

“Kneeling on gritty, damp floors in multiple layers of old clothes, or freezing outside barns and garages”



# RESURRE

**Few activities in aviation can be as rewarding as bringing a laid-up airframe back to life**

**By Bob Grimstead**

**T**he 37-year-old, 1972 AAIB report was terse: ‘Fournier RF4D G-AWEK, 25th October at 1515GMT, near Chelsfield, Kent. The 352 hrs CPL pilot was unable to restart the engine, which stopped during a stall turn. The aircraft was substantially damaged during subsequent forced landing into a field with marked downslope.’

For a decade this dismantled airframe, minus its smashed wings, was robbed for spares. For another decade the remains languished unregarded at the side of a hangar. Fifteen more years saw intermittent attempts at stripping and re-building it, but even this desultory effort ground to a halt for lack of its immensely strong, all-wood, one-piece, forty-foot wing. A wing did exist, with the sad remnants of another Fournier in a Biggin Hill hangar, but its ownership was in dispute, the

subject of a financial wrangle for nearly twenty years.

A change of hangar ownership brought movement. Eventually that wing was obtained, and a proper rebuild started.

G-AWEK’s owner was my lifelong friend, Matthew Hill: former member of the Skyhawks Fournier display trio, subsequently a Crunchie wing-walkers Stearman flier, and latterly a restless airline pilot.

Matthew would supervise the physical effort, with my assistance where possible. My expertise would be paperwork, which might be copious. Obviously, our first step was to talk with the LAA’s Francis Donaldson and Ken Craigie to ensure we met their requirements.

Our Permit inspector would be Marc Anstey. Over the years, Matt had accumulated every Fournier component and spare he could get his hands on, including the complete but



The wooden wing is truly a masterpiece built by craftsmen



Painting outside is convenient, but not if it's dusty or wet



Many's the farm that has housed a rebuild project



Working in cramped and often cold conditions

# CTION

sawn up rear fuselage of a crashed French example. Boxes, tins and piles of parts, large and minute, filled my garage. Inevitably, he had lots of items that rarely wore out, but very few of the routinely scrapped bits. These we would have to find or make.

I managed to source an original (albeit time-expired) Rectimo engine when, like a very good penny, up popped Bobby Warren, a former Skyhawks engineer. Like me, Bobby delayed his departure for warmer climes in favour of many hours in multiple layers of old clothes lying on gritty damp floors or standing in a howling gale in freezing barns, garages, workshops and hangars.

Bobby stripped our Volkswagen-derived motor, got the necessary parts from near-forgotten sources, and re-assembled it. Meanwhile Matt stripped, inspected and renovated the fuselage, wing and tail feathers, occasionally aided by his lovely wife Mhairi-

Ann. I helped where I could, as general dogsbody, apprentice, gopher and scribe.

It soon became clear that, although the fabric and paint work was easily within Matt's capabilities, his airline commitments meant he simply didn't have time to do it. So we called in the experts: Mike Rummey, John Day and Mark Masters.

An American friend says, "Engineers exist in a different time continuum. For them, an hour means a day, a day means a week, a week means a month, and a month means a year to us." We didn't have a year, or even much more than a month or two, but what we initially anticipated as a few weeks of re-assembly eventually turned into day after night after grinding, fourteen-hour day of constant graft.

September stretched into October and still we were at it. I gave up worrying about dirty fingernails and stained clothing,



Moving from one satellite workshop to another



The Fournier has a very long wing, made in one piece



What could be better for a fuselage than a horse box?



Masking tape and paper during painting

while food was often just a snatched sandwich, whether lunch, tea or dinner.

Occasionally we hit a wall, delayed by a vital component, or merely waiting for paint to dry. Then we retired home, attended to the proliferating washing, contacted loved ones, did some shopping and answered the mail before re-grouping for renewed efforts.

Unless you have undertaken such an apparently straightforward reassembly, you can have no idea of the irritating minutiae that prolong even the simplest task. Although a production type, Fourniers were hand-assembled by carpentry craftsmen, and wood is a living material, never quite uniform in its composition, so our components, sourced from up to four airframes, each had to be hand-fettled to fit – in three dimensions!

For just one simple example of our many frustrations, during the intervening forty years metric hardware specifications changed. Most of the old bolts Matt had accumulated were either worn or corroded or both. Current threads were slightly altered, so none of our carefully sorted nuts fitted the new bolts. Worse, the shank to thread ratio of current bolts had changed, so we had to buy oversize

and then laboriously shorten virtually every bolt. Some lengths were only obtainable at vast expense.

Most bolts had to be drilled for split-pins, but they were tough, so the tiny drill bits frequently snapped, sometimes embedded in the bolt, thereby rendering it scrap. That high-pitched ‘ping’ and subsequent soft cursing became familiar hangar sounds. Often it was impossible to get a spanner to a bolt’s head once it was in place, so we had to modify our

## “ The wing went on the roof of a Peugeot estate, the fuselage into a horse box ”

tools. We all got grazed knuckles.

We had five fibreglass fin fillets. None was acceptable. All three tailwheels were worn. And so it went with virtually every component, large or small. Woodwork repairs, metalwork replacement, hardware sourcing, fibreglass refurbishment, component manufacture – at every stage after one step advanced, we had to retreat four, pondering on a feasible solution.

Matt made innumerable phone calls and

internet searches for stockists and suppliers, quietly murmuring, “I love my I-Phone”. Help was available on the Fournier Forum, but often we knew more about a specific problem than anybody else, so we just had to wrestle out a solution.

The trees shed their leaves. Equinoctial gales blew them into drifts. Halloween and Bonfire Night passed uncelebrated. October faded into November, and still we were trapped in those isolated widespread

workshops and barns, with part-completed major sub-assemblies scattered around the county and no end in sight to this ‘quick reassembly’. Christmas loomed.

Things looked up when we got everything to Goodwood. Tony Hoskins kindly offered us roomy, well-illuminated hangar space; so we lashed the newly-painted wing on to the roof of Bobby’s Peugeot estate and squeezed the fuselage into Allie Rummey’s horsebox.

Other components came in our cars as a



The keys to the relatively rapid rebuild were having many hands on the project and a methodical, tidy approach



Finding a fibreglass fin fillet to fit was one of many challenges

five-vehicle convoy cautiously wound its way through back roads to the airfield.

Next day, I flew in my Fournier to park beside its identical twin; the first time they had been together since happy Sportair days forty years ago. Now we could measure and copy, and if necessary, temporarily rob from WGN to make WEK airworthy. Still setbacks.

I cannot now remember how many times we re-booked visits from the weighing company and inspector Marc, only to apologise for another unexpected delay. Quietly, late one dark night, Bobby raised his weary head from a particularly tricky task, "I reckon this bloody aeroplane's fighting back!"

Our spirits got a fillip when, amidst weeks and weeks of hosing rain and hangar-rattling gales, a single, surprising day dawned clear, bright and calm. Out came WGN for half-an-hour each of mind-clearing aerobatics. I even managed to lurch my way around an entire outside loop. I was euphoric.

In my former career I worked though the night so many times I no longer entertain all-nighters on principle, but Matt and Bobby often continued until the clink of milk bottles.

Perhaps unwisely, I took the opportunity of my RF4 being in a proper hangar to change its engine. Inevitably, the day before Marc's final inspection, this had all three of us working 28

straight hours through day, night and on to the next lunchtime to get both aeroplanes finished.

At last 'the great day of weighing' dawned. Phil from Loadmasters did it, and WEK's weight turned out mid-way between my Fourniers'. Result! Matt was disappointed his wasn't lightest, but a handful of kilos here and there is mostly down to wood density and moisture content rather than careful weight-pairing. Marc's inspection revealed a couple of points needing more focus, but now the end was in sight.

Unfortunately (but, given the way things had gone so far, perhaps predictably) WEK's



Getting close to that all-important retract mechanism



Canopy masked - any paint spray is a disaster on Perspex



The resurrected Fournier with smoke rockets on its wingtips, ready to take its place alongside its twin for displays

first engine run revealed an oil pump leak. After a day's diagnosis we discovered one of the front-plate bolts was slightly too long, bottoming-out and causing external seepage. After finding a new gasket of precisely the correct thickness, that 'only' took two full days to fix.

The next run provided plenty of pressure. Too much indeed. The gauge's needle shot to the top of its arc, then bounced back and forth between maximum and minimum stops

## “Matt and Bobby headed for the nearest VW dealer through Christmas traffic”

before sulking, miffed, around zero. We shut down. None of us had seen that before. Bobby bought a 200psi gauge to try again. Even this needle whipped across its dial. We shut down instantly. The needle swung back, but stopped dead at 30psi. Opening the gauge revealed a stripped cog. Okay, so it's cold and the oil's thick, but that's wild!

After a long diagnosis and some serious brainstorming, we finally consulted John Maher in the Outer Hebrides. His explanation that the latest crankcases needed two relief valves and no regulator solved that problem in a single call.

The next run was much better, although the earlier over-pressure had blown the motor's

only rubber seal. 'That's not a problem' says the ever-cheerful Bobby. 'With the engine out, I can fix that in a couple of hours'. Matt and Bobby shot off through heavy shopping traffic to the nearest VW dealer at 4pm on an icy Friday evening a mere fortnight before Christmas, while I undid everything connecting Volkswagen to Fournier.

The following day Bobby not only replaced the seal, but incorporated a couple of improvements to the engine's installation.

Then, suddenly, we were done. The motor went back in. Duplicate inspections and an extended ground run brought no surprises. The LAA's required two minutes at full power were successful, and suddenly there were no more obstacles.

My Fournier was also serviceable, so we pulled them both out, swung their propellers and set off in trail across a waterlogged airfield under a leaden sky.

We had briefed this sortie a hundred times, covering every conceivable emergency, plus acknowledging that any real occurrence was sure to be an unexpected one.

My role was as silent observer, following a safe distance after Matt's take-off and

forming with him once he'd throttled back. Sitting isolated alongside by the threshold as he checked everything, under my breath I wished him luck; for him this was the culmination of a twenty-year ambition. We resisted the strong temptation to call ourselves RedHawk Leader and RedHawk Two as we shall be this summer.

Taxying to the very beginning of the runway, Matt opened his throttle. That little 1400cc Volkswagen Beetle blattered like a Spandau and he was off. Airborne after barely 100 yards, he left his mainwheel extended until crossing the upwind threshold. Hurrying to catch up, I whipped up my wheel the moment I was airborne, but still he pulled ahead. What had Bobby breathed into that motor?

Reaching 1,000 feet, he finally throttled back so I could slot into echelon. Glancing over his shoulder, Matt's huge, beaming smile said everything. He tried a couple of gentle turns and a wide, high orbit of Mike's workshops, briefly framing his gleaming Fournier against the salmon-tinged clouds twenty minutes before sunset. Then he bent round into the big circuit that every first flight should be.

I fired my smokes. We flew high past John for a commemorative photo, and then Matt glided in to land. My task complete, and with sunnier climes calling (not to mention a tolerant but taxed wife) I turned away, taking WGN back to her airstrip for the winter.

That night, over chicken tikka-masala, six of us toasted ourselves and the RedHawks in Cuvée Fournier champagne. Still ahead were more than five hours of test flying, including stability checks, stalls and general handling at all possible weights and loadings, plus successful spin demonstrations to left and right and the LAA's two-hour endurance test.

The subsequent paperwork took a few weeks, but now Matt has resurrected one of the all-time great Fourniers. WEK flies again!

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