



the FIREBUG

by PETER TAIT

PART 1

“Great!” I thought,
“The Firebug is doing
the job - a lot of
people having good fun
in boats that they have
built themselves”

I was having a long soak in the bath and contemplating my day at a late autumn Firebug Sailing Day at the Point Chevalier Sailing Club in Auckland. It had been a race day but there were a lot of newcomers present. After having recently completed their boats they were simply sailing out and back and around the bay enjoying learning how to make their new creations go.

HOW IT CAME ABOUT

A friend and I had been lamenting the lack of a good little yacht which could be self built at low cost. A boat which would make sailing more affordable and therefore more accessible especially to children and families. Something which could become really popular. We also reckoned that building your own boat was a great experience yet there didn't seem to be many amateur builders about, especially here in New Zealand (No *AABB?*) So if we could at the same time encourage more people to have a go at building their own boats, ie to foster amateur boatbuilding skills, then that would be great. And so, the Firebug Project came about.

The Firebug is a 2.4 metre yacht, a trainer, for club racing or simply a knock-about, family fun boat. Good fun to sail and even more fun to sail if you have built it yourself.

The building technique was optimised to be as foolproof as is possible. Yet we felt that it was important, if the builder was to go on and do bigger boats that it had a structure and wasn't just a shell. So construction is like a bigger boat with ply bulkheads, a



up sailing



PPYC launching 15 boats from the winter building program



central girder, chines and gun'ls etc. The result is a real boat that is just right for learning sailing. The builder(s) will have picked up a lot of skills and the next one can be a bigger project - how about a trailer sailer or a 40 footer and cruise the Pacific?

To date, about five years on, it has been a great success. Registrations are at nearly 400, mostly in New Zealand but also in several countries overseas. The FBHQ filing cabinet is overflowing with enthusiastic letters and photos.

CONSTRUCTION

Construction is ply over timber stringers and ply bulkheads. Plywood thickness generally is 4mm except for the bottom which is 9mm. The glue system commonly used is 1:1 epoxy although any type of marine glue is okay.

The approach is to make up most of the components before assembling the building jig and actually starting to Put it all together. This



Stringers going on - make sure the kids help

minimises the need for large amounts of floor space.

A reasonable set of tools is preferable but it is always surprising what can be achieved with just the basics and a liberal dose of enthusiasm. Workshop space is also handy but not essential. I know of one boat built in a hallway and one in the dining room. The person who built in the hallway reckoned that it was the least used area in the house. He made the jig low so it could be leaned against the wall when not

being worked on. He claimed that his wife only ever complained once and that was about the funny smell from the timber leaning against the wall in the bedroom!

Hand brushed paintwork gives an acceptable finish. One pot systems over an epoxy seal give an excellent result. The angular hull shape likes lively colour schemes, multicoloured sails and computer cut stick-on names and graphics.

BUILDING AT HOME

The popularity is mostly for home building by dads, mums and grandads. All you need is basic skills, basic tools and a space suitable as a temporary workshop.

BUILDING AT SAILING CLUBS

There have also been several very successful club building schemes. In New Zealand many sailing clubs are suffering declining membership. The Firebug can help. The Pleasant Point Yacht Club in Christchurch was, a few seasons ago, concerned with falling membership. It now has a new fleet of 35 new boats. Almost all being built in club building schemes. One family has enjoyed the experience so much that they are doing a third boat this winter. Almost all the boats came with new family memberships.

The Firebugs at the club have resulted in considerable publicity which has led to some interesting spin off eg; a local high school is currently constructing a fleet of four boats. Club members are providing guidance during construction and expect to assist the school with boat storage, learn-to-sail etc. It is likely that the keener kids will join the club, further boosting membership.

BUILDING IN SCHOOLS

Several schools are involved in classroom building where the project attracts special funding and successful students can receive credits into tertiary courses. The kids enjoy it - there have been reports of children actually working on after school hours on 'their' boats!

Two schools in Gisborne now have a combined fleet of eight boats. In conjunction with the local club one of them had all 300 pupils, 11-13 year olds, afloat in one season.

The schools are working in conjunction with either the local sailing club or Auckland's Unitec Marine Technology Department where they agree that the FB is ideal for teaching boatbuilding. All of their students take part in Firebug building during their first year.

THE HULL DESIGN

It is optimised for foolproof construction. Some features are unusual but help to make it relatively simple to build:

1. *The angle at each of the chines is the same for the entire length.* The stringers (chines and gun'ls) therefore have the same cross section for their entire length, ie no fairing up.
2. *The hull shape repeats fore and aft,* ie starting at the centre of the cockpit, the shape is the same in both directions. This repetition means that the two cockpit bulkheads are identical and the stern is the same shape as occurs under the mast. If you took the after end one station (module) further the boat would be double ended, just like the Devonport ferry.

3. *The deck is dead flat.* This means that the top surface of the building jig (it is built upside down) is the datum for setting things up. So, provided that the jig is set up level with a centreline, accurate assembly is assured.
4. *Lofting.* All of the above features mean that lofting (marking) out is relatively simple. Full sized patterns are available however for those who want to shortcut or feel the need to check their figuring.
5. *The bottom* is exactly a half sheet of ply 2400 mm x 600 mm. This is a check on straightness. When this is fixed in place any inaccuracies which have occurred are made clear and can be corrected.
6. *Thick bottom ply.* The ply which forms the bottom is 9mm thick. This initially appears excessive but there are good reasons:



Boatbuilding in the dining room

- It needs to be strong for crunching rocks on the beach, bumping ramps etc.
- It is also the cockpit floor - extra strength means no need for floorboards.
- It spreads the loads from the mast.
- Weight low down helps stability.

PERFORMANCE

The Firebug is an interesting little boat on the water. It's a real yacht which sails fast and planes easily as it lifts on the wide bow wave. For novices or in a breeze a simple reef slows it up.



The typical workshop

It can be sailed by children or adults for learning, racing or just knocking about. At a bit of a squeeze two up is okay. This works really well for teaching ie a child and adult - no need for shouting from another boat or from the beach. The boat still sails okay with two adults on board on a nice day but by this time space in the cockpit is getting a bit tight and things can become a bit romantic!

The narrowish waterline beam results in good speed but also means that initially it appears to be quite tender. As it heels the wider overall beam comes into play giving excellent last minute stability - usually just enough to save the capsizes! The wide-ish bow gives a relatively straight shape in the water, especially when heeled, resulting in maximum use of the 2.4 m (8ft) length. In a chop it is best to sail heeled even off the wind so the wide bow doesn't bulldoze water. Sailing heeled is like having two bows - one for each tack.

The rig is uncomplicated. The 4.5sqm sail is loose footed on a 4.2m rotating, stayed mast.

As a club racing boat it is very manoeuvrable and fun to sail. The sloping cockpit sides mean that when righted after a capsizes the boat comes up dry. To date about half of the racing skippers are adult.

TRANSPORTATION

One of the joys of small boats is ease of storage and transportation. Firebugs can be trailered either on their own, on top of a bigger boat (laser or cat etc) or in the case of club boats or a family fleet, in a stack. They also travel easily on a roof rack.

THE DESIGNER AND FBHQ

Well known and ingenious New Zealand designer John Spencer came up with the concept. John was best known amongst dinghy sailors for his Flying



Ember almost on a plane

Ant, Cherub and Javelin but also designed many keel and power boats. A champion of the amateur builder he disliked off-the-shelf performance boats where the high price limited access to the pleasures of sailing. John was also the other half of the Firebug Project, but unfortunately after a period of not such good health he passed away in 1996. One thing is for sure, had he stuck around he would have been absolutely delighted to have seen his 'favourite boat' becoming so popular.

After the successful launch of Firebug No 1 John wrote the following letter to a friend:

"Success at last. Firebug 1 launched yesterday - a perfect day for it. It's a great little boat and not so little. Light conditions with strong gusts - typical Russell wind pattern, and the 'bug sailed

happily with crew weights from 4.5 stones to 15 or more. Is very buoyant and seems very forgiving. Heeled seemingly beyond point of no return by a sudden gust she seems to accelerate and right herself. Neil (on his own) capsized once only and righted her easily. Had quite a few near misses that would normally have been capsizes - is a combination I think of the balanced shape when well heeled and good freeboard. Had Andrew 'boat test it' and he pronounced it perfectly balanced and no need whatever for stack straps for larger sailors. This means that we have only to concern ourselves with the smaller ones - have yet to sort this out with Neil but even he was able to hang well without any fitted as yet. Some fairly large people had a sail and has ample room for adults so that as I predicted would be a great 'fun' boat for adults as well as the kids. One thing very noticeable after the usual problem with most, particularly kids, was that instead of sitting too far aft and dragging the stern, the tendency was to sit naturally in position for light weather bow down trim.

Watching this sailing is accentuated by the straight shear parallel to LWL in level trim. She really looks a picture both in and out of the water and the flat deck looks right, I am pleased to be able to say. Sail looks great - am pleased that Fred Martin talked me out of using the old FA/P Class sail. Thought I may have made sail too full but seems fine. Andrew did not think it too full and I think it just needed a good stretching in after laying around for years.

I'm really convinced now that this will be a great boat, and that the 'bug's bow shape is right. While we had no chop whatsoever (offshore breeze) the bow action was pretty to watch, even when trimmed too far forward. Will be interesting to see how it handles a good chop. Certainly in

flat water if partly immersed it has no tendency to push water up - simply curls it neatly back. Is bound of course to knock a bit of spray around but that should blow away to leeward. The solid bottom looked like a very good idea yesterday. I don't know what they have been teaching these optimist kids but if there was nobody there to catch them they just sailed up the beach. After all the effort I did not have a sail in it myself. I think perhaps I wanted to wait for no. 2 and let everyone else have a go in the first of the fleet and hear what they thought of it."

FBHQ (Firebug Headquarters) looks after the class, attends boatshows, sends regular newsletters, supplies planpacks, kits, advice etc. The planpack contains 25 illustrated pages of building instructions and 7 sheets of plans. Full sized paper patterns are available, as are glue, sealer and paint packs, fastening packs, deck fittings, spars and sails. The Firebug has enjoyed excellent support from the local marine industry. Delivery in Australia is not a problem.

COST

Cost varies depending on the approach taken but here in Auckland it is normally in the range \$NZ900 - \$NZ1400 depending on how much you make and what you buy in kits. \$NZ1 = \$A0.83

PLANS AVAILABLE NOW

For those who are keen to get started, planpacks with full instructions are available now. FBHQ is funded from sales of planpacks. Only A\$50 (a normal cheque works okay) to:

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Next Issue:

Materials list and how to construct your Firebug hull including: basic marking out, cutting timber and ply components, making the jig, assembling all the bits, gluing, fairing up and sanding. ■

