

Journey without maps



Well, the paper ones stayed were rarely consulted, anyway. **Keith Hayley** describes his introduction to the real world of long-distance IFR travel

It's one thing to have an Instrument Rating, quite another to put it to practical use by flying long distances under Instrument Flight Rules. But sooner rather than later one must forsake the comforts of known geography and understandable ATC and plunge into the cold waters of trans-European and even trans-world flight. Like most things in aviation, it's easier than you think, as long as you know the system.

My first distance flight was from my home base at Denham to Palma, Majorca, in a Cirrus SR22. I would stress that in my view it's hardly worth attempting a flight like this without a capable aircraft, properly equipped, and the SR22 fits the bill perfectly. It's almost a mini-airliner, with its Avidyne glass cockpit and S-Tech autopilot – again, I believe virtually essential for flights of this nature. You could in theory hand-fly for five or six hours at a time, but keeping ahead of the aircraft takes so much concentration that it's useful to have the autopilot to take some of the load, especially in IMC.

I shudder to think what single-pilot IFR was

like in the days before GPS. Navigating between VORs would be fine, but interim waypoints, established by cross-cut from VOR or ADF, must have been a nightmare. It's not that many years since a dedicated navigator, complete with sextant, was part of every crew, and I can see why.

It would be foolish to embark on a complicated flight for the first time without an experienced safety pilot, and on this trip I took along John Page of TAA – Technically Advanced Aircraft – based at Denham. John has thousands of hours of IFR flight behind him and knows the Cirrus and its systems inside out. He's also good company, and always game for a laugh.

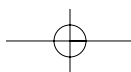
We flight planned using Jeppesen FliteStar software, with a fuel stop at Limoges, two and half hours from Denham at the Cirrus's cruising speed of 165 knots. This particular SR22 didn't have oxygen – it's an optional extra – so we flight planned at flight level 090. On the day, the weather was clear all the way to Palma so the flight was on. We climbed out of Denham with a prearranged squawk and

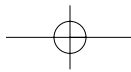
switched to London Control, who said: "November 84 Victor cleared to join controlled airspace 3,000 feet direct RODNI."

I read back the clearance. "Where the hell's RODNI?" asked John. I dialled RODNI into the Garmin 430 and hit 'Direct To,' then punched 'Nav' twice on the autopilot. N84V turned gently towards the waypoint. Problem solved. From there we were stepped over Heathrow traffic and cleared on N859 direct to SITET on the FIR boundary. Using our best power settings in the climb, we showed 25ins MAP, 120kt and 800 fpm.

Our flight plan had been accepted by the Eurocontrol computer without amendment. That was probably because we'd cross-checked it with the internet validator to make sure we were filing correctly, and one tends to find that if it goes through the validator, Eurocontrol will accept it. We had chosen a direct route that took full advantage of a strong northerly wind that occasionally gave us a ground speed in excess of 200 knots. When you're airborne, the en-route controllers will make their own decisions about where to send you, and they're open to suggestions from you – but you must first convince Eurocontrol's

Top: Avidyne shows our SR22 approaching KANIG at FLO90 abeam the Pyrenees, while Garmin confirms 189 kts over the ground





others. There's a huge amount of additional information in 'data blocks' in the corners – engine data on the left side, route data in the 'trip' data block on the right, including bearing, distance, time, and fuel information, lightning strike alerts, and TCAS alerts, but no resolution. The trip page gives you all your waypoints, together with times, fuel used and endurance. The 'nearest' page gives you all the data you'll need in a hurry if you have to divert, and there's a page for checklists. Finally you have the 'auxiliary' page for decluttering the MFD, filtering the data on all the other pages. Some systems have an extra two pages, one for terrain, the other with the Cmax approach plates. This last is apparently well worth having. It projects a Jeppesen database of plates with the aircraft superimposed.

The Primary Flight Display on the left has your AI and DI, ASI, altimeter and VSI as digital data. In the bottom half is the digital data for the heading, altitude and VSI bugs, with the select buttons on the right and the setting knob beneath. On the left is basic data from the GPS and autopilot. You can superimpose the map display on the 360 rose of the DI.

What surprised me to begin with was just how much work there is to do en route.

Left: John Page (left) and Keith Hayley with Cirrus SR22 on the apron at Toulouse
Below left: 'nearest airports' page on the MFD gives 24 options, with approach information available for all
Below: large-scale map of all our waypoints between Denham and Limoges



computer that you won't be conflicting with other traffic.

There's very little traffic up there at FL090. VFR stick and rudder tends to stay below 5,000 feet, and the big boys want to get up above FL300 as quickly as possible, so between FL050 and FL180 you've often got the place to yourself. The SR22 is good for FL170, and the new turbo version can get to FL250, so there are plenty of flight levels to choose from. An indicated airspeed of 140 knots trued out on the good side of 165 knots, and with the 'lean assist' function we chose best economy for a fuel flow of 14 gph.

Our first call to Paris won us a direct leg of 125 nm to KOVAK on the Alpha 31 airway, which turned out to be abeam Le Mans – as if we needed to know. It should be borne in mind that VFR traffic can use the lower airways in France, so there's always the risk of a pop-up, but we saw none. The weather cleared in northern France, and thereafter we had unlimited visibility all the way to Majorca. I find it's rarely the case that one is in actual IMC on an instrument flight plan. The Cirrus is

equipped with anti-icing systems, but its just there to get you out of trouble and it's not cleared for flight into known icing.

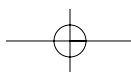
The Cirrus doesn't like fuel tank imbalances, and any more than ten gallons is undesirable. One useful feature of our Mode-S transponder is an audio timer, which we set to a 30-minute countdown. Every time I heard 'time expired' I changed tanks. The aircraft has an endurance of five and a half hours, which would theoretically give you four and a half hours with full IFR reserves, but two and a half hours is comfortable for the average pilot in his middle years. The engine page screen on the Multi-Function Display allows one to lean for best economy, showing the exhaust gas temperatures for each cylinder and producing a 'best economy' caption when you've hit the spot. On the engine page you can examine the CHTs and the health of the electrical and fuel systems, and I calculated we were getting 13.3 nautical miles per US gallon at about 200 mph in a straight line.

There are five other pages on the MFD, and one tends to use the map page more than the

Because one can control the engine parameters so closely, one tends to do it. On every leg I was planning my actions at the next waypoint, setting up the next heading ready to push the buttons and occupying any spare moments with FREDAs checks – and the 'time expired' alert seemed to chime in every few minutes.

At Limoges, the wind was in the north at 16 knots, gusting 27. The approach data on the GNS 430 showed Limoges had a GPS approach to the into-wind runway 03, but control gave us an ILS approach to the reciprocal with a 1000 foot circle to land for 03. The MFD showed we were ten minutes ahead of schedule and had used fully six gallons less fuel than expected. We squandered our gains waiting for a leisurely refueller – and it wasn't even lunchtime. On the climbout the No 6 cylinder started to run a little warm. On the map page the engine notification turned yellow, so I moderated our rate of climb to reduce the temperature.

Talking to Perpignan we went around the Pyrenees, losing contact briefly after the switch



to Barcelona as the mountains blanked my transmissions, then we were out over the Med. Palma gave us a short-cut which took us between the two big islands and I started a descent 25 miles out. We were fed directly onto the downwind at 4000 and slotted into LEPA between the endless streams of holiday jets, holding 160 knots to short finals.

What could be easier?

Coming back a week later we flight-planned to cross the Pyrenees at FL120, which should have given us ample en-route clearance. Eurocontrol accepted the flight plan, and the efficient and helpful ground staff at Mallorcair handed us a sheaf of documents – our en route clearances with weather and Notams, and the DRAGO 1 Alpha standard instrument departure. With the flight plan loaded into the Garmin, the clearance, taxi and ground frequencies took us to O6R with clearance to climb straight ahead to 4000 feet. I took off with the VSI bug set to 850 fpm and the alt bug to 4000 feet and switched to autopilot at 500 feet while I dealt with Palma Departure, who gave me FLO90 and a northerly heading. I reduced power to 80 percent and did my after-departure checks. With the engine page on, I nudged the power up and leaned the mixture until the EGT reached 1400 degrees.



Top right: on finals for Limoges, MFD confirms the visual picture

Right: engine page shows EGTs and CHTs for all cylinders, together with fuel flow and much more

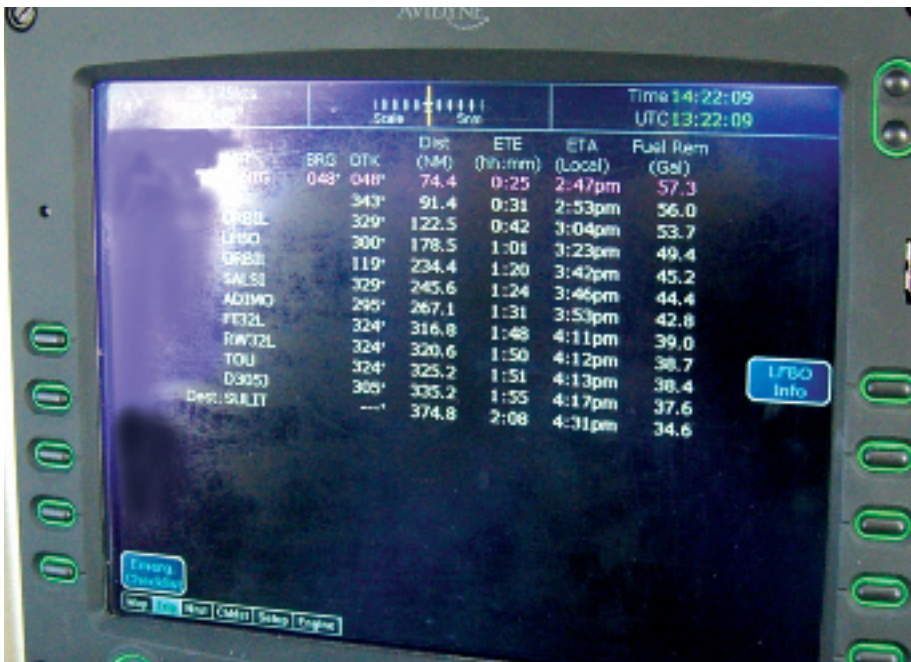
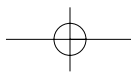
Bottom right: the Pyrenees, out of bounds on this occasion due to excessive turbulence

Before we reached 5,000 feet they'd given us direct DRAGO and we were off to the races. We were cleared to FL140, which I refused (no, oxygen, remember); they settled for FL100, and I watched the island slide behind us on the map display. I certainly couldn't see it out of the window – above about 5000 feet there was thick haze. Climbing to cruise altitude was a lot of work, although it all gets easier with practice.

As we crossed the Spanish coast Barcelona unexpectedly told me their minimum en-route altitude on our route was FL160, which I could not accept. John Page had previously flown the route at 12,000 feet, briefly stepping up to 14,000, but on this occasion turbulence meant a higher en-route minimum. They insisted that we route along the coast to the BGR VOR, then direct KANIG on the French border. A little bit of haggling got us direct KANIG, but the dog-leg added perhaps 15 minutes to the sector. Once we were north of the Pyrenees the haze dissipated and we were back in unlimited vis. We tried to get direct PPG when we were past the high ground but they kept us to KANIG; by way of compensation they routed us direct PPG to MORIL for Toulouse, which cut off about a minute. From there I was vectored to the ILS for 32 and asked to keep the speed up – there was a Beluga behind us. I landed with a quintet of A380s, one in Singapore colours, on the apron.

After a rapid refuel I was given a LACOU 5B departure – the flight plan had been filed from Majorca – and asked to turn left onto 280 as soon as possible after take-off to facilitate the departure of jets behind. I was stepped up to FL100, handed to Aquitaine and routed direct Limoges; 90 nm in a straight line. I spoke to Limoges, then Poitiers, who gave me direct Amboise. Now I had time on my hands.





Big, France.
 The original flight plan called for a series of dog-legs in northern France, so in an idle moment I inputted a more direct route into the No 2 GPS in the hope that control might look kindly on me. Approaching Amboise I was turned 30 degrees off track for traffic avoidance – traffic I never saw. I asked Seine to try to get me a direct routing to LGL VOR, and after five minutes' telephone parley with the next sector I was cleared direct LGL, 96 nm distant. I asked

Paris for a change of routing for Deauville, ETRAT, SITET then Goodwood and got a direct clearance to ETRAT, which lies on the French coast north of Deauville. Good news – they'd just cut 20 minutes off my ETA at Denham. It's relatively easy to get a change of routing in the air, I've discovered. You can file a convoluted route to satisfy the Eurocontrol computer, then rely on the human beings down the line to get you there direct.
 London Control were surprised to hear from

me, perhaps because of our change of route, but I was accepted without demur. We were routed to DRAKE in mid-Channel, Goodwood and Compton, and stepped down out of controlled airspace at Lasham to make our own way into Denham.

I felt a great sense of satisfaction when the journey ended. I wouldn't have done it without John Page, but it has raised my horizons and I will attempt greater things in future. The fact is that ATC is generally helpful and flexible, tolerant of small fumbles and not to be thought of as an obstacle. But it's vitally important to be fully at home in your aircraft and competent with all the kit – the IFR environment is no place to start learning about your plane.

**If you want to contact John Page, try 07956 520536 or email john@taauk.net ■*

**Above: waypoints with distances, ETAs and fuel quantity information
 Top right: we maintained speed on finals to Toulouse to beat the Beluga
 Below: Rosas, on the Mediterranean coast, from FL090 and 190 kt**



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