

Instrument Pilot

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Unmanned Aerial Vehicles (UAVs) were the subject of a recent IAOPA conference. See page 12 for details.

Brooklands is (very) appealing!

By Alan Winn

In August 2006, Brooklands Museum officially opened its latest exhibit, Aerospatiale-BAC Concorde 202, G-BBDG, the most expensive restoration this small private-sector charity has ever undertaken. Delta Golf was received from British Airways as a stripped-out hulk which only just survived a 22-year career as a spares ship for the rest of BA's Concorde fleet. It had to be cut into five major sections to

New projects

Having brought that epic restoration into service (though there's still more to be done on Delta Golf), we have moved on to other, equally challenging projects. We've acquired the wonderful Vickers Vimy replica with which the likes of Peter McMillan, Mark Rebholz and Steve Fosset have re-enacted three truly heroic pioneering flights (England-Australia, England-South Africa, and

The Brooklands Concorde, G-BBDG



be transported the 100 miles from Filton to Weybridge. And then this bare shell, with the aid of some 45 lorry-loads of components, had to be turned into a working exhibit which now gives visitors the closest approximation available anywhere to flying in a Concorde. They sit in the real seats, hear and feel the rumble of Olympus engines on full reheat, and watch the cabin displays flick through Mach 1 and Mach 2 in a vivid reminder of the progress which we have lost with the retirement of the world's only supersonic airliner to see commercial service.

Alcock and Brown's Transatlantic flight of 1919), and are working to maintain her as a flying tribute to the Brooklands tradition. We're building an airworthy replica of A V Roe's first biplane, with which he got airborne at Brooklands in June 1908, in time for the centenary of that event. And we've just rescued the fuselage of G-ARVM, the last Vickers VC10 to serve with British Airways, and which will become a major educational resource for the Museum following its restoration.

Brooklands enjoys the distinction of having been arguably the most

P 20 ►

“ Delta Golf just survived a 22-year career as a spares ship for the rest of BA's Concorde fleet ”



(OR VFR VS. IFR) PART 2

By
Phil Wadsworth

“ Yogi and I pulled on our survival suites. Very uncomfortable, but it would have been a quick demise in freezing waters without them ”

In the last issue of Instrument Pilot, Phil recounted the first part of his epic adventures as he headed north. Here we join him again as he lands in the medieval World Heritage town of Visby in Sweden.

Again, airport security helped us find a hotel, including negotiating discounts for us poor pilots. This time it was a very fine Best Western, with a sauna! A real bonus! Now I had brought a high visibility jacket and, because it was padded, I decided to wear it when exposed to the cold winds! Very sensible I thought! But the others were not happy walking about with this yellow peril! Anyway, we rapidly found a warm cellar bar, enjoyed some lunch and explored the town. The tourist season had definitely not started in Visby, so it was difficult to find a restaurant open, especially one that came up to our high standards! Finally, we came across the inevitable Italian restaurant, enjoyed the wine, then back to our cellar bar for a nightcap.

Weather

Wednesday dawned, but the sun didn't. Our intent had been to move on to Ronne, Bornholm, a Danish island situated off the southern end of Sweden, but the weather had really closed in with low cloud, freezing winds and drifting snow! Definitely no go for VFR limited pilots! Nothing for it but to batten down the hatches, back to the cellar bar and Italian restaurant! Life is tough! Our hotel not only said they could put us up for another night, but apologized for charging us too much and gave us a further discount! Top marks!

We really wanted to be in Gdansk the following day as a sea captain friend of Nigel's, Captain Wojciech Sobkowiak, had invited us for lunch on board Poland's largest ferry. In order to help expedite this aim,

Nigel and I left the softer members of our party and braved the blizzard, returning to the airport to check the 'planes and plan routes. After working out the Swedish instructions on the fax, we managed to submit flight plans for a direct sea crossing to Gdansk for the following morning.

That night, Wojciech telephoned Nigel from the bridge of his ship to say he was, at that moment, passing Visby on route Gdansk and please don't be late reaching Gdansk! We'd now got our orders and there was not going to be any nonsense, not in that man's Navy!

De-icing

Next morning, as it was still snowing in Visby, but clearing in Gdansk, we persevered against desperate odds and started work de-icing our trusty steeds. I am not saying the snow was deep, but we had to use the prop wash to clear the runway of snow! We faced a two hour flight of some 220 miles over the Baltic Sea and Yogi and I pulled on our survival suites. Very uncomfortable, but it would have been a quick demise in freezing waters without them! Again, we had filled IFR, with the others going VFR and for once (damn it!) the others had a following wind lower down while we were in neutral

wind at 7,000ft! No problems entering Polish airspace and we were positioned right downwind for a radar vectored approach onto runway 29. While in this manoeuvre, we passed over Wojciech's ship, the 'Scandinavia', as it was entering Gdansk harbour and also had a good view of the famous Gdansk shipyards.

We taxied into place beside OO-GAZ and D-ENFL about 20 minutes after they had arrived. VFR v IFR: 20 minutes to VFR!

There was an icy wind blowing over the exposed Gdansk airport apron as we took out our still frozen covers, complete with Swedish ice, and put them on the 'planes. A few minutes later, we were joined by G-MALC with Brian and Roger, who now rejoined the official tour, so, once again, we were four aircraft and eight pilots! Brian and Roger had spent the blizzard day visiting Peenemunde, Germany, where the V2 rocket was developed (Werner von Braun started his rocket development there). Another place worth a visit.

The fuel truck arrived and took 10 minutes refuelling each 'plane as we stood around freezing our backsides off! Roger, who spent the whole trip looking as if he had hyperthermia, had had enough and cadged a lift to the



Visby
Airfield,
Gotland,
Sweden

Bearing the cold on the Baltic coast of Gdansk



terminal building half a mile away, in a security guard's buggy. He did take some of our luggage, I am pleased to say!

To meet us on the apron was the redoubtable Rafal Bartusch who had done a remarkable job in organising our three day Gdansk visit, complete with buss, hotel, tour guides and a printed agenda. Rafal is, we believe, the only Grumman AA1 owner in Poland! High distinction indeed. He'd been working very hard to ensure our visit was a success, to the extent that he had even worked out how much of the local currency we would each have to draw out from an ATM. Many thanks, Rafal! You really made our visit!

“Scandinavia”

After clearing immigration, our Rafal organised bus arrived and we headed immediately to the port and the 'Scandinavia' where Captain Wojciech Sobkowiak escorted us aboard. When inviting Nigel for lunch, he had said to bring a few friends as he could cater for 1,800! Now you begin to see just how large this ship is! Wojciech entertained us with a superb lunch and we listened to old sea dog stories as he and Nigel tried to out-do each other. Then Wojciech took us for a tour of the bridge and explained the techniques in handling and manoeuvring such a vessel. We all left with our master's certificates and Roger actually sounded as if he knew what he was talking about!

Convent

Then it was on to our hotel, which is actually a convent! The House of St. Brigida in Danzica. Modern, large rooms, very jolly, welcoming nuns and only for £20 bed and breakfast. Except when it failed one night, the heating

was on the whole time with no way of turning it off, not a thermostat or radiator valve! That evening we ate in an excellent local restaurant which Rafal had found, the Restaurancja w Palacu Opatow, situated in a grand old house set in a park. It was so nice that we chose it for our final evening in Poland as well.

On Friday, we visited a local church for a recital from a famous organ with 7,000 pipes and bits whirling round! I would swear it was even colder in this church than it was outside and that was bitter! Roger suffered in silence as befitted the atmosphere! Much to the embarrassment of the others, I insisted on wearing my high visibility jacket. Better to look daft than freeze! Here we met our very knowledgeable guide, whose son is an air traffic controller at Gdansk airport. We visited the famous shipyards where Lech Walensa had helped orchestrate the Solidarity campaign, learning so much about the Polish history and invasions through the ages. We finished the day in the old centre (actually rebuilt after the Second World War destruction) and Rafal had again come up trumps with another excellent restaurant, where I think we will be remembered for quite a while, as this was the evening we sampled the local vodka, as one has to do while visiting Poland!

For Saturday, Rafal had organised a visit to a huge Teutonic Knights castle at Malbork, an UNESCO site, complete with our personal guide.

Return Flights

Sunday morning, it was back to the airport and this was the official end of the tour with all aircraft departing to separate destinations. The three VFR craft were heading along the north German coast while Yogi and

I returned to Bonn. Had the winds had been neutral, we could have made a direct flight in four hours 10 minutes, but they were anything but in our favour! We had filed IFR and to get over the Polish military areas, they sent us up the FL110, where the temperature was minus 18C. We were in and out of light cloud from about 5,000ft, with no icing problems until we neared the German border, where we could see a build up of cumulus cloud. Fortunately, the minimum level on our route dropped to 4,000ft at the German border and ATC brought us straight down when we requested a descent to prevent entering icing conditions. Even so, we picked up some in the descent and were again flying through snow. All the way, we were experiencing 40 to 45 knot head winds (3.4 hrs to cover 301 miles!), but so were our VFR colleagues, so there was no gain for VFR that day. We stopped at Magdeburg to refuel, hoping for some lunch, but they were closed, so again, thanks to Yogi for carrying emergency supplies. Then on to Bonn, VFR this time, where it actually felt warm!

The other blokes in 'FL' & 'AZ' went off to stay at Heringsdorg (EDAH), whilst the 'LC' chaps went on first to Lubeck then Eelda (Gronigen) in rather bumpy conditions and spent the night in the airport hotel. They were rewarded, however, with a splendid meal in a Turkish restaurant.

Home to Popham

Monday, 10th April, I set off IFR to Popham and as usual on any westerly route through Belgium, they sent me up to FL100, where the IOAT was minus 15C, but this time, I was a good 5,000ft above the clouds. These were becoming scattered by the time I reached Kent, which was covered in snow from an overnight dump. Fortunately, there was none in Hampshire and I landed at Popham spot on schedule, thanks to neutral winds. The others also arrived back at their home airstrips with no mishaps.

VFR v IFR: IFR wins by 23.5 hours!
Total flown: 2,152NM, airborne: 19.2hrs, average fuel, 33 l/hr

A very good trip, excellent group to fly and socialise with and many, many thanks to the Danes and Poles for being such great hosts!



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Then it was on to our hotel, which is actually a convent; the House of St. Brigida in Danzica

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By Matthew Stibbe

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

Diamond tantalises with DA-50 Superstar

Just before Christmas, Diamond unofficially presented its new DA50 Superstar to guests at a party. While the company gave away few details, the single-engine aircraft looks set up to compete with Cirrus and Lancair's top-of-the-line models. It will sport a range of engines with up to 350 hp, which could potentially be Thielert's Centurion 4.0 diesel / Jet A-1 unit. The company also revealed that it will seat five people, making it the most spacious interior in the category. The company's D-Jet also features five seats suggesting some commonality in cockpit design.



First Eclipse 500 customer delivery

Eclipse Aviation delivered the first VLJ to a customer on December 31st, 2006. The plane's co-owners are David Crowe and Jet-Alliance (a shared jet ownership company). The company has 37 other aircraft at various stages of production, including seven which have completed final assembly and which are being prepared for delivery.

In December, Eclipse announced that its first models were not going to meet projected speed and range targets by a narrow margin. Depositors were offered refunds. However, the company has also instituted a series of upgrades and improvements, which have raised the top speed to 370kt and range to 1,125 (with a 100 nm alternate). Changes include improved aerodynamics and bigger wingtip fuel tanks. Despite an earlier announcement to the contrary, all of the aircraft off the ramp, including the first 100, will be fitted with these changes.



Airbus A380 – the ultimate bizjet?

The world of ultra-VIP private jets has a new contender; the Airbus A380. Climb the stairs to the owner's deck and there's a spacious bar with full-sized galley. A gently curving corridor leads past two en-suite guest bedrooms to the master suite: an office, double bedroom with full-size bathroom and gym. Other options include an in-flight cinema, an operating theatre, a stable and a sauna.

Although no one has ordered the VIP version yet, the manufacturers hope to sell 20 in the next ten years. With a price tag of \$280m for the basic plane and between \$20-90m for the completion, it will sell to an exclusive market. Of course, the plane will be restricted to major airports and the landing fees are likely to be as gargantuan as the plane itself. Still, if the Eclipse seems a little too small and you have half a billion dollars to spare, the A380 VIP is the plane to go for.



Return of the Zeppelin

It is late afternoon in the Kalahari Desert. In the distance, silhouetted against a National Geographic sunset is an airship. It is the length of a football field and it is cruising a few hundred feet above the parched soil. Below, giraffe and antelope scatter. However, this is not a scene from an Indiana Jones movie. De Beers, the diamond company, is using a new generation of Zeppelins right now to prospect for diamonds in southern Africa.

It is possible to buy your own Zeppelin. The list price of the Zeppelin NT is €8.5 million, plus the cost of ground equipment such as mast trucks. "It's like operating any aircraft," says Thomas Brandt, the manufacturer's CEO, "you need maintenance, certification, pilots but it is normal aerospace business." Once ordered, a new airship takes about 18 months to build – plenty of time to get the pilots trained up.

The Zeppelin uses three engines to reach a maximum speed of 125km/h. It can hover like a helicopter and dock and undock under its own power – no need for dozens of men with ropes anymore. The company has also dispensed with explosive hydrogen as a lifting gas in favour of inert helium. No more Hindenburgs. The airship can carry 12 passengers and two pilots.



Prince Charles, Richard Branson go green

With Ryanair taking flak from the UK's environment minister ("the unacceptable face of capitalism"), Richard Branson is making good on his much-hyped promise to go green. Virgin Atlantic has started trials with its Gatwick and Heathrow-based 747s in which the 'planes will be towed to the runway before starting their engine. This approach should not only save fuel costs and cut greenhouse emissions, it will also improve the air quality in and around airports.

Prince Charles has taken things one step further. According to a spokesman, he has decided to make less use of helicopters and chartered planes and rely more on cars, scheduled flights and trains. He has also converted his Jaguar and Land Rover to run on bio diesel. If he read Instrument Pilot, he would have seen the last issue's coverage of bio ethanol fuel for aircraft and he could leap back into the air with a clean conscience.

Raytheon going, going, gone

Raytheon has agreed to sell Raytheon Aircraft to Onex Corp and GS Capital Partners for \$3.3 billion. The new company will be known as Hawker Beechcraft once the deal is complete in about six months. Besides high-end business jets, the company makes the Bonanza, Baron and Kingair models. There are no immediate plans for any changes to the line up or production facilities. Raytheon keeps its Flight Options fractional operation.

Grob down but not out

Grob Aerospace lost the second prototype of its SPn business jet in a crash at Mattsies-Tussenhausen, Germany. The \$7m eight-seater is specially designed for use on shorter and rough runways. The crash has put back the likely date of European certification by six months to early 2008.



Capstone goes mainstream

Capstone, a system that uses ADS-B technology to give pilots a radar-like view of traffic in uncontrolled airspace, has been on trial in Alaska for several years. It has proved very successful in reducing the accident rate there. Now, the FAA plans to roll out the same technology nationwide. The only catch is that for it to be effective every plane has to have an appropriate transponder. While the FAA paid for the cockpit equipment in the Alaska experiment, it seems unlikely that it will do so for aircraft in the rest of the country.



ANNUAL GENERAL MEETING SATURDAY 28th APRIL 2007

The AGM of PPL/IR Europe will be held on 28th April 2007. Just as we are about to go to press we have been notified that the runway will be closed for maintenance at Oxford airport where the AGM had been arranged. We are currently making new arrangements for another location, which is likely to be within the south of England area. The venue will be announced within the next week (see website for latest news) and posted in IP 60.

The cost is £15/€25 payable to the meetings organiser on arrival, to cover meeting room hire, teas/coffees and Saturday lunch. Participants are responsible for airport landing and parking fees.

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

SCHEDULE

10:30	Arrivals, registration, coffee/tea
11:00	Morning - seminar presentation 1 <i>Lord Rotherwick, The Parliamentary Aviation Group and GA</i> How we in GA can talk with a powerful single voice to influence Aviation and how the PAG can serve us in achieving our needs
12:15	Lunch
13:15	Afternoon - seminar presentation 2 <i>Steve Copeland. The Use of Oxygen in General Aviation Flying</i> A presentation and discussion on the use of oxygen in General Aviation IFR flying and demonstration of portable equipment designed for use in light aircraft.
14:30	Afternoon coffee/tea
14:45	PPL/IR Europe AGM
16:00	End of meeting and departures

REGISTRATION

I hope to attend the meeting on 28th April 2007.

Name:
Accompanying person(s):
Tel: number:
Email address:
Arriving by Air/Car?:

If arriving by air:

Aircraft registration:
Aircraft type:
Arriving from:
ETA:
Departing to (if different):
ETD:
POB:
Pilot/passenger names:

If arriving by car:

I need a car parking space: Yes / No / Not applicable.

Please return registration details to Steve Dunnett: email to meetings@pplir.org or post to Brain Repair Group, School of Biosciences, Cardiff University, Museum Avenue, Cardiff CF10 3US.



Jim Thorpe and the mystical art of spark plug maintenance

PPL/IR Europe's Technical Specialist

“ It is accepted practice to throw away any plug which has been dropped

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This started out as an article on the proper way to check and clean spark plugs with a view to providing information to those who want to do it themselves. At first glance it does not seem unreasonable to think of this in automobile terms as a fairly simple operation. Unfortunately things connected with aircraft are rarely simple. Eventually I thought it would be most useful to explain what a qualified and motivated engineer would do and the equipment they would use. In this way it perhaps has more general relevance to a pilot deciding whether they want to develop the skills needed to do some of their own maintenance work and consider what they may need to acquire in the way of tools and reference material.

Benefits of experience

Firstly it is worth pointing out the value of having a trained eye look over an engine every 50 hours or six months. Even if you are on the N register there is no doubt in my mind that 50 hours or six months is an entirely appropriate interval between basic checks. I am fairly experienced with aircraft engines but this is not the same as working with them day-after-day for years, so even though I do some work myself I still have a professional look at my aircraft. I well remember watching a sharp eyed engineer who was replacing a cowling after an oil change, notice that the throttle linkage was only a couple of threads away from departing the aircraft. This linkage was not part of the inspection and not even in clear view. Spotting it was the product of decades of experience and developing a sense for things 'not being right'. I doubt if I would have spotted the problem even if a visual check of the throttle linkage had been an inspection item.

Tools required

Returning to plugs, First of all you need data, tools and some spare parts. Just because the plugs are in your engine does not mean they are

the correct type. Data is available in your aircraft manuals or on the web. Using the wrong heat grade of plug will not be a disaster but using one with the wrong reach will. Having the piston strike the plug will definitely spoil your day and the bank balance. You need a six point deep well socket. It would be nice to have the Snap-on or Champion brand but this is not essential. What is completely useless is the cheap plug spanner typically sold at Halfords. If you drop a plug or damage the thread it must be discarded so economising by using a car plug spanner is unwise. Surprisingly the plugs internal parts and the tips are delicate and damage may occur which is not visible. It is accepted practice to throw away any plug which has been dropped even if only a couple of feet onto a bench. The copper washers under the plugs take up a set and harden with use. That is they become slightly dome shaped like the plug seat in the cylinder head and they harden with the high temperature. If you reuse them, and particularly if you use them upside down, they will not seal properly or you will need to use excess force on plugs to get them to seal. You can recycle the washers by heating them for 20 minutes in the family oven to anneal them but this may lead to an expensive divorce. They cost very little so why not buy a new set. Some sort of tray for holding the plugs is pretty important. There is a purpose made tray with numbered holes that you can buy. It is of course possible to just lay them out on a bench on a numbered sheet of paper but you will probably disturb them and get confused when you try to rotate them side to side and top to bottom while replacing them.



For cleaning the plugs you need a purpose made sandblaster. They are available cheaply from Aircraft Spruce and LP aero. Some people claim they work acceptably but I found mine useless, threw it away and purchased the professional model. As is mostly the case with tools, and certainly with aircraft tools, cheap is a mistake. Lead deposits can mostly be removed with careful use of dental picks although there is a special vibrating tool which does a better job. Finally there are special tools for setting and measuring the plug gaps. Aircraft Spruce sells a reasonably priced functional kit which also includes a thread cleaning tool. This is needed if carbon gets into the thread in the head and the plug cannot be easily screwed in by hand.

A professional plug blasting tool also has the facility for sparking the plug in a chamber with about 80 PSI air pressure. This is an attempt to replicate the conditions in your cylinder and although it is a much less harsh environment than a running engine it will pick up a lot of faulty plugs. Even new plugs are occasionally faulty so the check is worthwhile.



You will need a few non-specialist tools. Nowadays in Europe almost everything is metric but of course aircraft being of US origin use imperial measurements. You will need a set of combination spanners. Do not buy cheap. They must be strong but slim. Snap-on are the best but outrageously expensive. Facon or Britool are generally OK. You will need a torque wrench capable of low

torque settings; almost certainly this will be below the range of anything you need on the car. (Don't confuse inch lbs with the more usual ft lbs) This tool will probably be expensive since they are produced in lower volumes and need to be of higher quality to be of any real use. In some applications one or more plugs will be almost impossible to remove without quite complex arrangements of 1/4" drive sockets possibly with wobble or flex capability and various lengths of extension. An extreme example is the lower plug on a Bonanza No 6 cylinder. This is so awkward that Beech sell a special tool for just this plug.

It will not have escaped your notice that to do the job thoroughly, a professional engineer will have spent a considerable sum on equipment. The kit I have described above will cost about £1500 and most of it is useful for only one task. Indeed in the USA cleaning and gapping plugs is considered so tedious and time consuming that some repair stations send all plugs away to a specialist who does nothing but recondition plugs.

Consumable materials needed will include MEK or acetone for cleaning the insulator or 'cigarette' as it is colloquially known. MEK is fairly nasty stuff so avoid too much skin contact or breathing in the fumes. You will need something to prevent the plugs seizing in the cylinder heads. There is a carbon based product sold by Champion or a more generally applicable copper based anti seize product. A small tube or tub of either will last a lifetime.

Preparation

Having assemble the hardware lets return to the task. First ensure that the aircraft is secured, keys out, throttle closed, chocked etc. Your choice of location may be limited but if possible be inside with a source of electricity. If you have to work outside you will need a decent torch. If you can find a large sheet of scrap cardboard put it under the engine to make anything you drop easy to find.

Depending on the aircraft type access may involve nothing more than opening the cowlings or it may involve wrestling with numerous screws and fittings to remove top and bottom cowlings. This will probably

be a two handed job to avoid potential damage to the cowling. Don't forget any connections such as ice lights or landing lights. They will probably have knife connectors under some sort of sleeving held in place by cable ties. When snipping the ties don't damage the cable. There may be a flexible connection to the air filter or air intake normally using an orange fabric hose known as scat. When replacing this don't think tighter is better for the jubilee clips which retain the hose. The fittings are aluminium and it is quite possible that over enthusiastic tightening will distort the aluminium fitting.



You will have needed one or more screwdrivers to remove the cowling. Normal fixed end screwdrivers should have no place in aircraft maintenance. Ratcheting drivers with changeable bits are the tools to use and the bits should be new-ish ideally with anti cam grooves or coated with diamond dust. 'Cam out' occurs when the screw is seized into the fitting and the screw driver destroys the Phillips head rather than turning the screw. Anything less than an excellent fit of the screwdriver point in the screw and firm pressure in line with the screw will make this likely. In moments of desperation a little valve lapping compound on the screw head helps as does liberal doses of penetrating oil the night before. Problems will be very likely if you confuse the Posidrive bits you use on your B&Q furniture with the similar but functionally quite different Philips pattern. (By the time you have wrestled with the average aircraft cowling with worn out Dzus or other fasteners you may be persuaded that it is worth replacing all the knackered 25 year old fittings. You can replace like for like but there are much improved and legal after market fits from companies like Skybolt.) Before replacing the cowling have a good look round. Are the engine mountings drooping making the clearance round

the spinner uneven? Is anything fouling the cowling as evidenced by shiny aluminium at the point of contact? (Is this why the cowling is a sod to get off and put back.) Is there any discolouring of the paintwork indicating exhaust or turbo leaks?

Cleaning

Anyway back to the simple task of cleaning the plugs. To remove the plug leads use two spanners don't just take off the large nut and allow the smaller one to twist and possibly damage the plug leads. If the leads have been well routed and tie wrapped it will probably be impossible to reconnect them wrongly but if not use a piece of masking tape to note which cylinder goes with which lead. As you remove each plug be sure that the copper washer is on the plug and not left on the engine. If you have to pick the washer from the engine don't drop it. It's copper so you won't be able to get it with a magnet. You simply cannot abandon lose items in the engine even if you are almost sure it fell on the floor so now is when you will be glad you put the cardboard or old sheet under the engine. Ensure that at the end of the removal exercise you have 12 washers to go with the 12 plugs assuming a six cylinder engine. Block each plug hole, ideally with a blanking plug but a twist of clean cloth will do. If you do not do this small objects, apparently imbued by Harry Potter with special abilities will mysteriously and inevitably fall into the cylinder.

You should now have your 12 plugs laid out on the bench pointing up so the electrodes are visible. All plugs will have some sort of deposit with a tendency for the bottom plugs to be darker with a little more evidence of oil. Rather than go into the dark art of discerning the engines condition from the plugs entrails I refer you to the web where pictures of plugs in various states of distress can be found. Why not take a digital picture of your plugs with the cylinder numbers visible. This may be helpful for comparison purposes some time in the future or it can be taken and shown to some knowledgeable source if you feel there may be a problem.



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The kit described will cost about £1500 and most of it is useful for only one task

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“Maximum plug life is gained by rotating the plugs in a fixed pattern top to bottom and side to side”

Spark plug maintenance

continued from page 7

Again on the web you can find pictures of plugs worn to various degrees. It is anyway prudent to carry a spare plug and a new plug will give a point of reference. You don't need to remove the plug from its plastic air filed sealed pouch. After all you would not want to drop it and waste £12 and you can see quite well through the clear plastic.

Basically the centre electrode starts round and ends up oval and the side electrode wear away. A few photographs will help make this clear. The point where replacement is needed is usually regarded as a matter of judgement although it is possible to purchase a simple gauge.

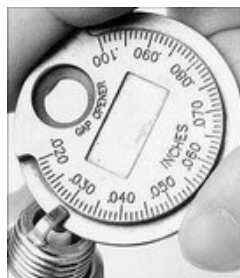
Blasting

Assuming there are no gross problems, remove any large lumps of lead with careful use of a dental pick. Then give the plug a few seconds on the vibrator and pick or shake out further smaller pieces. Then the plug should be given a short sand blast and a blast of clean air to remove sand and any remaining debris. Note that sandblasting wears the plug significantly so keep sandblasting time to a minimum.



Plug gap

The plug gap should then be measured with the special gauges produced for this purpose and the gap adjusted with the proper tool to somewhere near the lower limit. Gaps open up in service so adjustment normally means closing. While it is possible to open up the gap this is both difficult to do and not recommended so try not to close the gap too much in the first place. The electrodes always spring back so this is not a precise science. Generally adjusting them right to the lower limit will result in a slightly



larger but acceptable gap when they spring back as the adjustment tool is removed.



The plug can then be inserted in a 'bomb tester'. The spark is checked visually while in operation via a mirror which gives a view into the pressure chamber. This can be done side by side with a new plug to compare the quality of the spark. If all is well the plug is now ready for reuse. You should note that even if a plug passes all these tests it is no guarantee that it will not break down in actual use particularly at high altitude where the insulating property of air is much reduced.

Now consider the plug leads. Inspect the insulated ends and clean them with MEK. Once cleaned try to avoid touching them at all. Certainly don't touch them with greasy fingers. Look at the springs which make contact with the plug. Are they of similar length and free from corrosion at the end. You can lightly clean these with emery paper. If one spring seems a little short don't try to stretch it, get a replacement. They just screw into the leads and don't cost much.



Plug leads can be tested and can easily be the source of problems. The actual conductor is quite small and it is possible to disrupt this for example by overenthusiastic use of cable ties. However at a simple plug change the engineer would normally just cast his eye over the leads looking for obvious signs of distress or fraying.

The plugs should ideally go back into a different cylinder from that from which they emerged. This is because according to their location they fire positively or negatively and so some wear the central electrode and some the outer electrodes. Maximum plug life is gained by rotating the plugs in a fixed pattern top to bottom and side to side. It should be possible to screw the plug fully into the cylinder with finger pressure. If this is

not the case it will be necessary to clean the thread in the cylinder head using a thread cleaning tool.



Using a new washer put a tiny amount of anti-seize compound on the plug threads but do not put any compound on the two threads nearest the tip. You don't want this compound in the cylinder perhaps shorting the plug. Tighten the plug using a correctly adjusted torque wrench. Reattach the plug leads again using two spanners. Don't go mad fastening these aluminium nuts or they can crack. Just pinching them up is sufficient.

Reassembly

Now reassemble your tool kit in its boxed sets or specific locations so that you can be sure that nothing remains in the engine. Have a look round for cleaning rags or other items. Button up the cowling and you are ready for a test run. If all is fine you will need to make a log book entry along with your name and license number detailing the work done and noting if any plugs were changed. If new plugs are fitted there should be some link to their origin via a form 8130-3 or EASA Form 1.

If you have any reason to suspect a problem with your engine while the plugs are out it would be a good time to do a compression check and a boroscope examination. This is really going beyond the cope of this article but IFR flight inevitably exposes pilots to greater risk in the event of engine failure than VFR flight. My view is that this can be minimized by a few extra regular precautionary procedures and in a typical low usage private aircraft I suggest that at 50hrs / six months the cautious instrument pilot might opt for:

- ☞ Oil Analysis
- ☞ Filter cut and examination
- ☞ Down load and comparison of Engine Analyser data
- ☞ Standard maintenance checks as per the manufacturer
- ☞ Compression check and cylinder boroscope examination.



Sicily

PPL/IR Europe Tour, June 2006
Part 2, Pantelleria to Bournemouth

Words by Jeff Pearce, Photos by Sally Turner

In the last issue of Instrument Pilot, Jeff and the rest of the party were finally clear of the police and customs and attempting to leave Pantelleria.

On taxiing out, the Bonanza's alternator went off line and Jim was forced to stay put. Here was the guy who had done all the legwork in putting this trip together and his was the aircraft going tech – there ain't no justice. And what a place to breakdown, stuck on a small, dormant volcanic island halfway between Africa and Sicily with nothing in the way of local engineering facilities.

Pantelleria to Giubiana

Apart from having to leave one of our party behind, the departure from Pantelleria was uneventful with an initial clearance to 5,000 feet, which before reaching was revised to FL100. Routing via GZO was an indirect routing to Giubiana but was the best airways routing we could get. However, on reaching DOBIX we were instructed 'route direct NELDA' which cut a large corner off. On approaching NELDA we asked Malta ATC for a descent but were advised that this could not be given until reaching NELDA. With the group's aircraft arriving at NELDA between FL100 and FL120, and twelve miles between NELDA and Giubiana, clearly we were going to be a tad high on arrival in the overhead!

Our stay at Giubiana was the high point of the holiday; staying at The Eremo della Giubiana a former



Giubiana cottages next to the runway

14th century convent, now converted to a five star hotel complete with its own airfield. Even better, there are five holiday cottages adjacent to the runway giving some of us the opportunity of waking up in the morning with the other love of our life parked at the end of the garden! But first we had to land.



Runway at Giubiana

Although nothing had been said, I suspect some, if not all, of the pilots in the group had been thinking about this approach for some time. The runway is 680 metres long, 10 metres wide with a stone wall at one end and an escarpment at the other. Landing long or short wasn't an option and the slope of the runway dictates landings on 07, take offs from 25, whatever the wind direction. We had been advised to arrive early or late as thermal activity invariably gave strong winds across the plateau on which the airfield is sited. High ambient temperature and 1,400 feet altitude all conspired to make this an interesting approach and departure. We were number four to arrive and our experience was typical. Having landed safely, the wonderful surroundings, peace and tranquillity mixed with a sense of relief, meant that we were all grinning like Cheshire cats. But then the sound of the cicadas and bird song would be interrupted by the sound of a Lycoming at high level and looking up we would see a light aircraft approaching, struggling to

lose as much height as possible before circling over the field in a long and protracted descent. At this stage, those on the ground would switch their attention to watching the next arrival; it was like having your own mini-airshow! Each safe arrival was greeted with a round of applause from those on the ground and a sigh of relief from the pilot. Fortunately all the landings were uneventful, although we did a go around with the Arrow as we were a bit fast on short final and one of the AA5s disappeared out of sight below the level of the runway for a heart stopping moment before popping up again, to go on and execute a greaser of a landing right on the numbers!

Rest at last!

The Hotel Eremo della Giubiana would make a stunning location for anyone, but especially those able to arrive by air. The main building is steeped in history. A former 12th century Arabic fortified structure it became a convent in the 14th century before being used by the Knights of The Order of St. John in the 16th century, finally becoming the private residence of the Nifosi family in the 18th century, who still own it to this day and have recently opened the property as a hotel. The hotel has been completed with sensitivity and without detracting from its natural charm. A visit is highly recommended but if not current in short field landings, do go and practice a few before arrival at Giubiana.



The main hotel at Giubiana

P 10 ►

“
The runway is 680 metres long and 10 metres wide with a stone wall at one end

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A rescue mission was launched by Dave and Mark in the Cessna 303, who returned to pick up Jim and Judi

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Etna

Thursday was to have been a coach trip to Mount Etna complete with guide but no guide was available until Friday, so this was rescheduled, which left open the possibility that Jim and Judi in the Bonanza might catch us up. However, it became clear that the Bonanza was going to be off-line for some time while Jim struggled to get the three pieces of the jigsaw together, an alternator in the UK, an engineer in Malta and the aircraft in Pantelleria. As this would take time and could be co-ordinated from Sicily just as easily a 'rescue mission' was launched by Dave and Mark in the Cessna 303, who returned to Pantelleria to pick up Jim and Judi. The rest of us spent Thursday doing our own thing. Come Friday Jim was still in the thick of it trying to co-ordinate aircraft, engineer and alternator, and had to miss out on the Etna trip, but at least Judi was able to join the party.



After a couple of hours in the mini-bus Etna finally appeared through the heat haze on what was proving to be another sweltering day. On reaching the coach park at approximately 2,300m ASL, our guide offered us the option of taking the cable car higher and then going on an all-wheel drive mini-bus that runs from the top of the cable car to nearly 3,000m ASL; as near to the main crater as the public are allowed to go.

After an exhilarating cable car ride and mini bus ride (excepting for the point where the driver missed a gear!) we arrived at – well the surface of the Moon would be an apt description. The drop in temperature at this height was marked; add in the wind chill and it was really quite cold, a clear example of temperature lapse rate after the hot and humid conditions lower down.

The main cone stood some 300 metres higher and was emitting smoke in what was, hopefully, a benign fashion. Lower down at our level were the cones of the 2000 and

2002 eruptions, one of which was still emitting smoke. Although considered safe to walk on, scraping a small hole in the ground immediately results in smoke coming out. Putting your hand in the hole showed it to be too warm for comfort even those few inches down - impressive!

Saturday we did our own thing again. However, as the day drew to a close we started to address the question of filing flight plans for the start of the journey back home. There had been three flights out of Giubiana while we were there. The rescue mission by Dave and Mark, a trip they made to Malta and a flight by Marco and Jim in Marco's SIAI-Marchetti to Pantelleria for Jim to oversee the uniting of aircraft, alternator and engineer. All three flights had some difficulties in opening their flight plans on departing this VFR field. In theory, Catania was the obvious choice to call, but although only about thirty miles away there are known communication difficulties, which can prevent radio calls getting through below FL90, which is clearly ridiculous. Second choice would be Campo Radar but even that couldn't be guaranteed and as most of us would be heading northwest, Palermo seemed a good back up. Who to file the flight plan with was also a consideration. On one of their earlier flights Dave and Mark filed using www.homebriefing.com. However, when they did manage to contact Catania they denied having the flight plan and left them to circle to 10,000 feet over the field while they sorted it out, and before giving them their clearance. The moral of this seemed to be to file with Catania so I phoned my flight plan with them direct.

After a final excellent meal together an early night was in order as we had an early start the next day to get off while it was still comparatively cool and calm, with some planning a long day's flying.



Final meal at Giubiana

Giubiana to Ajaccio (LFKJ)

After the challenge of getting into Giubiana, getting out again was a comparative 'doddle' with a downhill departure from runway 25. Our VFR departure as far as MARON meant we were able to climb to 5,500 feet before opening the flight plan. Despite waiting to gain altitude it proved impossible to raise Catania and we switched frequency to Campo Radar who replied immediately and opened our flight plan, before quickly passing us on to Rome who cleared us to F110 direct Trapani and then direct KAPIL, which would cut a few miles off the route. On approaching KAPIL another aircraft joined us on track to CAR in our 11 o'clock and a thousand feet below us. This was Dave and Anne in their Mooney. Had they known we were there, it might have given them some reassurance on the 185-mile sea crossing to Sardinia but they were unaware of our watching presence behind them and by the time we were over Sardinia they had crept ahead and disappeared from view.

The crossing of Sardinia proved uneventful and a lot less 'lumpy' than on the way down but on reaching the Mediterranean between Sardinia and Corsica we went IMC with a lot of turbulence and rain. There had been no forecast of CBs or TS activity so we were pretty confident it wouldn't be much. Throughout our journey the OAT had been around five degrees positive, but on going IMC it dropped to minus two. Fortunately we saw no ice, but it continued to be a turbulent crossing for the next 10 minutes. On landing at Ajaccio we taxied to the pumps to find Dave and Anne's Mooney and Steve and Marilyn's Seneca both in front of us. Both reported a smooth crossing at FL100 as did Paul and Sally in their TB21 at FL190 so we had obviously drawn the short straw at FL110!

Originally several of us had intended to land at Olbia in Sardinia to refuel, and in our case, stay overnight, but the imposition of a Euro 150 'luxury' tax on all visiting aircraft and yachts meant a change of plan. Doubtless some bureaucrat is patting himself on the back at having found a way of raising extra revenue. The reality is that instead of getting our landing fees, fuel, meals and hotel spending they got precisely nothing

Azure waters approaching Ajaccio



and doubtless others will come to the same conclusion. Should do wonders for their tourism industry!

Steve had intended refuelling at Calvi, but stronger than forecast head winds required an early stop. This did raise a problem. Jim had finally got his Bonanza repaired and was also heading home but, Judi was still at Giubiliana. It had therefore been decided that Judi would travel with Steve and Marilyn and rendezvous with Jim at Calvi. Having landed at Ajaccio instead, they therefore conferred with Jim by mobile and a new rendezvous was agreed at Lyon Bron, where Judi and Jim were finally reunited, although if they had been half an hour later the thunderstorms approaching Lyon Bron from the north would have prevented their meeting up yet again. The TB21 and Mooney were routing on to overnight in Switzerland. Like Steve, had their arrival in Switzerland been any later they wouldn't have made it either due to TS activity yet again. We, for our part, had decided to overnight in Ajaccio to take in the local sites.



On finals to Lausanne (LSGL), just ahead of the approach thunderstorm

Ajaccio to Beziers (LFMU)

Having completed the TINOT3P SID and cleared to FL80 we continued en route towards the radio fix TINOT where we anticipated a turn towards the Martiques VOR (MTG), instead of which we got 'route direct ZR' the locator NDB for Beziers. This meant an almost straight line route AJO to ZR. On the down side it would also mean being over water the whole time

apart from the couple of miles coasting in at Beziers. On approaching ZR, the airfield was clearly visible through the heat haze, so we cancelled IFR for a VFR approach to runway 10.

Beziers to...as far as we can!

It had been our intention to fly back to Bournemouth in the day, airways via La Rochelle (LFBH) but a check on Avbrief showed yet more CB and TS activity around Bordeaux. After our experiences battling CBs and TS while IMC approaching St Tropez on the way out, my previously held rule not to fly IFR when CBs and TS are likely seemed a wise one and so we planned the route to La Rochelle VFR.

Given the forecast for the Bordeaux area we did not actually expect to get to La Rochelle, rather it was a case of 'see how far we can get' before the weather starts to close in and then divert to a suitable airfield. So while I did the flying, Val kept a running check on our position and the nearest suitable airfields.

Sure enough, with about ten miles to run to SAU, we were confronted with cloud build-up ahead exactly as per the forecast. A quick confer with my co-pilot showed Marmande (LFDN) less than five miles away to the south west of us with 1,000 m of tarmac. Ideal - decision made. So a quick call to Aquitaine to advise our intentions and a frequency change, which they immediately acknowledged and we were on our way. At the same time Val was entering LFDN into the GPS so we had a bearing and distance and almost immediately the field appeared in our 11 o'clock and we joined the circuit and landed.

After an hour and a half the cloud base appeared to have lifted somewhat and a study of the VFR chart showed that routing DCT SAU DCT ROYAN DCT LFBH would keep us over very low ground the whole way, basically following the course of the Gironde River and so we had another try. We were able to achieve 2,000 feet immediately and once past Bordeaux it 'perked up' to a beautiful day with SCT CU becoming FEW CU.

The visual approach to La Rochelle was straightforward and we were instructed to join via the bridge for a downwind right hand to runway 28, and landed for hopefully the penultimate time on this trip.

After refuelling and a pleasant meal in the airport restaurant we filed a flight plan for home.

Although we filed VFR it seemed unlikely that we would be able to get all the way home VFR due to Jerseys METAR of SCT 800 feet, but there was no mention of CBs or TS so if the cloud defeated us, we could always upgrade to IFR. When the last of the 'foreign' controllers passed us on to Jersey it was a welcome change to hear an easily understood voice return our call and a prompt clearance through their zone direct ORTAC at 3,000 feet. We continued in beautiful sunshine and all went well until approaching ORTAC when it became obvious we would be going IMC at that level. We therefore requested a descent to try and maintain VMC but even at 1,200 feet we would still not be below cloud. A quick call to Jersey to advise we would be unable to maintain VMC, request a change to IFR and a climb brought an immediate clearance to 3,000 feet and acknowledgement of the change to IFR. On climbing we were immediately solid IMC. At that height Jersey lost us before we could be picked up by Bournemouth giving us ten minutes mid-channel IMC with no radar cover.

We had visualised approaching the coast with Bournemouth bathed in sunshine, the chalk cliffs of Swanage to our left, The Needles to our right, but no. Instead, we were IMC until a vectored ILS to 26 saw us dropping out of the gloom with about five miles to run followed by an uneventful landing.

Finally we were home after a most memorable holiday and I know I speak for everyone on the trip when I say a heartfelt thanks to Jim Thorpe for all the work he put in to make it such a memorable trip.

P.S. A trip to Spain and Morocco is being planned for 2007. This will take place in May (to avoid the hottest weather). It is expected to last nine or ten days with possibly an initial meet up in Valencia on Saturday 12th May, followed by visits to Fez, Marrakech and Seville. See the website for more details and if you are interested in joining the trip, please express your interest by emailing your details to Anthony Bowles at gajb@corsock.com.



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Every-
one
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passed
Sardinia
due to a
150euro
luxury
tax on
visiting
aircraft

”



By
John Pickett

VAT/TVA on Avgas

The European Union sets minimum VAT/TVA tax levels on aviation fuel by Directive. The current EU rate of tax on unleaded AVGAS is 0.359 Euros per litre. The Directive requires that there should be minimum taxes on AVGAS used in non-commercial aviation. However, a country can apply a higher tax rate without EU approval, but a lower or zero rate of tax requires a unanimous decision by the Council of Ministers.

Special treatment is given by the EU commission to promote the development of environmentally friendly fuels.

The Swedish Government has notified the EU that it wishes to continue its presently applied deviation from the EU directive. The present exemption ended on the 1st January 2007. Sweden leads Europe in the development of environmentally friendly fuels and unleaded AVGAS is widely used.

AOPA Sweden has been urging other countries in the EU to take action. To date, UK, France, Malta and Finland have filed requests for below minimum tax with the EU.

A problem was that several countries were unaware that existing tax exemptions would automatically be cancelled on the 1st January 2007 unless new applications were filed and this exacerbated the problem.

Unmanned Airborne Vehicles (UAVs)

At a recent conference on the Unmanned Vehicles System IAOPA expressed concern about two issues. Is the UAV system sufficiently reliable to remain within its assigned airspace? And will UAV airspace be accessible by manned aircraft?

“Situational Awareness” and “See and be seen” are the essentials of any piloted aircraft operation. With the increasing number of wars in the world the development and growth of UAVs is considerable. A good percentage of the research and development of the UAV is conducted in Europe and the UK. Consequently the amount of UAV flying is increasing. One hopes that the control systems are sufficiently sophisticated to enable the (pilot?) controllers of UAVs to “see” us on radar?

Airframe icing

Some pilots have reported, whilst flying in UK and Europe, of incidents of restricted flight control movement during flight. These have been attributed to anti-icing fluid dry out and re-hydration. Repeated application of fluid as an anti-ice treatment or when applied at night to protect against morning frost, caused residues to collect and accumulate in aerodynamically quiet areas. That is, control surface gaps, cavities, hinges etc. The repeated application of fluid causes the residues to accumulate in increasing quantities unless removed by regular cleaning. On exposure to moisture, e.g. in rain showers, the residues absorb water and swell to many times their original volume and form a thick gel. As the aeroplane climbs above the freezing level, the residues can freeze and restrict or even jam the flight control systems. With thanks to the UK CAA Flight Operations Department for the warning.

Hijacking

A new patent has been filed involving an autopilot facility which once engaged cannot be disengaged. It is designed to be used if an aircraft is hijacked. The pilot would engage the autopilot and the aircraft would automatically be flown and landed at a pre-programmed airport. ATC would be informed accordingly and automatically. Neither the crew nor the hijackers would be able to access the autopilot controls once engaged! The thought of an Airbus 380 becoming an “UAV” is mind blowing

Mode S

Mode S for IFR is mandatory for the UK after 31st March 2007 and compulsory throughout Europe (VFR & IFR) after 31st March 2008 and yet there is still no news about the availability of a low power SSR Transponder. Unfortunately the Eurocontrol Stakeholders Group has put the low power XPDR on a “low” priority. All aircraft that are not fitted with an alternator or generator will need such a transponder. It appears that a portable device could be available next year but it is not anywhere near volume production and is likely to cost in excess of 1,100 Euros, without extras.

In the UK the CAA conducted a Regulatory Impact Assessment and received over 3,500 responses. The major concerns expressed were:

- ⊖ The costs involved in installing a suitable transponder,
- ⊖ Whether Mode S is really necessary,
- ⊖ The availability of the equipment, particularly low power XPDR required by gliders and aircraft without “electrics”, and importantly
- ⊖ The integration of ADS-B.

Consequently the CAA has not decided upon a specification for Mode S transponders. In other words they do not know what it should do!

An expert recently quoting the introduction of Mode S as “solving a problem that had not been defined yet”.

ADS-B

There appears to be reluctance by some authorities to recognize the potential of ADS-B. A UK CAA representative described it as “immature”. Perhaps that remark was because ADS-B is based upon GPS! It is wondered if the thinking will change when Galileo is fully operational. The tiny state of the Republic of the Fiji Islands has been using ADS-B since the first Gulf War, in 1991, with great effect. Fiji ATC control aircraft flying over a large part of the South Pacific Ocean between the Antipodes and the Americas.

Concorde accident

Some good has come out of the Concorde accident in France in the year 2000. The Concorde crashed on take off after a small strip of metal punctured the SST’s fuel tank. The piece of metal came from a tyre of a Continental Airlines aeroplane. The genesis of an idea to use optical lasers to detect such debris on a runway reached fruition recently. An innovative technological device received a patent in late December 2006. The device will constantly monitor the surface of a runway for debris and potentially hazardous objects.

GPS

The GPS 11R-14M satellite went live just before Christmas. A further six additional GPS11R-M will be launched starting this year. This new family of satellites will incorporate new signals that include a third civilian signal. Both military and civilian users already have receivers that will allow them to take advantage of the advanced capabilities that the new satellites offer. Rockwell Collins stated that by the end of December 2006 they would have manufactured 50,000 Defence Advanced GPS Receivers (DAGR). The DAGRs is designed for use by US military forces and they weigh less than one pound (0.4 kg) and measure 3.5 inches by 6.5 inches. It is wonderful what was can do to the speed of production of such devices!

When it comes to minimising greenhouse gas emissions the fastest route, using GPS, is not necessarily the most efficient. The Swedish Lund Institute of Technology is testing a software programme designed to work out the most energy efficient route. Sweden is demonstrating, yet again, that it is leading in the development of energy efficient fuels and techniques.

JAR instrument rating (aeroplanes) – Modular flying training course

Amendment 7 to JAR-FCL 1 introduces a new provision for IR (A) modular flying training. When it is introduced some time in 2007 the IR(A) Modular Course will consist of two modules that can be taken separately or combined.

- (a) The Basic Instrument Flight Module comprises 10 hours of instrument time under instruction, of which up to 5 hours can be instrument ground time in BITD, FNPT1 or 2, or a flight simulator. The training must be conducted at an approved FTO and subject to the satisfaction of the Head of Training a Course Completion Certificate shall be issued.
- (b) The Procedural Instrument Flight Module comprises the remainder of the training syllabus. That again is to be conducted at an approved FTO.

The net effect of the amendment is that the training for an IR (A) can be conducted at different Flying Training Organizations, if it is wished, and some of the instrument ground training can be mixed between an FNPT1 and an FNPT2.

JAR PPL I/R A and H

Amendment 7 to FCL1, and Amendment 5 to FCL2 introduce other changes to the PPL IR (A) and PPL IR (H): - For the benefit of members the entire Amendment 7 is repeated below. (Amendment 5 to FCL2 is broadly similar.)

Paragraph 3 to Appendix 1 states that: - "A private pilot licence with instrument rating issued in accordance with ICAO Annex 1 by a non-JAA State may be validated subject to conditions by a JAA Member State. To validate such licences, the holder shall.

- (a) complete, as a skill test, the type/class and instrument rating of Appendix 1 and 2 to JAR-FCL 1.210 and Appendix 3 to JAR-FCL 1.240;
- (b) demonstrate to the satisfaction of the Authority in accordance with Subpart J, that a knowledge of Air Law, Aeronautical Weather codes, Flight Planning & Performance (IR) and Human Performance etc.

- (c) demonstrate a knowledge of English in accordance with JAR-FCL 1.200;
- (d) hold at least a valid JAR-FCL Class 2 medical certificate including the hearing requirements in accordance with JAR-FCL 3.355(b)
- (e) hold R/T privileges acceptable to the Authority,
- (f) comply with the experience requirements (more than 100 hours PIC instrument flight time".

In other words if a pilot has a PPL IR issued by a Non-JAA State, he or she can apply to a JAA State for validation of the licence and IR subject to meeting the above requirements. This "concession" goes some of the way in easing the path to a JAR PPL IR. However it should be remembered that it is a "validation" and that not all States will accept the Amendments.

GA

One of the criticisms by the UK CAA addressed to the UK General Aviation industry is that it, GA, does not speak with one voice. The recent NPA process involving EASA and the regulation of GA produced over 4,500 separate comments from a large number of factions, organizations and individuals. This emphasizes the scope and scale of GA and the necessity for one voice.

However, it is not only GA that does not speak with one voice!

A perfect example is the publication of Amendment 4 to JAR FCL2 dealing with helicopter pilot licensing. (This includes the IR.) It was very late when the full impact of the amendment was realized. Some countries immediately called a halt to implementation and started an impact assessment. However, Amendment 5 to JAR-FCL2 was then published by the JAA, (Amendment 5 was issued because Amendment 4 had to be withdrawn due to a number of mistakes in the content.)

Meanwhile, the UK CAA decided to retain Amendment 3 as policy. So Europe now has an anomalous situation where the UK, and probably some other States, is retaining Amendment 3 as the definitive requirement and some countries have adopted Amendment 5. Could not the Regulatory Authorities have consulted, agreed and spoken with one voice? Results are awaited.

GA training

A tongue in cheek, thought for the New Year. The airline world is still trying to get its act together over the introduction of the new Multi Pilot licence (MPL). In the meantime the general aviation industry continues to provide the vast majority of training for pilots in Europe. If the world's aircraft manufacturers recent forecast is correct new aircraft deliveries will require that 367,361 new pilots need to be trained between now and the year 2024. (Where the "1" comes from is not known!) Other sources predict a worldwide requirement of 330,000 new pilots. So perhaps the estimates are reasonably accurate! Of these totals, Europe, it is predicted, will require 78,325 newly trained pilots. A few seconds work with a calculator shows that this equates to 15,665 million flight-training hours. That is approximately 825,000 flying hours per year. Governments - discount the existence of general aviation at your peril!

Norway

The Norwegian CAA is proposing to raise its fees by 4% from 1st January 2007.



Pilots' talk

Have you renewed your membership?

It was due on the 1st January. If not then dig out the last issue of Instrument Pilot for the postal renewal method or do it right now, online at http://www.pplir.org/index.php?option=com_facileforms&Itemid=49.

Dates for your diary

PPL/IR Europe AGM Saturday 28th April 2007

The day will include presentations from Lord Rotherwick on the *Parliamentary Aviators Group and GA*, and Steve Copeland on the *Use of Oxygen in GA*. However, the AGM will no longer be held at Oxford due to planned runway maintenance. More details, schedule and booking form on page 5 or from the website.



Oxford. Runway closures will prevent it being used for this year's AGM

Highlands and Islands Spring Tour May Bank Holiday 2007

For full itinerary, booking form and hotel reservation details see the >Events >Future Events page on the website at www.pplir.org or email *Linda Mollison*, (Linda@pat.uk.com) or *Steve Dunnett* (meetings@pplir.org).



Kirkwall Harbour, initial destination for the Highlands and Islands Spring Tour

July/August 2007, Weekend fly-in to Berlin Tempelhof - Before it Closes!

Express an interest to *Steve Dunnett* (meetings@pplir.org).

September 2007

Since the Spring trip to Spain and Morocco booked up very quickly indeed there appear to be a number of disappointed members. Can I have indications of interest in a tour in September say to the Greek Aegean Islands, day trip into Turkey out via Czech Republic (one night) and back via Venice or a Croatian island? (one night) about nine days in total. No need for commitment at this stage and no promise it will happen as yet. Contact *Jim Thorpe* depchair@pplir.org.

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 updates

From the MoD Defence Contracts Bulletin we glean that *Brize Norton*, Oxfordshire has had the main runway resurfaced and new arrestor gear and lighting has been installed. It has also now been designated as the Military Emergency Diversion Airfield for the south of the UK.

At *Elvington*, North Yorkshire on 20th September 2006 news broke of a horrific motor crash at "an airfield near York". Radio 4's Today programme began with confusing references to "a grass airfield", though it later emerged that the mishap had occurred at Elvington. In an unofficial attempt at the British land speed record, Richard Hammond, co-presenter of the BBC Television Top Gear, lost control, veered off



the 1.8 mile (hard) runway, flipped, and finished embedded in the wreckage on soft ground 200 yards away. Richard's dragster-style jet car Vampire had just reached 280 mph (450kph) when he either miscalculated, experienced a mechanical fault or was caught by a freak cross-wind. Mercifully, he survived without brain damage or crippling injury. The story is pertinent to the history of airfields for it highlights key aspects of their after-use. Cold War runways have provided obvious sites for dangerous sports and testing on account of their comparative remoteness from built-up areas and the absence in Britain of vast level wildernesses such as the salt flats used in America. Inevitably the incident raised questions about the health and safety and the morality of glamorising speed and risk via the media (*Ron Blake*). Out of interest, Top Gear's permanent base is *Dunsfold*, Surrey.

Haverfordwest, Dyfed is reported to be still very active, both as an airfield and for other uses. Aviation activity is based on the west of the airfield, with a small, modern control room and a number of hangars including a wartime T2. Several flying clubs are based here and there seems to be a reasonable amount of GA activity. Two runways are still in use. The technical site to the East appears to be largely intact, including the original watch office, another T2 and many other buildings. These are put to miscellaneous industrial and leisure uses and unlike many such sites, appear to be well looked after by the owners and tenants.

The *North Weald* airfield Sector Operations Block Bunker built in 1941 is to be demolished once a company has been approved to build 60 homes on the site and the old barrack area long demolished. The scheme is out to tender and meanwhile the bunker is defaced with masses of graffiti.



North Weald, which is likely to see up to 60 new homes built on the site

The relentless search for land to build houses on (for all the house builders to live in – we assume – *Ed*) has enveloped **Oakington**, Cambridgeshire where an MoD Defence Contracts Bulletin reports that English Partnerships have purchased the Oakington airfield site, until 1999 the home of the Royal Anglian Regiment and more recently used as a centre for asylum seekers. Sadly it is to be the site of a new town development called Northstowe and so another historic airfield site will disappear.

St. Athan, South Wales formally ceased to exist on 1st July 2006 when it was officially renamed Ministry of Defence St. Athan. The airfield now houses RAF, Army and MOD units together with civilian organisations.

The 31/13 runways at **St. Mawgan**, Cornwall have had their direction numbers repainted due to the relentless change in the earth's magnetic field. They now read 30/12. (According to my 1966 Air Touring Flight Guide, Gatwick's runway(s) were 27/09 – they are now 26/08 - *Ed*).

Tollerton, Nottinghamshire is set to become yet another inter-war municipal airport that may close. By 2026 Rushcliffe Council has to find space for 13,000 new homes of which 3,000 could be built at Nottingham (Tollerton) Airport. Problematically, the site lies in a statutory green belt which carries the presumption against development outside villages. Nottingham City Council bought land for an aerodrome there in 1927 but now regards the site as inefficient in property terms. Selling the land would raise £5m to upgrade city infrastructure plus further income from a stake in the £100m development

Developers like big land allocations and a mixed-use scheme comprising housing, retail and business units could be the outcome, assuming ministerial approval. Twenty potential buyers have expressed interest, including current tenant Truman Aviation who would retain flying operations. Parishioners say they are accustomed to the buzz of small planes and are more fearful of increased lorry and car traffic. Two rays of hope: First, Tollerton's aeronautical future could be secured if a large housing allocation is approved at Cotgrave disused colliery; secondly, a government planning inspector may be minded to safeguard Tollerton aerodrome in view of the fact that the recently vacated grass runway at RAF Newton also lies within the green belt and is zoned for agricultural use.

Finally at **Davidstow Moor**, Cornwall, a RAF Memorial Museum has been opened in the refurbished sergeants' shower

block complete with original showers. A marvellous collection of artefacts with pilots' and air gunners' tunics from as far as New Zealand. The former squash courts have also been refurbished. (If you've not yet flown in to Davidstow Moor, the new museum will give you a good excuse for a flight – *Ed*)(*Airfield Research Group*)

UK launches procurement search for GPS contingency

A United Kingdom-based  Trinity House agency plans

to buy a navigation system to serve as a backup for satellite-based technology, such as the Global Positioning System, putting pressure on the United States to follow suit, according to navigation industry consultants and vendors.

Trinity House, a UK organization that provides marine aides to navigation in England, Wales, the Channel Islands and Gibraltar, recently issued a request for proposals for an enhanced long-range navigation (eLoran) system. Loran provides highly accurate location information without depending on satellite signals, which are subject to jamming or disruption.

The agency asked interested bidders to submit proposals by January 6th 2007, for continuation of ongoing eLoran tests with plans to transition that test system into the UK component of an operational European eLoran service.

The United States needs a similar backup system to provide an alternative to GPS for air and marine navigation and for communications networks that rely on GPS timing signals, these vendors and consultants said.

A Transportation Department spokesman said officials from DOT and the Homeland Security Department are working on a backup system for GPS, which includes eLoran and a final decision is due soon but declined to provide a time frame. Navigation industry executives expect an eLoran decision from DOT and DHS by the end of this year.

Loran stations house two low-frequency transmitters, which send time difference signals. Receivers determine their location based on the time difference of the signals received from the two transmitters. The U.S. Loran system covers all coastal waters in the lower 48 states and parts of Alaska. The United Kingdom has one Loran station and there are seven others in Europe.

eLoran systems gain enhanced accuracy through the use of differential correction

systems well-established in GPS and the ability of receivers to tap into signals from multiple stations, which also improves accuracy and timing information.

Mike Harrison, a consultant in the Washington DC area who helped write a white paper by Aviation Management Associates for the Federal Aviation Administration on GPS backup systems, said the UK decision to go ahead with an eLoran backup “sends a very strong signal to the US to go ahead with its own eLoran system”, which Aviation Management urged in its FAA report.

Harrison said a backup to global navigation satellite systems (GNSS), which besides GPS include the planned European Union Galileo system and the existing Russian Glonass system, is essential in case of jamming or attack.

Harrison's paper said two terrorism suspects arrested in Atlanta earlier this year planned attacks against GPS. The paper also quoted a June CNN news report in which Lt. Gen. Robert Kehler, deputy commander of the U.S. Strategic Command, said that he was concerned by attacks by insurgents in Iraq against U.S. satellite navigation systems, which “mark the emergence of a new threat.”

Harrison said deployment of eLoran in the United States would be the equivalent of buying insurance against an attack on the GPS system as well as the FAA's GPS-based Wide Area Augmentation System and the Coast Guard's Differential GPS (DGPS) system.

DOT has recognized GPS' vulnerability to jamming and attack since Sept. 10, 2001, when the Volpe National Transportation Systems Centre research arm assessed the GPS vulnerabilities and urged development of a backup system. The Volpe report said that as GPS penetrates into the civil infrastructure, “it becomes a tempting target that could be exploited by individuals, groups or countries hostile to the United States.”

The General Lighthouse Authorities (GLA) of the UK and Ireland, which along with Trinity House manage aides to navigation in the UK, including Loran and DGPS systems, said in a report on eLoran released in May that they agreed the threat to GNSS from terrorism or criminal jamming is “credible, real and likely to have significant economic and financial costs.”

The GLA eLoran report said that GNSS is also subject to unintentional interference, including amplified television antennas. In 2001, the GLA report said, an amplified TV antenna operating near Moss Landing

Harbor, Calif., 60 miles south of San Francisco, jammed GPS signals in that area for more than a month, disabling GPS navigation and timing signals.

eLoran can provide an excellent backup to GNSS because it transmits high power signals less susceptible to jamming than GPS or Galileo signals, the GLA report said.

Zachariah Conover, president of CrossRate Technology, a start-up company developing eLoran receivers, said developing backup for timing systems could be more important than providing backup for navigational signals.

Conover said timing is essential to the operation of the Internet and cellular telephone systems, which need precise timing signals to function.

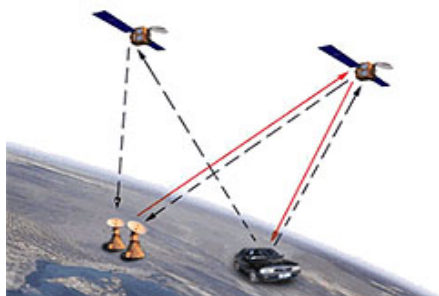
The United States cannot afford a shutdown of GPS-based critical infrastructure systems, Conover said, and the Aviation Management report on eLoran for the FAA stated that the eLoran could be deployed for between \$24 million and \$27 million, thanks to the \$160 million investment in Loran modernization since 1997.

Any deployment of eLoran would require upgrades of systems in Alaska, which the Aviation Management report estimated at between \$75 million and \$140 million. This contrasts with ILS upgrades estimated at \$117.5 million, VOR upgrades costing \$47.2 million and DME upgrades pegged at \$25.5 million, the Aviation Management report stated.

The GLA report said that eLoran provides the ideal second input to any e-navigation system by removing vulnerabilities to jamming attack or unintentional interference associated with satellite navigation systems. "In fact, there is no realistic alternative to eLoran in doing this," the eLoran report concluded. *(Bob Brewin - FCW.com)*

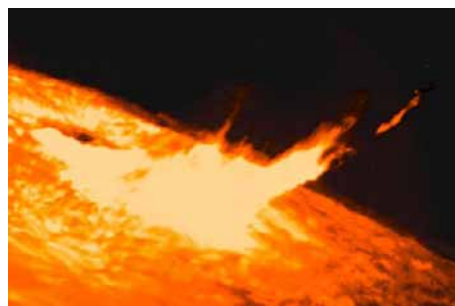
China wants its own GPS

China is expected to launch two satellites next year that will start its GPS constellation. The Beidou (Compass) satellites will provide coverage for most of China and some neighbouring countries



before the country launches the remaining 33 satellites to yield worldwide coverage. The plan was confirmed by state-controlled news services last week. The open frequency from the system will give navigational accuracy to 10 meters, with speed accuracy to within 0.2 meters per second and timing accuracy to within 50 nanoseconds. The "authorized" service will be better on all three counts. The news services said China isn't necessarily going to keep the system to itself and is willing to cooperate with other countries to make it compatible. There are three GPS systems in operation. The U.S. Air Force's system was operational in 1978, the Russians built theirs in the 1980s and the European Galileo system was begun in 2002. China's system will ultimately include five geostationary satellites and 30 medium orbit satellites. *(AVweb)*

Prediction of solar flares, GPS disruption



As GA pilots become increasingly dependent on GPS signals not only for navigation but for instrument approaches, it now appears that it may be possible for the signals to be disrupted by solar flares. Right now that's not a problem because the sun is in a quiet phase, but it's expected to get active again in 2011. That seems a long way off, but it will be here before you know it. The intense solar flares could cause GPS signals used by aircraft navigation and emergency location systems to degrade by up to 90 percent, for hours at a time. GPS has become ubiquitous during a quiet solar period, and no easy fix for the problem is immediately apparent. The disruptive effect was discovered accidentally by a grad student studying the ionosphere, and was later verified by numerous sources. So far, it seems the only way to cope with the interference is to have a backup plan for when it happens. *(AVweb)*

FAA's final rule - Replace those crankshafts

The FAA has published its final version of a controversial rule affecting crankshafts in 3,774 Lycoming 360- and 540-series

engines. The Airworthiness Directive (AD), effective Nov. 3, requires owners to replace the crankshaft either at normal overhaul, when the crankcase is split for any reason, or within 12 years of the time the crankshaft was put into service. Replacement parts will cost about \$16,000 per engine. Lycoming is offering to reduce that price to \$2,000 for three years. If the routine overhaul is done at the Lycoming factory, the crankshaft will be replaced with no additional charge. But that hasn't satisfied all owners, who note that in a previous crankshaft AD, the company bore the entire cost of repair. And there's the court system. One owner in California has filed a class-action suit calling for Lycoming to do the same this time. Lycoming has declined to comment on that suit. *(AVweb)*

Cirrus taking jet orders

Cirrus is planning to build a single-engine jet that will cruise faster than 300 knots, up to 25,000 feet, with a range of 1,000 nm and cost less than \$1 million. In an interview with AVweb Wednesday, Cirrus VP of sales John Bingham said about 1,500 people worldwide (many of them Cirrus owners) will receive a package this week that will give them some of the goods on the aircraft, called the-jet (that's what they said). No pictures are being distributed but Bingham said the plane is "very, very unique" in an appealing way. If they break the \$1 million price barrier, they'll be the first, but Bingham said that, based on the company's track record, he's confident the figure will stand. He's not saying how much less than \$1 million it will be. It will have a full airframe parachute but Bingham wouldn't say how many people it will seat. "It has a very large comfortable interior," he said. The company will formally announce the-jet at the National Business Aviation Association convention in Orlando (Oct. 17-19) but there will be no aircraft or mock-up there. The engine manufacturer will be announced at NBAA.

Cirrus has been musing about a jet for several years and admitted its intention to go ahead with one about a year ago. Central to the jet's design is that it be an easy transition from piston-powered Cirruses, Bingham said. Even without the photo, those receiving the package this week are being asked to put down a deposit of \$100,000. Bingham wouldn't say when the company hopes to start production. *(AVweb)*



London TMA changes in the air & the EAS/Eurocontrol conference

By Paul Draper

London terminal control changes

NATS held a meeting at Bournemouth on 14th December to explain their proposals for the London Terminal Control area North (TCN) and show radar simulations of what is proposed. This is part of their consultation process for the proposed changes and additional meetings for the South West and North East will follow shortly so there is much change in the air! In addition NATS is holding a GA Forum at Swanwick on January 29th to discuss and exchange views with GA. Either Jim Thorpe or I will go to each of the meetings and it is encouraging to see NATS taking trouble to liaise with us and others from GA. While they now have to consult, this is positive proof of a new approach that I saw start last year within the Airspace Infringement Working Group (AIWG) at the CAA; NATS became concerned at the number of infringements affecting their service and saw the need to do something positive.

At the Bournemouth meeting there were only four representatives from GA plus two from the Department of Airspace Policy at the CAA. The NATS person in charge gave a short presentation showing the extended (by 10 miles) area and the new locations of the three holds inbound to Luton and Stansted.

It was explained that the current location of the holds close to the airports and their method of operation limited the capacity of the ATC system and placed a constraint on the efficient operation at periods of high demand. The movement of the current holds further out from the airports was a key objective as this will generate more space to manage effectively the traffic flows between holds and the airports and avoid departing aircraft under-flying holding traffic.

The movement of the holds will also allow an extra sector to be established to manage the holding traffic for Luton and Stansted respectively, currently one sector does this task and controls approximately 1000 aircraft per day which cannot be sustained.

It was mentioned that the intention is PRNAV routes be used for these new proposals; accordingly more airspace is needed to enable the PRNAV routes to be workable by the pilots! I said that I thought one of the reasons for PRNAV was to enable more accurate flight paths saving airspace requirements. There was no proper answer to this other than they are charged to provide more capacity etc.

I asked what provision there was for IFR transit traffic; it seemed they had not thought of that issue – this rather surprised me in view of discussions elsewhere. However they did take note and when we later looked at the simulation rooms I had the chance to discuss this further plus the need for easier access to airports under and near to the London TMA (eg EGTR). NATS are willing to discuss this issue and a meeting will be held on 20th February to discuss this and other transit issues.

So, what do I make of all this? Mainly that they are listening and want to develop solutions, if possible – but there are no guarantees at this stage. In addition this was another meeting that has proved beneficial and which it was good we were at – except, as usual, more work flows from it! We will keep you advised of progress on this and the other sectors as proposals progress.

EAS/Eurocontrol conference - Brussels - 1st December 2006

I attended this event along with 150 other attendees (including Martin Robinson and Sylvain de Weerd). Some S&RA (Sports and Recreational Aviation) organisations had set up some displays including a glider in front of the Eurocontrol main entrance, a glider simulator (excellent), a balloon basket, a very large model aircraft and a hang glider. All very impressive. They also had some large screen video footage of various craft. I was a bit under equipped in comparison but had some hand outs and back issues of Instrument Pilot that were eagerly snapped up. This is a good indicator of how we

really ought to be promoting ourselves more proactively and since attending the meeting action has been taken to build up a promotional supply of copies of Instrument Pilot for distribution at similar events and we are investigating the viability of producing a PPL/IR Europe promotional DVD.

The day went well and Eurocontrol seemed to be in listening mode when questions were raised as to their policies on various points. Furthermore Sir John Allison, EAS President, was in “strong” mood and Bo Redeborn, Chairing for Eurocontrol, took it well and has agreed there will be follow up meetings on all the topics. However, I have made the point to Sir John that we need to have a similar presentation to the senior executives at the European Commission. A few points of note for us that arose in the general discussion are detailed below. All in all, a successful event and another example of the benefits of being present and, importantly in this case, able to be included in making a presentation. I understand from talking with Sam Parkin of Eurocontrol that this event, which is S&RA’s alternative to the IAOPA / Eurocontrol event, will in future years alternate with the IAOPA event.

Eurocontrol (Bo Redeborn):

- ☞ Lower airspace will be dealt with by NAAs not Eurocontrol.
- ☞ There will be new ICAO mandates re: PRNAV and RNP requirements.
- ☞ GPS approaches are being progressed.
- ☞ Workshop planned in May on VLJs.
- ☞ Use of Class G by CAT – recommendation is to find an equipage solution.

Airspace (Bill Armit):

- ☞ Currently studying the issue of Class G below 3000 ft. Watch for study results.

Mode S (John Law):

- ☞ UK VFR likely to be deferred until 2010.
- ☞ ADSB not suitable for high density traffic areas.
- ☞ UK EHS only from 2005. ELS ground implementation validation stage for FIRs and UIRs in 2012.

Sometimes it all seems worthwhile

Returning from the PPL/IR Europe Meeting at Kortrijk I filed Koksy - Biggin - Compton direct Gloucester FL80. I had little expectation of flying this more or less direct track home since it parallels Heathrow's runway just to the south but the flight plan system liked it and that was what mattered. It was a clear day, little wind and no turbulence. The autopilot engaged I coasted in and was poised, knob in hand so to speak, to twist the heading bug to the first vector to some place I didn't want to visit. Dulcet tones instruct me to plan on Biggin then Compton and pass this routing to London on the next frequency. 'Passed on' routings rarely work. Perhaps it's some sort of standing joke between the sector controllers. Maybe today it was who could get the most pilots to say words starting with B and C. But no. The next sector just left me to my own devices. Excitement mounted. Could this be an against the flow transit over London or were they just playing with me. Then the wild card. Change frequency not to a sector but to Heathrow director. Here the plot unfurled and daydreaming suspended. There was a real emergency in progress. Two aircraft were despatched to the stacks. Two 747s were told to orbit in their present position. One 747 pilot's voice was so expressive that I could almost see the disbelieving faces in the cockpit. 'She wants us to what'. I proceed serenely along almost overhead Heathrow watching a 747 orbiting at low level and large jets scattering in all directions. Not to labour the point but trouble free handovers to other London sectors, Brize and Gloucester followed. Gloucester told me that customs had stayed at home so I transited their overhead to land at my own strip where 10 minutes activity saw the Bonanza in the hangar and me in the kitchen having a cup of tea.

Sometimes all the effort and aggravation of getting and keeping the rating seems worthwhile. Sometimes it really is a privilege to fly the airways. To see the ATC system under pressure working well and even accommodating 'the low and the slow' With all the IR issues we face it's easy to lose sight of the fact that we are experiencing a kind of flying which is very special and which sadly, too few other pilots are able to share.

Jim Thorpe, MEMBER 326

EAS/Eurocontrol conference

continued from page 17

Note - On my asking why this and other such regulations are not implemented on the same dates throughout Europe there was no satisfactory answer.

ADSB (Alex Wandels):

⊖ Will be part of SESAR. A Representative attendee for the EC stated they wish to harmonise airspace classifications in Europe.

8.33 KHz (Peter Alty):

- ⊖ Working on implementing below F195 for 2007.
- ⊖ Options - ACC initially; Selected TMAs thereafter.
- ⊖ Entire fleet (preferred option) at, assuming their recommendation is accepted, ACC for IFR (and some VFR) 2010.
- ⊖ Full implementation 2013.

Note - the costs associated with this proposal are huge for both aircraft owners and ANSPs but Eurocontrol seem determined to implement it and ICAO have made a decision to proceed. EC Implementing Regulations will be used to establish consistency.

⊖ Garmin 530 and 430 ranges will be compliant but Garmin 480s are stated as not being compliant.

UAVs (Holger Matthiesen & Mike Strong - Military):

- ⊖ Will have a significant impact on the future use of airspace.
- ⊖ Must perform in the same manner supporting ATM transparency to other users.
- ⊖ Other hurdles to be overcome before can be used in earnest, particularly "sense and avoid" systems.

SESAR (Philippe Renaud):

⊖ The joint undertaking is to be set up in 2007 and the "aviation community" will be invited to join. However it is not known on what basis that can take place.

Note - There was questioning about the possibility of GA inputting other than via IAOPA and the exclusion of most of GA due to the costs of joining. I made the point to the European Commission representative that, in practice, we were excluded and there was little or no opportunity for realistic input and feedback. I also felt the EC needed to do something about this before matters progressed much further.



CAA safety evenings

As always, every GA pilot, flight instructor, engineer, or indeed anyone associated with GA operations in the area is strongly encouraged to attend one of these evenings. Although the emphasis may be slanted towards the host organisation, the content is relevant to all forms of general aviation.

It is usually appreciated if those attending let the organiser know of their intention to attend, to give an idea of probable numbers. Most events are free, although a small charge is sometimes necessary to cover the cost of hiring the venue or providing refreshments. The events start at 7.30 pm unless otherwise advertised, and last approximately 2½ hours including a short break. The main speaker from Flight Operations is normally accompanied by a guest, and discussion and questions are encouraged. Everyone present has the opportunity to win prizes donated by generous sponsors.

Date	Area/airfield Location	Organiser	Phone
06/02/2007	Leeds, Multiflight	Michael Benson	01332 387130
26/02/2007	Cranfield, Café Pacific	Simon Mayer	01234 752819
28/02/2007	Biggin Hill, tbd	Philip Chew	07855 378661
05/03/2007	Bournemouth, Bournemouth FC	Bob Hinks	01202 578558
06/03/2007	Thrupton, Airfield restaurant	Jean Herridge	01264 773900
07/03/2007	Bodmin, Clubhouse	Mark Taylor	01208 821419
08/03/2007	Bristol/Filton, BAe Welfare Assn	Graham Clark	01454 618216
12/03/2007	Carlisle, Terminal	Brain Peacock	01228 573490
13/03/2007	Glenrothes, Topsy Nipper Restaurant	Julia Grant	01592 753792
14/03/2007	Inverness, tbd	Peter McLennan	01667 462226
15/03/2007	Oban, Connel Airfield	Paul Keegan	01631 710888
20/03/2007	Liverpool, Merseyside Police Social Club	Keith Rotherham	0151 426 6320
21/03/2007	Welshpool, Aerodrome	Bob Jones	01938 555552



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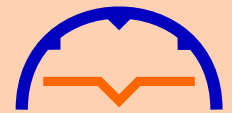


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For reports on meetings, conferences and other activities attended in the last 12 months by members of the Executive on behalf of PPL/IR Europe members please go to <http://www.pplir.org> – Activities

Brooklands is (very) appealing

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prolific aircraft production site in Europe, with over 18,500 aircraft of nearly 260 different types assembled or completed there over an 80-year period. Almost the last in that unmatched line-up was Concorde, with over 30% of every airframe having been built at Brooklands. The consolidation and streamlining of the industry over the last 50 years have seen most of the evidence of that staggering legacy obliterated, with just one Bellman hangar remaining of the buildings in which thousands of people created some of the greatest aircraft of the first century of flight. (That one Bellman Hangar is in urgent need of restoration, a task for which we have been promised almost £1 million in National Lottery funding, but for which we need another £1 million in match funding – and that’s just one of a dozen major projects at Brooklands currently stalled for want of funds.) But the aircraft themselves remain as an inspiration to future generations - be it from the big idea of getting aloft at all (A V Roe’s biplane), or getting aloft on vectored thrust (Sidney Camm’s P1127 and Harrier), or cruising supersonically without reheat as Concorde’s clever intake design allowed it to do decades before the military invented “supercruise”.



BA's last VC10, G-ARVM

There is now nowhere in the UK where members of the general public can see large aircraft being built or assembled, so it has become incumbent on museums such as ours to show visitors just how aircraft were and are put together, and what’s under the skin. We have the ultimate example at Brooklands in our Vickers Wellington bomber, recovered 21 years ago from a 42-year sojourn at the bottom of Loch Ness. Its distinctive Barnes Wallis “geodetic” structure has been left largely uncovered so that visitors can appreciate how it was built, how the controls work etc. Again, our Concorde has sections left unlined internally, so that the intricacies and cleverness of its machined-from-solid structure (and our structural repairs following dismantling for transport) can be appreciated. We will do more of this as our project to restore our 1940 Bellman Hangar moves forward, and we are able to display major aircraft sections in jigs just as they

Wellington bomber recovered from Loch Ness



would have been decades ago.

And inspiration doesn’t have to be on a grand scale - watching the delight on young children’s faces as they discover for themselves that an egg dropped from a balcony suspended under a bit of cloth and string need not break on landing, or understanding Newton’s third law from launching a water-powered rocket, is proof of that. The grander the scale, however, the greater the possible involvement, as shown by the dozens of students from the University of Surrey and the Farnborough College of Technology who have been able to contribute to our Concorde rebuild. All these students - thousands of them per year - are meeting aerospace hands-on, not through a computer or television screen, at just one small museum in Surrey, UK.

Open cockpit policy

It is vital that youngsters are able to see these aircraft at close quarters, and to touch and feel them, and that doesn’t happen any more at airports or, indeed, at many airshows and displays. It can at those museums which allow it; at Brooklands we have an “open cockpit” policy for as many of our large aircraft as we safely can, and young visitors are actually encouraged to take the controls of such as our VC10 and Harrier, and have the effects of those controls explained by volunteer guides. And when we and the University of Surrey finish restoring the old Concorde flight-deck simulator from Filton next year, we will be able to do even more.

And all that introduction, all that inspiration, all that hands-on experience, is delivered largely without cost to the state or to the industry which will benefit from it in years to come. Because Brooklands Museum, like so many other similar private-sector bodies throughout the world, has to rely on admission fees, generally small (though no less welcome for that) private and corporate donations and the work of

an army of volunteers (over 500 strong in our case). Many of those volunteers grew up in the industry at Brooklands, or with the airlines which operated Brooklands-built aircraft, and are now giving their spare (and in many cases not-so-spare) time to put something back. And of course Brooklands is not just aviation. It is the site of the world’s first purpose built motor racing circuit, with some of the banking still in existence. Today Brooklands is one of the world’s most unique motoring museums too. So with all that good work, and all that input from extraordinarily generous ordinary people, why is it that an organisation like Brooklands Museum finds it so difficult to attract real financial support from the industry it does so much to support and represent to the coming generations, their parents and their teachers? We have spent



Brooklands Museum

around £500,000 of our own cash (most of it borrowed) putting Concorde back together, plus a great deal of help in kind from small local businesses and the support of BA. It’s going to take an awful lot of visitors buying their £4 boarding cards for the Brooklands Concorde Experience to recoup that sort of investment, far less get Concorde generating the profits that will fund the next £4m worth of urgent expenditure needed to safeguard this uniquely important site. Next year, the Brooklands site will celebrate its centenary: what better way of celebrating that milestone could there be than actually funding its preservation and its future use as an inspiration to the next generation?

Want to help? Call me!

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