

PATHFINDER Pilothouse 17.4

In reviewing the success of the Pathfinder concept and in particular the first boat in the water, it is important to ask some questions about why I felt it was necessary to develop a new concept in the first place. ***Surely there was already an existing production boat out there that would fit the bill for a stylish long-range, ocean capable power boat with a 15kts plus cruise speed that was both comfortable at sea and as a live aboard?*** Well actually, no. To date, range has always come at the expense of cruising speed in boats under 100ft. Displacement hulls are restricted by their hull shape to a speed of 1.34 x the square root of their waterline length, so they cannot easily cruise faster. Planing hulls, be they monohulls or multihulls, are restricted by their weight in the form of the fuel and supplies they can carry, while still being able to get on the plane, as this requires a certain power to weight ratio. If you exceed this ratio, the boat will not plane and therefore, becomes a not particularly efficient displacement hull.



■ PETER BRADY

In the last few years quite a number of the larger production displacement monohull power boat builders have recognised the need for a higher cruising speed and have tried to develop a semi-displacement hull form to achieve this. It reads fine on the advertising brochures, but the results have not really been very successful, still requiring disproportional amounts of horsepower for a couple of knots of extra, but not particularly fuel efficient

speed. Displaning or high-speed displacement catamarans or trimarans however break the rules of conventional naval architecture due to their slim hulls and this allows them to cruise considerably faster than displacement monohulls while carrying the loads that planing hulls cannot.

Why do we need a higher cruising speed – what's wrong with cruising at 7-10kts?

Nothing, if you have no time restrictions in terms of overall time away from work or family.

Nothing, if you don't mind sitting out in whatever weather pattern hits you.

Nothing, if you don't have to make bar crossing by a certain time

Nothing if you don't mind waiting for the right tide every day for your passage, particularly round the top end of Australia where tides are so strong

that they can stop a slow boat dead in its tracks.

Nothing if you know you can go faster when you need to.

Unfortunately, while we would all love to go cruising without deadlines or time constraints, this is just not realistic for most people these days. Nor does every boatie have a cast iron stomach that lets them enjoy riding out unfavourable conditions. It is also hard to argue

against how much safer it is to be able to get to the bar at the right time for a safe crossing or to make port in front of a building storm.

If you have speed in a planing boat, why is it important to have range as well?

In smaller countries like New Zealand this has not been such a high priority as their coastlines or distances between ports are short, as it is in Europe, the

USA or even the East Coast of Australia. However the rest of Australia is a totally different proposition with its long rugged coastlines and lack of ports: if you don't have range around the top end of Australia, you either have to carry drums of fuel on deck which brings in a whole other world of safety issues, or you just don't go.

What do I mean by a comfortable cruiser?

One that is safe, relaxing and enjoyable, with a gentle motion both at sea and anchor.

Surely all boats are like that otherwise why would anyone go boating? Unfortunately no, many more would love to go boating if sea sickness did not ruin the experience for them. Generally it is rolling that makes people sick and this is why multihulls are gaining in popularity all the time. Unfortunately very few designers even discuss the issue of

comfort at sea and therefore it does not get the emphasis it deserves. Flopper stoppers and stabilizers are fitted to most long-range monohull power boats in an effort to reduce their roll motion when underway, however nothing works as well as two to three hulls when it comes to stability and therefore comfort when steaming or at anchor.

Making the situation of comfort at sea worse is the current cost-cutting trend by production boatbuilders of fitting fixed rather than opening windows and portlights, relying instead on air-conditioning to keep the air moving. Making this comfort level worse again is the so called 'Euro-styling' trend of small wedge shaped windows in the cabin sides, which reduces visibility, again a well proven way to increase sea sickness. *How do they get away with this?* Unfortunately most boats are tested in flat water and purchased at the boat show or marina where the lack of

ventilation and visibility doesn't seem as important.

What do I mean by trans-ocean?

I believe that trans-ocean is a better description now that blue water cruiser has been high jacked to describe any and every boat regardless of their seagoing ability.

Trans-ocean means to me at least a 1,500nm range without refuelling, the load carrying ability to carry the fuel, water, food and gear required to make this length of journey and most important of all the strength to make it. Now if you just want to coastal cruise up and down Australia's East Coast, then trans-ocean capable is not a requirement. But given that Australia is surrounded by oceans and there are so many tropical Pacific Islands, stunning Fiords and Sounds in New Zealand and spectacular Asian waters to explore, trans-ocean capable literally opens



far left: Drive station is laid out in such a way as to be easy to access when docking yet comfortable for helmsman and navigator on passages.

left: Visibility and ventilation make long passages so much more enjoyable.

below: Pilothouse top blends into upper aft deck to provide shade and shelter.



up another world to discover. A boat capable of crossing oceans makes long-range cruising around the more remote parts of Australia accessible and allows you to stay at these remote locations for longer. After all, there is no point in being able to reach a destination like the Kimberley if you cannot stay and enjoy the spectacular scenery and fishing.

SO HOW DID THE PATHFINDER PILOTHOUSE 17.4 PERFORM?

Let's start with the simple facts:

Speed and fuel efficiency and therefore range.

Our top speed was just on 27kts light and 26kts loaded which was 1kt below the original prediction, but given the amount of extra gear and upgraded interior fit out, was an excellent result. The engines and gearboxes were exactly the same as our previous build, Bathurst, so while in Darwin we took her owner out for a run to compare the two boats performance. The Yanmar's fuel burn figures were almost identical for both boats right through the rev range, which given that the new boat was 2.4m longer, 700mm wider and six tonnes heavier, showed we had improved the hulls' efficiency even further on this new design. In comparison to other power cats out there of a similar size, we are running 'smaller' motors for a higher top speed and in some cases our fuel consumption is at least a third and often half of theirs. Without fuel efficiency, you cannot easily get range, so very few power catamarans out there at present could claim to be genuinely trans-ocean capable. *There is even one production power cat on the market at just over 50ft that could not even reach Mackay from Brisbane at 8kts!*

In economic terms this difference in fuel efficiency for the delivery trip around the top end of 4,500nm @16kts with an average fuel price of \$1.80 per litre equates to an extra \$33,000. This is not factoring in the extra distance required to head into port every 24hrs to refuel, nor the extra cost of fuel from a barge or remote settlement which can be around \$3.00 per litre.

WAS THE BOAT COMFORTABLE?

To properly judge the boat's sea kindliness against other similar sized power cats, we would have to find one to run alongside us in the same conditions, which we haven't been able to do yet. Having said that, my own experience tells me that this is a very fine sea boat and the owner having just completed the 4,500nm trip through a number of different sea conditions, including a massive 'washing machine' in the form of big wind and sea against very strong tide around the top end, plus a 9hr punch into large head seas down the West Coast agrees. To illustrate this, there were 15 different guests on board on various legs of the delivery trip and not one was seasick.

I had a feeling that shifting the tanks up and central might make the boat's motion even softer, and running the design through my hydrostatics program demonstrated there was no detrimental effects on stability of this arrangement. But the actual results on the water were amazing with virtually no roll snap and minimal pitching.

What do I mean by roll snap? The best way to describe it is to remember what it was like when we were kids playing

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above left to right:

Forward bedrooms with walk-around beds provide resort like accommodation.

Interior has the ambience and facilities of modern luxury beach front resort.

on a see-saw and you got your weight out as far as you could towards the end, and then tried to bounce the other kid off when you hit the ground. When the weight of heavy items like fuel are located out on the extremes of the beam in a catamaran, then the already stiff roll motion can develop a snap at the end as the inertia of the weight is brought to an abrupt stop by volume increase in the hull. By shifting the weights inboard, the effect is now like it was on the seesaw when you sat right in close to the pivot point. It was incredibly difficult to get any movement in the seesaw, let alone make it jump the other kid up in the air. The effect on the boats motion after this change was the same, it didn't seem to have any great motion at all and was just softly planted. Locating the tanks over the boats fore and aft centres had the same effect on pitching, minimalizing it and allowing the multiple chines and V pods of the CVD to work as planned, gently lifting the bow over any head sea with very little fuss. This softer motion makes life on board so much more

relaxing, it's easier to move around and dramatically reduces the likelihood of seasickness. The combination of soft motion and the centralised tank weights provides the added benefit of reducing the torsion loads on the boat's structure. I was so impressed by the ride quality that as soon as I got back from the trip, I redesigned the tank arrangement of the next boat we are building to incorporate this breakthrough. Relocating the tanks also had a positive effect on the interior layout, allowing far more freedom in the design of the middle cabins.

IS THE BOAT STYLISH?

This one is the most difficult to judge as beauty is in the eye of the beholder, so the best way to answer this is to explain what we set out to do and let readers be the judge on whether we achieved our goal. Both the owner and I wanted a look that was contemporary, but not necessarily the latest fashion that could date, nor like a sailing cat with plumb bows and reverse sheer as that was not either of our style. The sweeping sheer I use on most of my

boats is practical, in that the high bows keep the decks drier and minimises the effect of the front cabin height with the lower height aft, providing the right bulwark height for safety on the aft deck. This sheer is also classic power boat and therefore will not go out of fashion or tie the boat to any particular era.

In styling the cabin structure of the pilothouse profile, the hard part was to blend the pilothouse roof overhang into the upper deck aft. This doesn't sound difficult until you realise that the steps from the back deck to the side decks are aft of the back wall of the pilothouse, and yet the side decks need headroom all the way aft to these steps.

We achieved this blending of the lines by following the line of the sheer with the pilothouse top, out to an angled support strut that extended down to the sheer line. Although this was not the easiest feature to build, both the owner and I realised that money spent on getting this right would make a huge difference to both the look of the boat and to its future resale value. This cabin overhang was an extremely important part of the boats design, providing shade in the pilothouse and galley which keeps the boat cooler. The protection it provides from rain also allows the windows to be left open most of the time for ventilation. *A win for form follows function!*

In the original design, the targa was to be a lowering arch to get under bridges, coupled with a soft top for sun shade. As it became apparent that this upper deck would make a superb viewing platform, an additional dining setting and even an extra sleeping area if required were added. Then the decision was made to change to a hard top which still had to be lowerable: as this hard top is 5m x 5m in size, the engineering became more interesting. Instead of the targa being a styling feature, we decided to make it 'disappear' by changing to stainless steel posts so the hard top would appear to float above, rather than dominate the style of the upper area.

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far left: Foward deck lockers provide easy on the back fender stroage.

left: Skylight from upper dec provides light into galley and stairwells.

below left: Roomy, well lit engine rooms make maintenance easy.



above left: Open plan layout allows communication between all areas and a feeling of inclusiveness.

above right: Light and ventilation shafts in ceiling in combination with hull windows make a huge difference to the feel of the mid cabins.

The hull windows were the other feature that was very important to get right as they had to be in the right position internally to work as windows, yet they could make or break the look of the topsides. Having tried a number of different shapes, it turned out a simple vertical rectangle with radiused corners worked perfectly, letting plenty of light into the boats mid cabins, yet not dominating the topsides and detracting from the classical sheer. I did however indulge myself slightly in the Corvette inspired air intakes with their chrome bars, which again worked in a practical sense with a touch of art. We also decided to do something a little different

in the choice of paint colours moving away from white, but not going with a dark colour that would make the interior of the boat hotter: Lorma chose a warm grey to tone in with the Teak decking and trims and this choice has drawn a lot of favourable comment.

How did the Pathfinder Pilothouse 17.4 compare with the original design brief and both the owners and my expectations?

In a nutshell, the boat has met the design brief in every respect and has exceeded both our expectations.

How can we make this judgement?

Firstly and most obviously by the smile on the faces of everyone involved including the owner's family and friends! On the first leg to Cairns, his wife who is not an experienced offshore boatie had a great time, cooking up a storm between reading and relaxing. A 1,000nm shakedown cruise is not usually the time to introduce people to offshore boating, with a decent variety of sea conditions including a good hard punch into head seas off Frazer Island the first night. We also had a spectacular days running and surfing in following seas on the last day heading into Cairns where at one stage, the owner and I were sitting around

the table on the aft deck either reading or chatting, his wife was in the galley preparing lunch, Lorma was sitting on the settee in the pilothouse reading a book and one of his friends was sitting in the helm seat, keeping half an eye on the course and instruments whilst also reading a book. We were all able to see and talk to each other, yet have a private conversation if we wanted: all of this in good sized following seas, on autopilot at 16kts with frequent long surfs down waves at 20kts plus. We tested out the forward facing seating on the foredeck later on that afternoon, which was a

magic place to sit when surfing in a following sea. The boat would lift on a wave and just take off, appearing to shoot out the front of the wave and just when you were waiting for a thump as it hit bottom, the CVD features would do their job and the bows would gently lift and off you would go again. Even when we surfed quick enough to run onto the back of the next wave, there was no thump or dramatic slowing, the boat just came back to the speed the throttles were set for and carried on its merry way. The foredeck was dry and comfortable and I spent a very enjoyable

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couple of hours getting the feel for the boats motion. I have to say that for a designer there could not be too many more satisfying ways to spend an afternoon. The satisfaction meter of the owner was also running very high right at this stage, as his wife had not only survived the first leg of the trip, but had enjoyed it so much that she was disappointed to leave the boat for a promised grandchildren babysitting gig.

I caught up with the boat again in Darwin

and spent an evening with the owner and the group of friends that had just completed the voyage from Cairns with him. They were on an absolute high from their trip, having had a real boys own adventure of exploring, fishing and socialising in absolute comfort, whilst enjoying a constantly changing backdrop of coast and island scenery. All but one of the crew who had business commitments were coming straight back to join the boat for the next leg through to the Kimberley. I spoke by phone with the owner a number of times as they headed across the top and down the west coast and he was still enthusing about how good the boats ride and economy was.

The open plan layout of the pilothouse-galley-aft deck had allowed everyone to socialise just they had wanted while either steaming or at anchor, yet the accommodation layout provided everyone with a quiet private place to either rest or sleep. The helmsman was in both visual and verbal contact with guests on either the aft, forward or upper decks when steaming, which increased safety for everyone on board. This blend of inclusiveness when steaming or entertaining and privacy when required was exactly what the owner was looking for. In his previous flybridge catamaran, he found on long passages the helms person was often isolated from the crew, particularly when preparing meals or at night. The ambience the open plan layout created in conjunction with Lorma's choice of colours and textures perfectly reflected the owner's desire for a relaxing, comfortable yet classy interior. While the boat was under construction, everyone in the shed knew it had that X factor and the beautifully proportioned and fabricated waxed Teak woodwork has a real feel of depth and quality, particularly against the backdrop of soft leather and linen lining, yet it is practical and easy to maintain.

On a more mundane level, the laundry worked its butt off the whole trip with the Electrolux dryer being a particular hit in the way it collects the moisture from the clothes whilst drying, then runs it into the bilge rather than blowing out hot air into the boat's interior. The skylight vents into the middle cabin worked really well in conjunction with the hull windows



above left: Alfresco dining on huge aft deck.

above right: Open plan pilothouse-galley-aft deck provides unique cruising environment.

to open up these cabins from what has often been considered a weak point in the accommodation layout of power cats into a very inviting and comfortable space. The natural venting on the boat worked so well that the air-conditioning was hardly even used even at the marina in Darwin!

The enginerooms were spacious, well lit and easy to get around even at sea, making checking on the systems simple. The Vibar soundproofing worked extremely well having both a good durable surface and excellent soundproofing qualities: the boat was 7db quieter in the galley and saloon than the previous boat when steaming.

CONCLUSIONS

This is a boat that is amazing to cruise long distances on, effortlessly eating up the miles with no drama or fuss. It is has an incredibly welcoming and relaxing ambience that just feels right and puts you in the holiday mood. The facilities are like being in a resort, and the front bedrooms with their walk-around beds are unmatched on any boat this size that I have seen. And yet the boat is easily handled by one to two people with its great visibility, widely spaced propellers and bow thruster. It can even be docked by 1 person with its wireless Yacht-Controller remote control. The best description I could make of this boat was that coined to describe a

Jaguar many years ago "grace, pace and space" and we could add fuel efficient, reliable and easy to work on, which could not necessarily be applied to a Jaguar much as I love them.

The development of the Pathfinder concept has been four years in the planning and it was very satisfying to show that Australia can still lead

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the world in innovative multihull design and construction. The Pathfinder Pilothouse 17.4 was a meeting of two minds with a common goal in the form of the owner and myself. This was made a little easier because I had already built a boat for him and he had completed around 7,000nm in it. For some reason designer-builders are rare these days, seeming to end with my generation, probably because it means that all responsibility rests with one person. It does however have what I consider to be a huge advantage, making the design very pure and keeps the communication one to one, which is so much faster and more efficient. Having said that, I had a very capable team with me in the form of Lorma and Chloe's interior decorating skills, all our employees trade skills, experience and most importantly enthusiasm. Having been one of the lucky boatbuilders to survive the GFC, it was great to be able to put together a team of tradesmen, sub-contractors and suppliers and watch their belief in the project grow as it went along. It is this collective pride in a boat that keeps everyone going on the 'big' days required to finish a project of this size. Thank you to all involved for a job well done that we all should be very proud of.

I had a very interesting conversation with the owner after the first run where he stated "that the boat was better than he could ever have imagined at the start" and that he believed it would be a "game changer". I thanked him very much for the opportunity to build the boat and commented that the project had taken on a life of its own and by doing so, took both of us on an amazing journey during its construction. After 4,500nm the owner is still smiling and stands by his statement that he believes this boat will indeed be a "game changer".

He made the offer to show the boat at the Mandurah Boat Show and it will be very interesting to see if those who come on board agree. If the reaction of visitors so far is a guide, then I think they will ...

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