familiar to people in the business jet world and less-commercial syndicates and flying clubs are common at GA airfields throughout Europe, several companies are bringing the idea of shared ownership under a commercial organisation to light aircraft. In the US, Airshares Elite and OurPlane have been growing rapidly, offering a range of sophisticated aircraft such as the Cirrus SR-22. The idea is that you buy a share of the aircraft and pay an hourly rate and, sometimes, a monthly management fee while the company looks after operations and maintenance for you. Pilots get many of the benefits of ownership without all the costs and hassle. Now the concept is coming to Europe. For example, City Flyer and FreeFlight Aviation have schemes that offer Cirrus aircraft in the UK.

FAA approves FlightSafety Farnborough

The FAA has awarded FlightSafety International's new training centre at Farnborough a Part 142 certificate. This will allow FAA-approved training on a range of turbo and jet aircraft in simulators there. For anyone unlucky enough not to own a business jet, they also have a Lasergrade concession which will allow them to administer FAA written exams, including the instrument rating written.

Synthetic vision PFD approved



Universal Avionics has developed a glass cockpit avionic display which puts a synthetic three dimensional view of the terrain ahead on the primary flight display (PFD) and an 'over the shoulder' wingman view on the navigation display (ND). In IFR conditions, this gives a pilot much great terrain awareness and reproduces electronically not just an artificial horizon but a whole artificial landscape. It has been tested on a Bombardier Challenger 601 and is now STC'd for Part 23 aircraft, the actual avionics weighs just 9kg and could potentially be fitted in smaller aircraft.

Florida fills up

The skies above Florida, a popular destination for pilots training for FAA licences and ratings, are filling up with planes and the local government is happy about it. It is the second-busiest aviation state in the US. According to the state's Transportation Department, there 860 aviation-related facilities in the state including heliports, glider ports and seaplane bases and it is home to 14,000 aircraft. Apparently 20 per cent of the world's flight training occurs there although no mention is made of the impact of increased security checks and visa complications since 9/11. Although the Transportation Department warns of a looming 'capacity crunch' it broadly welcomes the economic benefits of general aviation in the state. The detailed report is a role model for European states when considering the impact of general aviation.

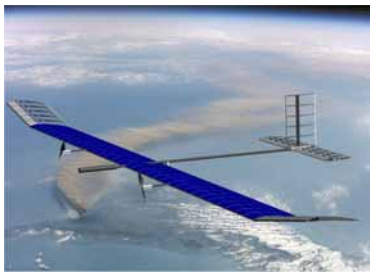
LORAN gone but not forgotten

AOPA have urged the FAA to support the continued operation of the LORAN navigation system until a permanent backup system for GPS is established. The U.S. Coast Guard plan to decommission the LORAN system is "premature," AOPA said. "Once gone, LORAN will no longer be a backup option, and any other suitable aviation alternative would likely be more costly, take longer to implement, and would be the responsibility of the FAA exclusively," AOPA President Phil Boyer told FAA Administrator Marion Blakey. "Let's look before we leap on this issue." Although most GA pilots use VORs as a backup Navaid, the FAA is planning to decommission VOR stations, leaving no backup system should there be a major disruption to GPS. Originally developed for military and marine navigation, LORAN uses a chain of low-frequency, ground-based radio transmitters maintained by the U.S. Coast Guard. AOPA asked the FAA to evaluate the viability of LORAN as a backup navigation signal that supports RNP 0.3 performance and ADS-B requirements, before proceeding with plans to discontinue it. (A.T.)

Microsoft Flight Simulator X

Microsoft have announced the next generation of their Flight Simulator series, the best selling series of computer games in history. It is due at the end of this year and features new aircraft, including a microlight, and a game-like sequence of 55 missions. However, with the addition of authentic controls and add-on software such as Eaglesoft's Cirrus simulator or the Reality XP Garmin 430 control, it can grow into a very effective IFR training tool. Although it's widely known that Eclipse CEO used to work at Microsoft, it is less well-known that one of his responsibilities was marketing the first version of Flight Simulator. Back then, in the early 80s, the program's author decided to publish the game with Microsoft 'because of its nice small-company atmosphere.'

Perpetual motion machine



The Mercator, an un-crewed plane with a 16m wingspan, will cruise the stratosphere for weeks or months at a stately 20-30 knots. Made out of carbon fibre, it is powered by solar cells. During the day they drive the two propellers and charge batteries for night operations. A 40 percent scale model is already flying on a weekly basis at low altitudes. The designers, a British firm named QinetiQ, also make satellites. The Mercator will offer similar capabilities at a fraction of the cost. "What we're aiming for is perpetual self-sustaining flight," says QinetiQ's Paul Davey.

Flying file server

The Global Hawk is a veteran of the wars in Iraq and Afghanistan. Like the fabled U2, it can prowl the stratosphere taking images with infrared, electro-optical sensors or radar. Unlike the U2, it is unmanned and can stay aloft for more than 32 hours at a stretch. It is launched with a single mouse click and the plane carries out the entire flight autonomously. A recent innovation by Northrop Grumman, makers of the Global Hawk, puts a file server and military radio on board. This allows front line grunts to call up images from the plane in real time using a PDA connected to a radio modem. "It's just like MapQuest," says the manufacturer.

Pilots' Talk

Dates for your diary

Aero – Club Ide Dunkerque - Fête de l'Air - 27th of August 2006

The Fête comprises of a static air display where French, Belgian & British pilots get to meet with a display of interesting and unique aircraft and where many members of the public get their first taste of general aviation. Hubert Dussert, the Aero Club's representative advised. "Last year, more than 15 English pilots came and see us and most of them will be back in Dunkirk for this event. This year, well also present a small air show with famous aerobatics women pilots. We'll be glad to offer you a good atmosphere and part of your fuel costs. You won't have to go first to another airfield for customs; you'll only have to send me your aircraft number, type and your passengers' identities, and we'll do what's necessary."

For further information, please email hubert.dussert@wanadoo.fr.

PPL/IR Europe combined workshop/social weekend 9th-10th Sep, Kortrijk, Belgium

Saturday 9th September:

- Morning: arrival, transfer to hotel, buffet lunch.
- Afternoon: Three presentations from: Micaela Verissimo (Rulemaking Officer, EASA) on the new policies and approach to rule making for GA in Europe; Jim Thorpe on IR flight planning and accessing the European airways system; and Dirk De Jonge on engine management for economy, health and efficiency.
- Evening: social dinner.

Sunday 10th September:

- Morning: local sightseeing plus organized tour of the Ypres WWI battlefield and museum.
- Lunchtime/afternoon: departures

For booking information please complete and return the form on page 12, or see the website http://www.pplir.org/index.php?option=com_content&task=view&id=153 or email Steve Dunnett at meetings@pplir.org.

Guernsey Aero Club 35th International Air Rally - Friday 8th to Sunday 10th September 2006

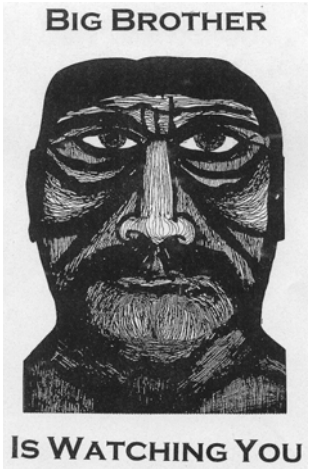
Full details were listed in IP issue 55. Alternatively, see http://www.guernseyaeroclub.com/rally/.

September 22nd to 24th - lunatic aviation festival week

Lunatic aviation festival, St Hillaire

Full details were listed in IP issue 55. For more details contact Jim Thorpe or Steve Dunnett (Meetings secretary).

Background checks on pilots - with Orwellian implications



Proposed EU legislation changes to introduce increased security at Airports are giving serious concern as the definition of an airport is wide enough to extend to sites wherever aviation activity takes place plus there is a proposal for "As a matter of principle, all pilots should be subject to a background check (on a continuing basis) in order to counter the possibility of security loopholes".

An 'airport' means any area of land [or water] specially adapted for landing, taking-off, and manoeuvring aircraft, including ancillary installations which these operations may involve for the requirements of aircraft traffic and services including the installations needed to assist commercial air services.

There is more information available at: http://www.europarl.europa.eu/oeil/file.jsp?id=5274732.

We will keep you advised. (***Paul Draper***).

Refresher workshops exclusive to PPL/IR Europe members

Workshops will be held on the following Saturdays, 10:30 to 16:00 hours; 16th September 2006 and 2nd December 2006. The workshop is subject to a minimum of four confirmed delegates four weeks in advance (and to a maximum of six delegates). Cost (including VAT) £150.00 - payable at time of booking. These courses are run on a 'not-for-profit' basis and take place at Professional Air Training Ltd, Bournemouth Airport. Arrive by car or air. For further details and booking: Tel. +44 1202 593366. Fax. +44 1202 574020. email info@pat.uk.com; http://www.pilotworkshops.com.

In the last issue (page 6) Dirk DeJonghe wrote up a review of Pilot Workshops. Since then, Dirk has managed to negotiate a 20% discount for PPL/IR Europe members. To take advantage of this discount go to www.pilotworkshops.com/pplir. If you go through the sample to the order page, it shows the standard prices. The discount is reflected when you select a product and go to the payment screen.

JAA FNPT simulator - discount for PPL/IR Europe members at Exeter (EGTE)

Simulator Flight Training Limited offers a 10% discount off of the standard training and IR renewal test fees subject to production of a current membership card when settling the invoice. Enquiries or bookings via Airways Flight Training's office at Exeter Airport on 01392 364216.

Airfield notes

This service in IP and on the website gives information about airports likely to be of interest to group members. We hope that members will contribute information on airfields they know so that the resource can grow quickly - www.pplir.org/pplir/viewforum.php?f=12. If you visit somewhere and find things have changed please pass on an update. (***Jim Thorpe***)

Morlaix Airfield In Brittany - LFRU

Many of the smaller, but never-the-less well equipped, airfields in France are owned and operated by the local Chamber of Commerce and Morlaix is no exception to this.

Morlaix viaduct

Morlaix is a town full of history – Mary Queen of Scots passed through in 1548 on her way from nearby Roscoff to Paris and stayed at the Jacobin convent. It has a famous viaduct and the town lies in the valley beneath it. It also has a wonderful assortment of shops, a Saturday market in the centre and a multitude of very good restaurants. We had a delicious meal at a "Lebanese-style" restaurant. It is on the north coast of France between Brest in the West and Lannion and Dinard in the East.

Pilots coming from the UK can pick up low cost duty and tax free fuel in Jersey on the way there or back.

The airfield (LFRU) has one hard runway (05/23) 1617 metres and two grass runways (16/34) 900 metres and (10/2) 610 metres. A phone call or fax 24 hours before intended arrival to, phone +33(0)298621609 or fax +33(0)298626536 with your intended dates and times of arrival and departure, your airport of departure and return destination, SOB and "request customs", is all that is needed. Once you have done this you can even land there during the extended French lunch hour and other times when the airfield is not manned. When the tower is operational on 118.5 it is "information only". Other times do blind transmissions when overhead, downwind, base and finals, preferably in French and listen for other traffic. Go to www.webvivant.com/aero-andaines/vocab-radio.html for the French phrases for these calls. Additionally for any flying in France you might also find http://flyinfrance.free.fr/ useful.

After landing, park by the tower and enter the bar in the terminal building. Do not forget to close your flight plan on the phone (+33810437837). Whilst you have a coffee they will order a taxi for you to take you the four kilometres into the town. The return trip including a visit to the Geant Hypermarket cost us 16 Euros and we arranged the pick-up place and time of the return trip with the driver on the way in. We used the taxi belonging to Guy Laviec on +33(0)298883543.

The landing fee at Morlaix is only 5 Euros for a PA28 and I paid 10 Euros for my PA34 Seneca and there are no parking charges. The airport and bar are run by the manager, Michel (who speaks good English) and his wife Chantal, who are both most helpful and keen to welcome more GA visiting aircraft, both VFR and IFR.

For the latter, there is a Locator DME or Locator procedure available for runway 23. It is a charming town, and as well as the shops and restaurants aforementioned, there are quite a few museums as well, and other places of historical interest. (***Charles Strasser***).

Quimper - LFRQ

In a nutshell: very reasonable landing fees, relatively close to town, customs & H24 with prior notice, Total self serve fuel pump, ILS and full lights, usually very quiet, easy parking... what more can you ask for! www.sia.aviation-civile.gouv.fr/html/frameset_aip_fr.htm.

Quimper is basically H24 (see above link for manned hours), as you can land there out of hours using the PCL lights if you give them adequate notice and fax an indemnity. Same frequency as Tower, and also gives you AWOS-like weather info if no one is in the tower. They have recently expanded the Tower hours however, so they are usually around. Usual air to air calls in French if not.

Customs: fax to local Douanes office (check the SIA website for the number), 24hrs prior notice. Never had them turn up (yet!).

Straightforward ILS28 approach, controlled by Iroise (Brest), which is H24. Check the VFR reporting points on the SIA website for VFR arrivals, basically avoids the town, and arrives mid-downwind.

IFR departures: Clearance given with very little delay by the tower; got cleared direct Guernsey several times immediately after becoming airborne.

On the ground: There is a little gate with a code displayed on a notice by the airside door of the tower, so you bypass the (modern) passenger terminal.

Landing fees non event, sub 10 euros for a single with 2 days parking I think. You can park right next to the tower and the gate for a small fee, or on the grass about 100m away for next to nothing. Last time I landed at night I think I was charged 30 euros for the lights. Maybe I am off by a few euros, but still cheap.

Fuel: usually manned by the fire crew, so they (or he... usually one guy only) are nearly always there but busy during the arrival/dep of the twice daily flight from Paris. They now have an automated Total fuel card system (takes Total card only, nearly essential if you fly in France a lot) since Xmas 2006. Getting fuel rapidly used to be my only gripe, but that has been addressed with self serve pump (the aero club have their own, separate pump).

One word of caution: they now seem to frequently have a GTA gendarme (Air Transport Gendarme) who sits in a small office at the foot of the tower overlooking the apron, and he is so bored that he likes to ramp check aircraft. So make sure all you papers are in order (CoA, VAT etc). He had a three page checklist when I was ramp checked last summer, and I was glad to see that I ticked all the boxes (although he was professional and friendly, and it only took ten minutes, he seemed mildly disappointed by that!)

Southern Brittany is very nice. Lots of nice small fishing villages, Quimper is nice too, and Belle Ile is only a short flight away. Runway 28/10 is the main runway, 04/22 sometimes used when there is a strong crosswind by light aircraft, but very rarely, and does not seem to be as well maintained. Avoid the town for noise abatement. Check the SIA VFR chart for reporting points. The tower will usually ask you to call passing 1500ft and then pass you to Iroise. My transponder also seems to interfere with my comm radio (nothing serious, only keeps squelch open) when on the tower frequency.

Landing fees: I have tried several times to find someone in the main terminal to pay the fees, but no one seems to be around, so I usually wait for them to bill me a month later by post (which I always get, so avoiding paying is not only illegal and counterproductive considering how cheap they are, it doesn't work!). You might want to give them a courtesy call with your address and ask to be billed, it saves time on the ground (which might be tricky however if you don't have French cheques), (***Patrick O'Donnell***).

Airspace Infringements

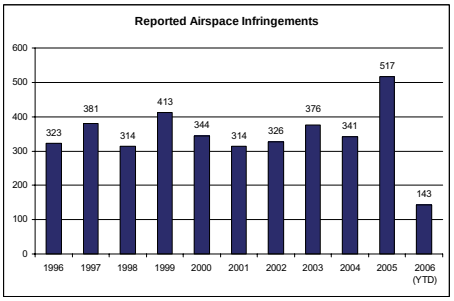
A statistical perspective on the 2005/6 data by Ian Harnett

Let me say right at the beginning of this article that I am not an expert in Airspace Infringements! Instead, I am looking at the latest data from the perspective of someone who, over the last few decades, has spent much of his time looking at a range of different types of statistics. I also come to this as someone keen to understand more about the data since I am about replace our Chairman Paul Draper representing PPL/IR Europe on the Airspace Infringement Working Group (AIWG). So… apologies for any errors and omissions.

Airspace Infringements have become a high priority for the CAA/NATS and the whole UK GA community in recent years with initiatives such as the "Fly On-Track" programme that has seen excellent work done on collating the reasons behind GA Airspace Infringements (see www.flyontrack.co.uk), to the NATS "Destination" initiative which has seen controllers encouraged to report all infringements. Indeed, Airspace Infringements warrants its own section in the CAA 2006 Safety Plan.

So let's start by looking at the headline figures…

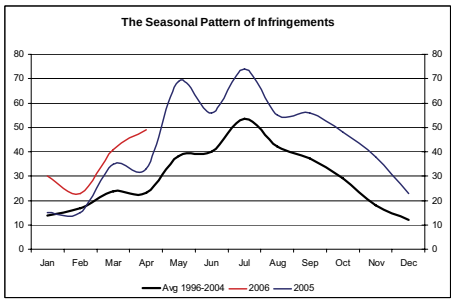
In the chart below we can see that until 2005 the average number of Airspace Infringements was relatively static, averaging around 350 between 1996 and 2004, with a fairly narrow spread (314 to 413 per year).



The data for 2005 and 2006 appear, however, out of step with the previous data. The 517 reported infringements in 2005 were almost 25% higher than the previously reported worse year (1999). The 2006 data are shaping up to be even worse. Looking at the monthly pattern of the 143 reports in the year to date (April is the most recent figure), shows reported infringements averaging 1.8 times the average for January-April 1996-2005. At this rate the 2006 data would produce a total of 641 infringements.

This increase in infringements might appear, at first sight, to be an indication of a trend towards poor airmanship amongst GA. Indeed, the data submitted by Terry Lober to the CAA General Aviation Strategic Review (available from the GAAC website) shows GA hours flown as having stabilised at around 1.2 million hours per year, which spread over more GA aircraft, implies lower utilisation rates. This could suggest that a lack of currency might be a major factor influencing the rising infringement figures. However, whilst an attractive supposition, a more detailed look at the data shows that such a conclusion may well be misplaced.

The seasonal pattern of infringements helps us understand more...



Over the years 1996-2004 there was a consistent climb in reported infringements towards the month of July (presumably reflecting increased flying activity), after which the numbers or infringements falls. In 2005 and 2006, however, while there is a similar seasonal pattern, the number of reports increased substantially.

From a statistical perspective the scale of the increase in reported events is so large that it is highly unlikely that the 1996-2004 data and the 2006 data are drawn from the same sample. In statistical terms, three of the four observations made so far in 2006 are outside two standard deviations of the 1996-2004 (i.e. if the distribution of infringements for each month was random – the latest observations would only be expected to occur less than five times in every 100 events). Indeed, 10 of the last 12 monthly observations recorded were the highest monthly totals since 1996, suggesting that the greater reporting vigilance of controllers is the main issue here, rather than any comment on the competence (or currency) of the pilots being observed.

The bad news is that makes almost any analysis suspect…

The key implication of the new data, therefore, is that comparison of the pre-2004 data with current data becomes fraught with statistical difficulty.

Therefore, suggestions that GA recurrent training should be improved, with greater emphasis on basic navigation skills, or that that the use of GPS has led to an increasing number of airspace infringements, are difficult to sustain. Similarly, however, attempts by GA groups to use this data to show how the growth of controlled airspace in the last two years has led to a greater number of airspace infringements is also statistically flawed.

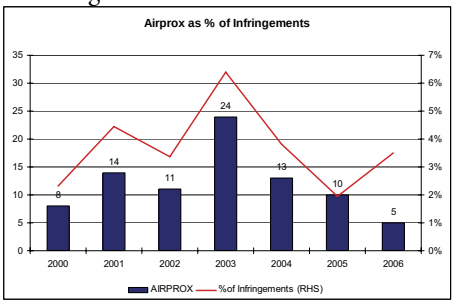
But the nature of current infringements can be better understood...

The 2005 and 2006 data do confirm that the nature of the infringements has remained broadly similar, with approximately 50%-60% of infringements being in Class D, around 20%-30% in Class A (CTRs, CTAs and Airways) and 10-20% in class G. The clear "hot-spots" for either assiduous reporting, or less than accurate flying, being Stansted and Luton (two of the top three sites for CTR and CTA incursions in both 2005 and 2006).

Of particular interest for PPL/IR Europe members is the fact that some 8%-10% of all infringements are of Airways (especially N864 and N866) and highlight the need for vigilance even when flying IFR if this is taking place in close proximity to VFR traffic.

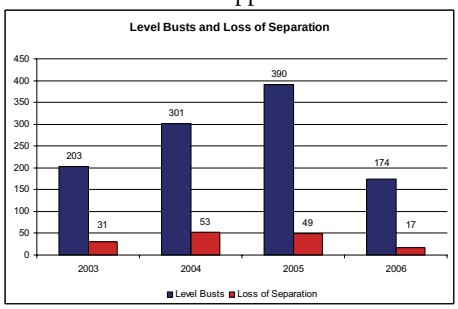
The good news is that airproxes are relatively stable…

Despite the dramatic rise in recorded infringements, the number of recorded airproxes involving GA has remained relatively stable in absolute terms (and fell to its lowest percentage of infringements in recent history in the 2005 data). This again is a possible source of evidence to suggest that the pattern of reporting that has changed rather than the underlying factors resulting in infringements.



…"level bust" data may be subject to similar recording problems

The other point to recognise is that it is not only infringements that are on the rise according to the CAA/NATS data. Level busts have also been the subject of an increased reporting initiative called "On the Level". Here too, it is unclear whether the standard of airmanship in UK airspace is falling – this time amongst commercial pilots, or whether there is now greater priority given to the full reporting of level busts. Again, however, the relative constancy in busts that resulted in events where separation was lost – despite the rise in overall reports of level busts – tends to support the view that it is the changed reporting regime that is the crucial factor.



However, a major cause for concern in PPL/IR Europe should be the relatively high proportion of non-AOC aircraft (i.e. PPL/IRs) responsible for level busts. This group accounted for 14.2% (127 of a total of 725) of level busts in the period from 2003-2005, with such flights accounting for just 5.3% of all recorded flights. Once more vigilance amongst PPL/IR Europe members is the buzzword.

Conclusion – Beware - both when flying IFR and when relying on statistics!

One of the great adages of statistics is "garbage in – garbage out". So we should welcome initiatives such as "Destination" and "On-the-Level" as improving the quality of data that is available to pilots and policymakers about where the risks surrounding IFR airspace usage are arising.

However, it is equally as dangerous to look at the increasing numbers of infringements or level-busts that are recorded under the new systems as indicating that training standards of changes in on-aircraft technology (such as GPS) have changed the probability of airproxes or significant separation issues. When we have three or four more years of data on the new data collection basis we will be able to draw some stronger conclusions.

For now, however, all we can say is that these more accurate data show that both GA and commercial pilots are still capable of making mistakes about the airspace that they are using (despite the improvement in technology and training available to both groups) and that extreme vigilance is required when operating in or around controlled airspace, for either IFR or VFR pilots.

Ian Harnett is a member of the PPL/IR Europe Executive. He is an IMC rated UK PPL with almost 400 hours and flies from Elstree in a Commander 114. Ian has a doctorate in Applied Econometrics from Oxford University and now runs his own Investment Research company, having previously worked in several major Investment Banks and the Bank of England.

LEVEL BUSTS

Continuing PPL/IR Europe's association with NATS, we have been provided the following incident report from Paul Hodgson, an ATC Investigator at the London Area Control Centre at Swanwick. NATS have also provided the leaflet entitled "avoiding communication error - top ten tips for pilots" which you will find enclosed in this edition of Instrument Pilot (but only if you receive a hard copy!)

Can you maintain your flight level? **A recent serious loss of separation in Controlled Airspace has highlighted how vital it is that pilots inform Air Traffic Control if they are unable to accurately maintain their allocated flight level for any reason.**

The pilot intended to make a short over-water flight from his home base to a destination on the south coast of England. The weather forecast for the return flight was not particularly good and was expected to preclude a VFR flight so an IFR flight plan was filed for a flight via the airways system. As the pilot was relatively inexperienced at IFR flight and with the poor weather forecast in mind he asked an experienced instructor from his local flying club to accompany him on the flight.

The flight northbound at FL50 was uneventful although at times in turbulence. During this flight the pilots noticed the suction instruments, especially the VSI and altimeter, were very lively which they believed suggested some form of static source blockage. The return flight later that day was made at FL60. This was just at the freezing level necessitating the use of pitot heat and involved flying in and out of the cloud tops. It became increasingly turbulent and the instructor asked the pilot if he required any assistance. As the pilot felt that he needed the practice at IFR flight under difficult conditions he elected to continue unassisted, but with the instructor keeping a close eye on his flying. ATC then gave a frequency change and as the pilot was changing frequency and retuning the VOR receiver the aircraft entered an area of worsening turbulence. The VSI indicated a 1500fpm climb and the altimeter was indicating a climb also and so the instructor reminded the pilot to maintain his altitude by lowering the nose to regain FL60. The turbulence and the erroneous readings of the instruments made it difficult to control the aircraft accurately and the pilot over-controlled the aircraft, entering a high rate of descent. The instructor then took control of the aircraft and climbed back to FL60 where it flew into clearer air and the flight continued at FL60.

However, the descent had taken the aircraft into confliction with opposite direction traffic on the airway below and, as both aircraft were flying in IMC, neither saw the other. The controller believed both aircraft were maintaining levels separated by 1000 feet and therefore not in conflict. He was busy dealing with other traffic and did not notice the level deviation so was unable to give avoiding action or traffic information.

Had either the pilot or instructor mentioned to ATC the difficulty the turbulence was causing them in maintaining level flight, the controller could have vectored the aircraft in order to provide lateral separation from the conflicting traffic or provided increased vertical separation.

When flying in controlled airspace, please always inform ATC if you are having difficulty maintaining level flight for any reason.

Getting a FAA IR at Chandler Air Service, Arizona

By Peter Holy

Part two of a three-part experience

Peter Holy continues his account of getting an FAA Instrument Rating at Chandler Air Service in Arizona

> "The early morning temperature was around 2˚C; but the air is very dry with the dew point around -10˚C"

I flew from Heathrow direct into Phoenix, British Airways. The Immigration officer at Phoenix was very careful to check my TSA and Visa paperwork. I had the papers in the suitcase which one does not retrieve until after passing through Immigration; this got the officer pretty cheesed off and she said "Well, get your suitcase then and come right back HERE"...

The hotel, Chandler Inn on Arizona Avenue, is a low-cost self catering motel-like place at about $280 per week inc tax. The price is standard for motels and it is OK for this purpose. Unfortunately my apartment (self catering) had all the windows screwed down so they could not be opened, so there was no ventilation except when I was in and then I could leave the front door open. This was a problem as the gas cooker was making copious quantities of carbon monoxide - very evident from the way I felt until I realised it. Self catering (shopping at a nearby Safeway, etc) is highly desirable; this isn't Washington or San Francisco and eating out without getting a heart attack before the IR is a major challenge.

Internet connection

Having a business to run, I needed internet access for doing business emails. There was no WiFi (a type of wireless local area network enabling people to log onto the Internet and receive emails on the move) at the hotel which made doing business emails etc a bit of a problem as I had to use ultra-expensive GPRS (a mobile phone data connection); about $40/MB. It was fast though; at least two times faster than GPRS in Europe. Eventually I started buying WiFi time at a Starbucks which was on the way to the school. This was with T-Mobile; they did offer cheaper longer-term options but all appeared to involve recurring credit card debits which continued until stopped with a phone call... Later, the school kindly lent me an Ethernet cable, which worked perfectly. There are plenty of hotels that offer WiFi but all of them are about three times more expensive to stay in.

I had forgotten to bring my driving licence so could not rent a car but in any case the original plan had been to borrow a bike and the school had a few of them, left there by previous students who were doing the same thing. The ride was 35-45 minutes each way. The early morning temperature was cold, around +2C, so I was cycling in well wrapped up, only to come back in the afternoon in +25C. However, +2C in AZ feels nothing like +2C in the UK because the air in AZ is very dry, with the dew point around -10C.

I never adjusted to the local time, going to bed 7pm and getting up 3am. This somewhat bizarre approach suits the training quite well as the first lesson often starts 07:30, and there was nothing much to do in the evenings. The neighbourhood is a lot of Mexican businesses, mostly car parts, tyres, exhausts, and snack shops selling rubbish food. Perhaps unexpectedly, there was no social scene at the school - another good reason for going to bed at 7pm. However, given the intensity of the flight training, I don't think I would have been in much of a condition for boozing late at night! This two-week visit was planned to be a 100% "get your head down and get it done" project. This tactic also avoids the seven-hour jet lag upon return to the UK which would otherwise take a week to fully get over.

They do have absolutely spectacular sunsets if there is cloud, because the cloud base is very high (8000ft+) and there is dust around.

Chandler Air Service

Chandler Air Service is based at the Chandler Municipal Airport (KCHD) and they seem to own a fair chunk of the airport. They have about 25 planes and do a lot of aerobatic training alongside the PPL and IR stuff. The staff are really nice and pleasant and the instructors are a lot more competent than most of those I have had in the UK. Most of the instructors seem to be real instructors, not the ATPL hour builders common in the UK. The planes are mostly PA28 Warriors of widely varying ages. It was obvious that the utilisation was very high, with anything up to six one-hour flights every day the maintenance book was full of 100-hour checks. On a PA28, the 100-hour check is similar

to the Annual so they got looked at frequently enough.

Training aircraft

The training aircraft are basic but everything in the panel worked - except the autopilot (marked "INOP") on the one I was flying. No GPS was fitted so no GPS was taught; just the traditional VOR/DME and lots and lots of it, mostly on partial panel. The converse is true: if GPS is fitted you will have to learn all about it. There were no more NDB procedures taught because they are being phased out so they are no longer in the syllabus - although, apparently, if the aircraft used for the check ride carries an ADF the examiner might give you an NDB approach. The lack of GPS means you don't learn GPS approaches, but that hardly matters since they are almost nonexistent in Europe. It's probably a good thing for this purpose because learning to use an IFR GPS correctly is a job for a few more days, and one can learn GPS approaches closer to home, if it's ever needed. Also, the approach procedure is highly GPS unit specific. The only real problem with the aeroplanes was the dreadful DI which would lose anything up to 20 degrees following a 180 turn.

Initially, the school didn't know anything about how good or bad I was so they just marked up a load of flights, usually two per day, for each day of the two weeks I would be there, followed by a check ride one day before the end, allowing a bit of slack for a repeat check ride if necessary. In retrospect they got it exactly right.

The first two days were really hard. I could not understand much of the rapid, casually abbreviated and often heavily accented radio traffic, and got very confused by the fact that the actual flights were all done under VFR but I was doing the IFR radio calls to the instructor only who pretended to be the controller, and he was giving me IFR clearances, vectors, etc. After day three I was starting to get the hang of the context. All flying was under the IFR hood, which came on immediately after takeoff. However, a few times they made me do the whole takeoff under the hood, maintaining the runway heading using the rudder. This "zero visibility takeoff" is apparently not illegal under Part 91 (private flights) and isn't illegal in the UK either if one has a full IR, so they make sure you can do it. It's easy enough to do although obviously one would never actually do it for real in real zero visibility; one cannot see if there is something on the runway, and also any local departure minima will apply.

About half the training, and most of the check ride including unusual attitude recoveries, was flown on partial panel.

Training area

The training area is very small; within about 30 x 20 miles, which makes it intensive because you get little time between leaving one thing and having to do the next. Every flight is packed with stuff from takeoff to landing, with barely a minute's rest. There is no "cruise segment". You get just enough time to trim the plane for level flight and you are intercepting the first VOR radial, the next radial comes up two minutes later and the VOR approach three minutes after that. This is quite unlike most real flying because one normally has more time to think and plan. The short distances, if combined with random vectors from the "pretend-ATC" instructor, also mess up any situational awareness which you think you had. A pilot with 500 hours, current, including a fair bit of UK IFR, should already know how to do the individual flying bits, but this intensity is something else. It's easy to end up on the wrong side of some radial because you shot through it so fast you never noticed. The training includes a procedure where you need to be able to look at two VOR (CDI) displays and immediately tell where you are relative to the two radials. This is a neat trick but in my view close to worthless for real IFR flying because it works over about 160 degrees so you could end up with an intercept that is uselessly far away. One needs a bit more than that for decent situational awareness. A proper position fix requires a VOR/VOR or VOR/DME fix but this of course takes longer...

Minima

Every approach was flown to minima. Upon reaching the decision height you would announce "decision height" and the instructor or examiner would tell you if you were going to land or go missed. As I expected having done a fair bit of ILS back home, I flew good ILS approaches. Unexpectedly I also flew reasonably good partial panel (DI and AI covered up) VOR approaches and holds, using timed turns only. As always, getting the plane trimmed makes everything much easier, but this is easier said than done if there is a lot of thermal turbulence (common in Arizona after the early morning) or when the next radial to intercept comes up 20 seconds after you have reached top of climb... In fact, flying approaches was the easy part. The hard part was intercepting one radial, then another one a few miles later, then getting vectored about five times in rapid sequence, then (when the vectoring has made you lose all situational awareness) being asked to intercept another radial. They expect you to be able to take one look at the two CDIs and know right away where you are and which way to turn. It's doable but having to do radio calls as well really raises the workload. Turbulence just finishes you off!

P 12 ▶

> "The training area is very small... Every flight is packed with stuff from takeoff to landing"

Nogales International Airport, Arizona

Getting a FAA IR at Chandler Air Service
continued from page 11

A few more days later, it became a bit easier. I was getting better organised. However I was still making a number of mistakes on every flight - mostly little ones, to do with radio calls and nothing dangerous flying-wise. In fact, I would say that from the start and throughout the training my flying was safe. Even the partial panel stuff with timed turns was OK. I just did not work fast enough...

Pitch stability

The PA28-161, with its low wing loading, is amazingly unstable (for a "tourer") in the thermal turbulence, and would tip into a 45 degree bank and change heading by about 30 degrees in much less time than it takes to write down a clearance. This obviously drastically increased the workload, to the point where I was sometimes unable to do anything else even when flying straight and level. The other little thing I noticed, having been flying behind the TB20 constant speed prop for a few years, is just how harder a fixed pitch prop aircraft is in updraughts and downdraughts: you get an updraught, you have to point the nose down, and the faster airflow causes the engine to rev up quite dramatically, so pulling back on the power is a lot more essential than with a CS prop. I had never realised this huge benefit of a CS prop: superior pitch stability.

The only FAA logbook requirement that I did not have prior to going to the USA was the 250nm cross-country with an instructor and three different approaches so this was done after the first week. We flew IFR down to Tuczon and then to Nogales. Nogales is a really odd place; a tiny airfield close to the Mexican border but the Customs presence gives it the "Nogales International" title.

The flight was uneventful and due to the generous airway MEAs most of it was done around 10000ft. The radio work on this flight was entirely for real as it was flown under an IFR flight plan.

America is truly the land of aviation freedom. There are hard-runway airfields everywhere, and most of them have instrument approaches. There are even many air parks (residential communities with an airfield attached) with ILS or GPS approaches! This is quite unlike anywhere in Europe. The USA is covered in VORs in vast numbers which form the airway intersections. All the charts, en-route, terminal and instrument approach, are free and completely usable which is a huge contrast to "rip-off Europe" where everything is copyrighted and tightly controlled, enabling the principal aviation chart provider, Jeppesen, to charge many times as much money for the same amount of information.

Check ride

Two days before the check ride I flew with an examiner (not the one I was finally to have), for a mock check ride. He was relatively outspoken but I liked him; he was very fair and he made good points and made them well. Again I made a few mistakes but nothing major.

The day before the check ride, I met the final examiner who gave me an assignment to plan, for the flight early the following morning. This was an airways flight of about 300 miles to an airfield in New Mexico (KLRU).

Peter Holy's story will be continued in the next issue of Instrument Pilot.

PPL/IR Europe Weekend Meeting

Saturday 9th-Sunday 10th September

Park Hotel, Kortrijk, Belgium

PROGRAMME

Saturday

10.30-12.30	Arrive, Kortrijk Airport, hotel shuttle transport
12.15-13.15	Buffet lunch at hotel
13:15	Practical flying: access to European airways system, Jim Thorpe (PPL/IR Europe)
14:30	The new European regulatory agency, Micaela Verassimo (EASA)
15.45	Tea/coffee break
16:15	Engine management, Dirk De Jonghe (PPL/IR Europe)
17:30	End of formal meeting
19.30	Social dinner

Sunday

10.30-12.30	Tour of Ieper/Ypres battlefield museum (www.inflandersfields.com)
12.30-14.00	Lunch (please make own arrangement); hotel shuttle transport return to airfield

Meeting registration: £25/€40 payable to the meetings organiser on arrival at hotel to cover meeting room hire, teas/coffees, Saturday lunch and shuttle bus. Participants are responsible for airport fees and hotel charges (which include room, Saturday social dinner at €50 per person, and breakfast).

Registration: Please complete a separate registration form for each meeting participant (accompanying persons should be added to the participant's registration).

PPL/IR Europe Weekend meeting, Kortrijk, 9th/10th September

1. Name: .....
2. Accompanying person(s) .....
3. I will attend the social dinner [Yes] [No]
   Number of places .....
4. I wish to participate in the battlefield museum tour [Yes] [No]
   Number of places .....
5. I will arrive by Air/other mode of transport .....
6. A/C type .....
7. A/C reg .....
8. ETA ..... from .....
9. ETD ..... to .....
10. POB: .....
11. Passengers' names: .....
    .....
    .....

Hotel reservations. Rates: single €90, double €100 (discount rate). Please make room reservations with hotel: +32 56 22 03 03 or email to info.parkhotel@parkhotel.be. Please return completed registration to Steve Dunnett (meetings@pplir.org).

Why the European GPS is a very good thing indeed

By David Bruford

I've decided to have a rethink on this Galileo thing. A search of my archives reveals that I first publicly vented my disapproval of the project in August 1999 and have doggedly continued to reinforce my anti-project bias with unmitigated enthusiasm at every subsequent opportunity; but now the worm has turned.

Why?

Grunting

In order to attend the Cambridge AGM I cadged a flight with Nigel Everett, a pilot and accomplished aviation author with flying experience of several hundred years. While loading the aircraft in preparation for the flight I was criticised for grunting and moaning as a compliment to every act of minor physical exertion. I was aware that after passing the age of 40 I had slipped into the habit of making noises when bending or lifting but had assumed that this was the Darwinian inevitability of ageing.

"Not on." Stated Everett, who is many decades my senior. "I don't allow grunting or moaning in my house or aircraft." And so, with self discipline and some sarcastic reminders, I have curtailed the routine and feel years younger for it. I have even managed, with limited success, to convert my long suffering wife to the cult of Everettism.

Galileo

So, several weeks later, we are sat on a sun-kissed equatorial beach and something, god knows what, gives rise to me moaning about Galileo. That's the EU Satellite Navigation system, not the dead Italian astronomer Galileo Galilei.

"Is there any chance." She asks in a tone that requires her teeth to be clenched. "That Everettism can be extended to your endless moaning?"

Fair comment I think, and inspired by several lunchtime rum punches, I decide to look at this Galileo chap from a whole new positive perspective.

What a sensible idea

The railway system

Imagine, just for a moment, that you live in Europe and that the whole area is covered by a well established and relatively efficient infrastructure called The Railway System. Let's pretend that it is completely free to use. OK, perhaps you have to pay something initially to receive this free service but after that, you can use the service 24/7, Europe-wide at no cost at all and that is guaranteed in perpetuity.

Stupid theory, I hear you shout; someone or something must pay for the running costs, maintenance and updates. Bear with me. In my utopian mindset, all the costs are paid by Uncle Sam, perhaps the US Department of Defense.

So there we are. It's 1999 and life for the rail user is great. But "Wait." Says some minor EU clerk. "What if the US DoD decide to stop paying and won't let us Europeans use their tracks?" He refers this to his Minister for Transport. "No worries." Say the Minister's researchers. "The US government has assured us in writing that they will give us six years notice if they intend to cease funding. Plenty of time for us to set up our own system"

But by now the seeds of doubt are sewn, EU ministers chatter, clerical Johnnies see solid employment prospects and fat pensions ahead. The rallying call evolves. "Europe needs its own independent rail system."

This is a brilliant idea with a distinct advantage over most new-start projects in that the existing rail system has proved, for decades, to be geographically efficiently placed, so the EU can save a fortune in R&D and site surveys. All the EU has to do is build new rail tracks alongside the existing US rail tracks all over Europe. New stations can be built opposite the existing stations as they are obviously, also in the right places.

Who will pay?

Patron saint of transport

Such a project would obviously cost €billions but that is simply covered. If multi-billion Euro contracts are being awarded to construction companies and rolling stock manufacturers, perhaps they'd like to invest in the project? Let's call it something thoughtful, in a similar way that Galileo is not an acronym, how about Christopher, after the patron saint of transport?

So, the mandarins calculate that a 50% contribution towards the initial setup costs would seem fair and they all agree and contracts are awarded. OK, the contracts don't actually include any obligation to invest in Christopher and eventually they only provide 0.3% of the required funding but that's not a problem because the EU taxpayer will cover the other 99.7% or, in Monopoly money terms, €3.6bn which we know will at least, eventually double.

"Not on." Say the ministers. We stated at the outset of the project that the taxpayer would not have to pay more than 50% and we are honest, trustworthy politicians and people expect us to stand by our policies." A few multi-million Euro 'independent' studies later and the ideal utopian is found.

The US system will be allowed to continue and the EU system will be compatible in every way. The engines and carriages will even fit on the US tracks (in case that was ever needed) and everybody will be able to continue to use the US system for free.

Users who will travel on the parallel European rail network will pay by the mile and that will provide the required balance of funding.

Brilliant.

THE AFRICAN BABOON SPIDER SCARE

Adèle Stephenson recounts a flight which her checklist didn't cater for

> "The baggage and cargo were only separated from the passenger cabin... by a cargo net"

The Fokker F27 (Friendship) with its 44 passenger seats and two noisy RR Dart engines was one of the DC 3 replacements that enjoyed worldwide use and is still used to this day in some places. One of its features, in common with many other turboprops, was that there were no under-floor holds so the baggage and cargo were only separated from the passenger cabin by bulkheads, doors and in the case of the F27's rear hold, a cargo net. This sometimes had advantages but at other times made life difficult. I worked for a company that had about a dozen of these aircraft at one time. They were all different in terms of flight deck layout except in one respect – none had an autopilot or flight director. We were therefore kept on our toes at all times but my instrument flying has never been so good before or since - we were all bad-weather aces because we had to be!

One epic began at 6.15 a.m. on a misty morning at a small regional airport when the first three F27s of the day were prepared to be launched more or less simultaneously for various destinations. With only 45 minutes scheduled from report time to airborne, one always had to move briskly and hope that nothing would happen to cause a delay. We were headed for Scotland and apart from the mist, forecast to clear, had no weather problems. The first officer and I stepped out to the aircraft, he to start the lengthy first-flight-of-the-day internal checks and myself to read the technical log, look at the outside and cope with anything that occurred regarding our departure.

Defects

I automatically turned first to the "B" or carried forward defects in the tech log – a list of defects that are present but don't prevent dispatch. The last item read "Aircraft required to be fumigated" and was signed off pending fumigation equipment being available. This was unusual given our business-traveller type loads, so I turned to the page which had triggered off the requirement. My colleague of the night before had written "At least two African Baboon Spiders loose in pax cabin, aircraft requires to be fumigated." It was signed off as "Aircraft thoroughly cleaned, no spiders found, fumigation transferred to B defects." I was starting to wake up now and first reaction was to wonder if this was an elaborate practical joke. The Engineering Ramp Supervisor materialised at my side and I wordlessly pointed to the entries.

"I know" he said "We've got an entry in our shift book from last night but as I wasn't here I don't know anything more."

"But are they poisonous?" I asked "How big are they? What does Management say? What do Port Health say?"

Nobody knew.

The Fokker F27 Friendship

The Engineering Ramp Supervisor was replaced by the Engineering Station Manager.

"They aren't poisonous, I'm told" he said "But they are very large. Are you going to take the aircraft?"

Was I? As I started to think this over another captain appeared out of the mist from the next aircraft.

"Can I have one of your cabin crew?" he said "We've got full loads and one of ours hasn't turned up. They've mislaid the standby. I understand you've only got up to 25 passengers on your sectors." We would be legal with one cabin crew.

I said yes, subject to the girls agreeing. Our remaining girl came to tell me that she was terrified of spiders.

So I only had a second-hand verbal statement that they weren't poisonous. Neither Customs nor Port Health was in attendance and Management securely tucked up in their beds. The Company did not have a senior management pilot on 24-hour call like other airlines. Naturally none of the manuals covered the situation. Were we legal? Were we safe? There had been no notification to me whatsoever regarding taking this aircraft. So it could be assumed that I could take it. The defect in the book had been correctly cleared. If I refused to take it, I would only have negatives in my defence – I don't know anything about spiders, I haven't received any direct information from Management and I am not satisfied with the defect rectification.

While all this was happening the first two aircraft left with the distinctive whistle of the Darts drowning all else.

"I'll take it" I said, turning to the Station Engineer "But I want cans of fly spray." He started to run towards his van.

Keep your head

I went up to the flight deck to fill in the F/O with the latest situation. He, dear chap, was in his fifties and well fitted by the description "If you can keep your head when all about are losing theirs you haven't understood the situation."

"Oh fine" he said "Can you remember if the No.1 ILS on this aircraft tests differently? It doesn't seem quite to work." I recommended looking it up in the manual and went back to the cabin. Our solo (and recently promoted to training) stewardess was gritting her teeth bravely and looking fearfully into the catering stowages. I explained that fly spray was on its way and she brightened a fraction.

Having dispatched the other two aircraft, the Traffic Supervisor wanted to see the back of us. We were holding up his breakfast. I explained that we had a delay due to fly spray. Passengers remained held in the departure lounge. I don't know what they were told – not the truth, I hoped.

The Station Engineer returned with a screeching of brakes in the steadily thickening fog (effect of sun rising). No fly spray anywhere to be found on the airport. Even the Asian corner supermarket outside the gate wasn't open yet.

"I know" I said "The kitchens in the terminal are just opening up, I'll go in."

As you will have guessed, commercial catering does not have fly spray; they have those blue light fly killers. Leaving the kitchens empty-handed I picked up the latest actuals from the flight clearance office as the fog was definitely thickening and we would need another airport as a take-off diversion.

Returning to the aircraft I had the idea of taking an engineer with us as Spider Killer (official). But the Ramp Supervisor had unaccountably disappeared and the Engineering Station Manager remembered some urgent appointments. The rest of the shift was apparently too junior for such an important engineering task. No amount of persuasion could change this position, especially as we were not "going foreign" so duty-free could not be dangled as bait.

And again the Traffic Supervisor wanted to board the passengers.

Turning to the First Officer, I asked what the current RVR was for the departure runway.

"What?" he said "Oh yes, it does look a bit misty."

The figure obtained was 175 metres and we needed 200 metres on that runway. The sky was lightening, however, so I asked for the passengers and in 10 minutes time we had passengers, exactly 200 metres and no visible spiders.

Elastic bands

Taxying out to the runway I was reminded of the one piece of sensible-sounding advice given to me that morning by one of my colleagues as he went out to his aircraft.

"Put elastic bands round your trouser legs" he said.

Low visibility take-offs are not my favourite activity anyway, and the prospect of having to proceed to an airport 80 miles distant should an engine fail with spiders all the way left me distinctly unenthusiastic. Fate, however, was kind to us and the take-off and rest of the flight were completed without any hairy visitors with eight legs. Nor did they appear on the subsequent three flights.

Had we known of the night before's excitement, however, I doubt if we would have gone. Apparently the load of spiders normally and regularly travelled in the (separate) front hold of the Shorts 360, but an F27 had been substituted on the route. All livestock goes in the back hold on the F27 but is only separated from the passenger cabin by a cargo net and passageway, which is why livestock was rarely carried.

The spiders' packaging came apart in flight and these huge, hairy things started off down the cabin. The passengers cringed away from them while a resourceful stewardess beat one to death then put a plastic glass over a smaller spider to hold it. The glass was nonchalantly dispatched with a flick of a leg and at least two vanished in the cabin not to be seen again. And, no exaggeration, they were as large as the name "Baboon" implies. The importer was furious and upset because his lovely creatures were missing and (at a guess) the cleaners did an even quicker job than usual.

The previous night's captain had faxed reports in all directions with an entirely negative result by the time we appeared next morning. I also ran the fax red-hot when we stepped off the aircraft at lunchtime. The crew taking over from us failed to leave due to a mutiny by the cabin crew, who had had the opportunity of hearing the description of the previous night's goings on from the stewardesses on that flight. Everyone except those involved thought it extremely funny and how it never got into the Press I cannot think. Maybe the copious supply of free alcohol liberally dispensed the night before had made the passengers think that they were seeing things – big hairy nightmares with eight legs.

P.S. The spiders were never seen alive again but the corpses of the ones that went AWOL were no doubt tucked into the fuselage somewhere, awaiting discovery by a diligent engineer on a major maintenance check.

> "The glass was dispatched with a flick of a leg and at least two vanished in the cabin not to be seen again"

The African Baboon spider, so called due to their hairy appearance and the black scopulae pads on its "feet" resembling the pads on baboons

EUROSTUFF 56

By
John Pickett

Galileo in trouble again

The name of Galileo has been dragged through the Court system. The Luxembourg based Court of First Instance has ruled that the EU may retain the name "Galileo" for "…its proposed satellite navigation system". The Court rejected an action brought by International Galileo Technology LLC against the European Commission. However, there may be an appeal. More of the European taxpayer's money being spent on legal costs!

EASA again

EASA has created a new committee with the object of reducing the regulation of General Aviation. The inspiring title of the new committee is apparently "MDM.O32".

It is gratifying to hear from EASA that it is not believed that more regulation leads to more safety. The MDM.O32 committee is tasked with finding a better way of regulating General Aviation in Europe. EASA's airworthiness manager is quoted as saying that he wanted to undo some JAA requirements that had proved unworkable. Many requirements were created as the result of a consensus of national aviation authorities. In England there is a saying that if you ask a committee to design a horse the result will be a camel. This was certainly true of some of the JAA requirements. EASA wants the GA industry to put forward radical new ideas. However; there is very little time, as MDM.032 must produce a Notice of Proposed Amendment by July 2006.

Medicals and the recreational pilot's licence

Since the creation of the JAA, the application of the medical requirements for various types of flight crew licences has changed. Some requirements have been relaxed.

It is wondered whether the medical standards cited by the JAA-JAR-FCL 3 have actually been validated?

Currently there are two standards of medical certificate. The JAR Class 1 for a professional flying licence and JAR Class 2 for a private flying licence. However, the UK CAA has special arrangements for pilots flying balloons, airships, micro lights, gyroplanes and single engine piston aeroplanes under 2,000kg MAUW. The UK National Private Pilots Licence (NPPL) holder requires medical certification broadly similar to that of the holder of a Heavy Goods Vehicle licence. This has not resulted in a dramatic increase in aircraft accidents!

Doctor Peter Saunby, Technical Officer (Medical) Europe Air Sports recently presented a paper fuelling the debate involving the issues of medical certification of recreational pilots. As EASA is committed to the introduction of the Recreational Pilots Licence. a major review of the medical certification must be conducted.

Doctor Saunby's paper covered the concept of aero medical risk, the cost of validation of pilot fitness and colour vision. Dr Saunby stated that the "…risk of incapacity from all causes (including normal old age) can be summated into a single figure".

Examination of the accident figures for aeroplanes 5,700 Kg or less shows that medical collapse and suicide account for 3% of accidents. The fatal accidents per 1,000 pilots in each age band are amazingly consistent at about seven in 1,000. The exception is for pilots below the age of 20. Here the rate leaps to 24 in 1,000.

The accepted levels of medical risk of sudden incapacity vary according to the type of activity of professional pilots, private pilots, air traffic controllers and heavy goods vehicle drivers.

Examples of accepted medical risk are: -

1.	Astronauts	0.1%
2.	JAR-FCL Class 1	1.0%
3.	JAR-FCL Class 2	1.0%
4.	ICAO Class 2	2.0%
5.	EU Group 2 Professional	2.0%
6.	EU Group 1 Private	20.0%

It appears that there is currently considerable, pardon the pun, overkill, in the application of the JAR requirements. Dr Saunby is proposing for recreational pilots the introduction of a much simpler means of medical certification.

The proposal includes:

- Medical review at intervals prescribed by ICAO (60 months to age 40, then 24 months). The review to consist of a declaration supported by an acceptable validation (examination, validation from records, or self-declaration).
- Standards to follow ICAO Class 2, but to take into account the effect of age, with the level of aero medical risk not to exceed 2%.
- Mitigation measures to be applied, with the acceptable risk not to exceed 20% (EU private driver).
- Aviation associations to appoint doctors, suitably qualified and experienced in the air sport concerned to advise on individual cases.

The proposal appears to be a sensible and common sense approach to a problem of overkill by regulatory authorities. It is also in line with EASA's declared intent to allow aircraft operations below 5,700kg to be self-regulating.

The JAA (shortly EASA) Instrument Rating (Helicopter)

For those pilots wishing to convert or add an IR(H) to their licence, modular training for the JAA IR (H) will shortly be available at Tiger Helicopters at Shobdon, Herefordshire in the UK. The JAA Qualification of a new simulator built into an Agusta 109 helicopter fuselage will result in a considerable reduction in the cost of an IR training course. Previously the cost of an IR (H) course was in excess of £50,000. In the future the cost will fall dramatically. The course has provisional CAA Approval pending the Qualification of the simulator.

Agusta 109

Eurocharges

Recently, it was not only the British horseracing classic, the Derby, which resulted in a photo finish. The EC ruling about Euro charges revolved around the use of words "should" "shall" and "may". The UK CAA in publications define "should" as indicating a strong obligation and "shall" indicating a mandatory requirement. The EC apparently debated for a long time whether some aircraft "shall be exempt" or "may be exempt". It went to a photo finish and "may" won.

Euro charges, (airways charges), will continue to apply to aircraft of two metric tonnes and above. Aircraft of an AUW of 1,999 Kgs or less will be exempt from the charges.

Meanwhile in the UK the National Air Traffic Services (NATS) published its profits to the 31st March 2006 as £80.3 million (115 million Euros). NATS Chairman Mr John Devany stated that "We expect that within the next ten years the 42 existing air traffic control organizations in Europe will have been reduced to no more that ten. NATS fully intends to be one of them." Meanwhile the UK CAA is seeking a reduction of 3.4% per year in NATS charges over the next five years. The late Lord Justice Denning, British Master of the Rolls, spent a considerable part of his career attempting to simplify British legal English. We now have the ludicrous situation where some documents have to include definitions of words such as "should", "shall" and "may". Why can we not go back to the definitions in the Oxford Dictionary rather than Euro-uk speak?

*I **will** compare thee to a summer's day....*

Satnav

Last Christmas saw a vast public awakening in the use of in-car satellite navigation systems. It is estimated that some 6% of road vehicles in the UK and Western Europe are fitted with a satellite navigation system. The popular press are quoted as saying "Drivers following in-car Satnav instructions are being led into hair-raising situations; Drivers are trying to discern intricate detail on a small glowing screen; Ambulance crews were sent up a narrow alleyway delaying their arrival at an accident".

It appears that in Europe and the UK it is illegal for the driver of a road vehicle to have sight of a visual display unit whilst in control of a vehicle. There is apparently discussion about legislation covering the positioning of GPS displays in vehicles and the "advantages" of electronically generated voice instructions.

It is not the fault of the satellite navigation system. As with everything involving personal computers, GIGO applies (garbage in = garbage out). One magazine is quoted as saying that in aeroplanes the tasks of navigating and piloting are divided between two people. Some sectors of the press do not understand the real world of the instrument pilot. Flying single crew IFR into airfields in Europe requires good planning, training, skill and accurate programming of navigation aids and GPS. It is not expecting too much for a driver with a GPS to programme it correctly. Most sets are menu driven and give three or four choices of routing. Education is required, not legislation.

Traffic collision and avoidance system (TCAS II)

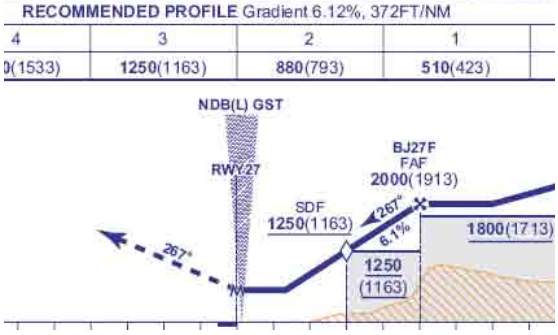
Over four years experience of TCAS II operations in European Reduced Vertical Separation Minima (RVSM) airspace has confirmed that it provides substantial safety benefits. TCAS II, based upon vertical and horizontal closing rates between aircraft, calculates protective volumes around its aircraft. If a closing aircraft is assessed as a threat, the TCAS II system suggests vertical Resolution Advisories (RA) to the pilot. This RA proposes a Vertical Avoidance Manoeuvre (VAM). Since the year 2000 TCAS II has many improvements and generates fewer false alerts.

Eurocontrol guidance is that the pilot should disregard controller instructions when following an RA. This is probably alien to us as private pilots where we are trained to comply with ATC instructions. However, it is worth noting that 97% of pilots flying aircraft fitted with TCAS II monitoring in Europe obeyed the RA. Further developments suggested include that the controller should automatically receive the information of an RA on his screen. The flight levels above us are becoming safer!

GNSS approaches in UK

At last the UK CAA is seeking assistance in gathering data about GNSS (GPS) approaches in the UK. The supplement S9/2006 to the UK AIP promulgates the establishment of trials to assess the safety of the design of GPS approaches at six airports in the UK. The latest supplement S24/2006 now adds two new instrument approaches to Gloucestershire and Inverness airports in addition to those previously published for Blackpool, Durham, Exeter and Shoreham. It is interesting to note that the final approach gradient is 6.1% in the case of the approach to runway 27 at Gloucestershire. All the published approaches are for "Trial purposes only" and are restricted to "VMC" only. Members are strongly urged to download the information and charts from the CAA website.

We should give the CAA at www.gpstrials.leeds.ac.uk as much information as possible. GPS is here to stay and the more information that can be obtained the faster that more instrument approach procedures would be promulgated. In the tiny Republic of the Fiji Islands, South Pacific, national registered aircraft have flown GPS approaches since the mid 1990s without any related accidents!



Extract from trial GPS approach at Gloucester-shire, R27

permanently based in the UK, and via EASA, EU wide. We shall fight it for there seems no safety case and surely EASA should accept that the USA, in particular, has more experience of operating light aircraft and issue of licenses, than any other Country. Regrettably the JAA IR is not now a realistic option for a private pilot to attain.

On the bright side

It is not all doom and gloom as virtually every economic indicator is soaring as companies revel in record numbers of orders and shipments. "All segments of the general aviation manufacturing industry are continuing to increase at strong levels," Sales hit €3.3 billion in the first quarter of 2006, up a staggering 40 percent over the €2.4 billion recorded in the same period last year. These quotes come from the USA, yet even in Europe we have new aircraft types such as diesel engined and VLJs are appearing, avionics get more sophisticated. So let's be cautiously optimistic about the future!

Your committee

There have been additions to your committee over the last several months. Those dealing with the increasing workload were becoming overwhelmed and so we appealed for some "new blood" and received some positive responses. You will already have seen results of improvements to the website.

Last year I reported that it was to be my last year in office but so far I have failed to find a replacement and have agreed to stay on until we find someone willing to take over. With that in mind, it has been decided to reform the "Executive Committee" into a flat type of structure with an enlarged number of members, 17, at the moment, and to call this group the "Executive" to distinguish it from the old "Committee". Executive members have a standing invitation to attend all Executive meetings and debates and will do so if there is a matter arising with which they are directly involved. A sub-part of the Executive, currently numbering eight, are Directors of PPL/IR Europe Ltd and will deal with formal company matters.

I remain much indebted for the support of the members of the Executive who contribute in many ways, often unseen, and which enables us to continue to be an effective organisation working on your behalf.

Since the last meeting the following members have left the Executive: ***Peter Herold*** – our original founder and former President, ***Leland Vandervort*** – former website secretary and ***Remy Bouin*** – our former AOPA France representative. ***David Crocker*** – Director. Our thanks to them all for their contributions.

In addition ***Ian Chandler***, our current meetings secretary, is leaving that post to take over as Treasurer from ***Paul Kelly***. Our thanks to both for the sterling work they have done for us – and you – over many years.

Paul Draper

Changes to Executive posts

I am very pleased to advise that my pleas for assistance at the AGM plus discussions with various members in the last few weeks have borne fruit.

As a result, Roger Dunn has decided to stand aside as Deputy Chairman but remain as a member of the Executive. I am sure you would all join me in thanking Roger for his invaluable input during his long period as Deputy. We look forward to continuing to have the benefit of his wise words of wisdom and from his membership of several CAA committees.

Jim Thorpe has agreed to become Deputy Chairman. This is on the basis that I remain as Chairman for the current year, he is Deputy for the same period and neither of us commits to continue thereafter in those roles. Jim will take overall responsibility for airspace matters, co-ordination of position papers such as IFR/IMC and equipage principles for PRNAV / GPS and also be involved in a sub-group aimed at extending the membership.

Vasa Babic has volunteered to be our representative at DfT EASA Forum meetings, Ian Harnett our representative at AIWG meetings, Alan South the representative at DfT SES Forum meetings and Howard Gold (not currently an Executive member) kindly agreed to attend the NATS meeting and follow up matters regarding changes to the LTMA North East sector (he is based at Elstree).

I shall remain as our representative at NATMAC, PAG, GAA and EAS.

I am encouraged by the responses at the AGM and feel these re-arrangements will place us in a good position to move forward in a positive manner.

Paul Draper - Chairman

G-BHBI at Rome, Urbe

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For reports on meetings, conferences and other activities attended in the last 12 months by members of the Executive on behalf of PPL/IR Europe members please go to http://www.pplir.org – Activities

PPL/IR Europe is open to any pilot interested in the operation of light aircraft under IFR in Europe. The annual subscription is GBP45 and more details are available from the Membership Secretary.

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LS800 tablet computer review

By Peter Holy

Over the past couple of years I have spent rather too much time exploring different solutions for automating the common IFR tasks. I have concluded that flight planning and navigation tasks are best split into two separate functions; things to do on the ground, and things to do in the air, and that these two functions require different equipment, with the latter equipment remaining in the aircraft.

I fly a Socata TB20 and there is nowhere (apart from one's knees) to put anything down, not even a surface suitable for a mounting bracket for a device located in the pilot's field of view.

Some readers will ask; why bother, given the already comprehensive level of navigation equipment in the IFR cockpit? The pilot already has a panel mounted IFR GPS providing the European BRNAV capability which is mandatory for airways flight. This panel mounted GPS will normally be the principal navigation reference, simply because it is probably the easiest to control and can drive the autopilot. However, I think there are two functions which make a second GPS worthwhile if flying a VFR/IFR mix:

1) having a backup GPS, and
2) having additional situational awareness when flying conventional instrument approaches, by displaying the approach plate with the aircraft superimposed on it.

Using the LS800

With an 8" screen, this promised to be the ideal format. I purchased the version with the polarised screen which is necessary for sunlight readability, 512MB RAM and a 60GB hard drive. The standard product includes Bluetooth and wireless (WiFi) networking. The LS800 worked perfectly straight out of the box. Jeppview was installed from a USB-connected DVD drive. For the GPS data source I use a remotely mounted Emtac Bluetooth GPS receiver (widely available from GPS shops, and eBay) connected to a rooftop antenna.

As the GPS emits only one data stream, you cannot run multiple applications. However, there is a software application, GPSgate, which converts the single GPS COM port into multiple COM ports, each of which looks like a separate GPS. This enables one to run one application displaying IFR route data, and another displaying a VFR chart showing detailed elevations. These can be on-screen at the same time.

Battery life was found to be around three hours, with the power management set to never switch off the display but for any serious use it is necessary to have a power unit which powers the LS800 from the aircraft power.

Excellent read-ability even in direct sunlight

For night operations, a very low brightness level is essential and most portables fail in this miserably. The LS800 does this acceptably but you need the manual brightness control to get it low enough. Some GPS moving map applications (not Jeppview as far as I can tell) offer a "night vision" mode where the primary display colour changes from white to red.

Printing works perfectly as one would expect with a standard Windows XP computer. I use the portable Canon IP90 inkjet printer (USB connected). Serious portable-gadget users will consider the Pentax Pocketjet printer which is an amazing 200/300dpi monochrome thermal printer, with optional Bluetooth support and entirely suitable for printing off approach plates and IFR en route chart sections.

The only problem found with the LS800 is the heat it generates. It isn't a particularly efficient design and runs warm. Lying down on a surface with poor heat conductivity (e.g. your knees) and in direct sunlight, it gets hot and eventually a message pops up saying that the display is being dimmed to reduce power dissipation. In extreme cases the display shuts down completely, making it look like it has been switched off! I think it could do with four rubber pads being stuck to the back of it, to provide an air gap.

Conclusion

The LS800 does the job described above very well. The cost of the unit, around £2000 including 17.5% VAT, is very high but not significantly more than the initial and annual cost of the European Jeppview subscription. Whether this is worth paying will depend on how much IFR the pilot does, and how much assistance he requires.

The LS800 is manufactured by Motion Computing www.motioncomputing.co.uk/products/tablet_pc_ls.asp and can be purchased from Mobitech www.mobitech.org.uk, or various outlets in the USA if you want to take the risk.