PATHFINDER ‘M’ RANGE
WEST COASTER 49

PARADIGM

Paradigm: *(n)* a distinct set of concepts or thought patterns, or a new way of looking at things (more modern meaning).

MAIN PIC: The upper deck will provide the perfect viewing platform when cruising the Kimberley.

INSET: The helm station is laid out so that all controls fall comfortably to hand whether sitting or standing.

Lowering the decukboard gives divers and swimmers easy access to the water.

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Cleverly named by her owners, *Paradigm* is a recently launched Pathfinder West Coaster 49 and shares these meanings for both them and us. As the designer, I believe the boat is definitely a distinct set of concepts or thought patterns in regards to long-range power boat cruising. As the builder, I know it is also a new way of looking at things, being the first in the Pathfinder 'M' range that we are developing using the principle of platform engineering that has been almost universally adopted in the car industry to blend the economic advantages of a common base with customisation to suit different clients.


The large, uncluttered back deck is perfect for relaxing or entertaining.

From the owners' perspective it is a distinct set of concepts or thought patterns of how they see themselves cruising the Australian coast, first enjoying semi-retirement and then retirement. In regards to the DC electrical system, it became a new way of looking at things for boats when they commissioned ARRID Australia to build on their experience as top end suppliers of low voltage and solar electrical systems to the railways, mines and offshore oil and gas rigs, in designing and supplying or in some cases building parts of *Paradigm's* electrical system

AND NOW TO THE BOAT ITSELF

She is a further refinement in a line of similar sized power catamarans I have been developing since 1995. *Paradigm's* emphasis has been on strength and durability as this

is one of the key requirements of long-range power boat cruising. She is of composite construction using infusion to maximise the quality of the core bond while minimising the resin content of the glass layers. Vinyl ester resin was used for all laminates with epoxy for the secondary bonding. We have had our own impact drop test rig for over 20 years now and have tested virtually all types of cores over this time. We chose Corecell as the core for *Paradigm's* construction as it returned the best impact tests I have ever seen, absorbing impact with very little stressing of the outside skins and absolutely no transfer to the inside skin. Double flooring is used through *Paradigm's* aft deck and wheelhouse area to both resist torsional loads and to house the fuel tanks and batteries. With 3,300L of fuel capacity, 800L of water and 500kg of batteries, both the strength to carry these loads and their location is extremely important. Keeping these major weights as centrally located as possible reduces pitching in head seas and yawing in following seas as well as minimising the trim difference between light and full loads.

Paradigm's styling is West Australian cray boat inspired as the owners loved this purposeful and practical look and I must admit I had no hesitation in saying yes when the owners cautiously asked me, "could I do it"? I was completely in sync with their choice, because my first major design and build project when starting out in business as a 21 year old was a new wheelhouse with forward leaning windows for a fishing boat which was incidentally the first of this style built in the port. Whilst the style is not used as much on pleasure boats, it is almost universal on work boats and ships as it reduces glare and heat in the cabin and provides room for instrumentation and electronics overhead. Complimenting this styling is the fairing structure on the cabin top which provides support for the targa bar and hides the storage box-lounging seat which doubles as a queen bed size should the weather be conducive to sleeping out under the stars. Cruising the Kimberley region is one of the owner's priorities, consequently this lounging seat will really come in to its own as most of the scenery is up on the cliffs, so driving with the

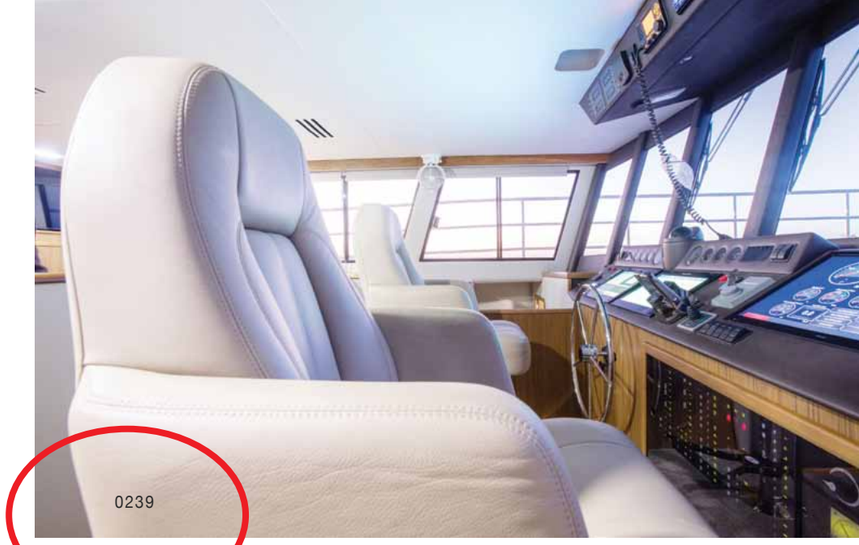
LEFT FROM TOP:

Comfortable settee also converts to daybed when deep back cushion is removed. Drop down desk in wall below TV.

The owner's ensuite is large and well lit with good ventilation.

Teak fitout with waxed finish provides a durable nautical feel.

Aft port guest cabin with double bed and plenty of storage.



remotes from this upper area will provide the perfect viewing platform. The storage box-seat has individual secure storage areas for fishing rods and safety equipment such as lifejackets as well as housing the wheelhouse air-conditioning unit. The forward section of the fairing provides more light storage and features vent boxes that direct fresh air from under the cabin top overhang onto the helm seats through the ceiling. Small hatches fitted in the ceiling allow the volume of air flow to be regulated or sealed completely in heavy weather or when hosing off the boat, plus they provide a speaking tube for giving or getting instructions from the fore deck when anchoring or docking. Also mounted up on the inside face of the fairings is a Lifecell safety pack: this very clever Australian invention is a flotation device as well as safe storage for the EPIRB and flares. An ADC power slew davit is parked neatly into the port side of the fairing and aft of the tender are 12 solar panels, located where they will get the maximum exposure to sunlight with the least effect from shadows. Following the strong purposeful styling are solid handrails all around the wide side decks so everyone on board will feel safe moving about in any sea condition, a huge uncluttered foredeck, large lockers for fenders and ropes and twin anchor winches, each with its own anchor mounted ready to go at any time. The fact that there are virtually no rules in regards to safety features on non-commercial boats allows designers and builders a freedom which is not possible in almost any other area these days. Unfortunately this also gives licence to the design and fitting of hand rails on many boats and in particular small power boats that are so low and

FAR LEFT: Steps over washing machine/dryer cabinet up to the flybridge.

LEFT: Large upper guest bathroom with separate shower.

lightly built, that they are almost more dangerous than having none at all because they give a false sense of safety that in reality is just not there.

As with any boat that is purpose designed for cruising around Australia's top end, the aft deck is huge and shaded because this is where the owners will spend most of their time at anchor. Fourteen square metres or 150sqft of back deck space on a 49ft boat is rare to say the least and although it is the power catamaran's biggest asset, some designers and manufacturers continue to ignore it. The ability to comfortably sit a large group around a table with ease of movement around the seats on a very stable platform is the reason why catamarans are always the centre of social events at anchorages. The fact that this table does not have to be built in and therefore can be shifted around to suit the weather, be it sun, wind or rain is a massive bonus. Having this back deck area low down and aft where there is the least movement and out in the fresh air makes it a great place when steaming, particularly for those with less hardy stomachs. Being able to move the table around also allows extra eskies or kill tanks to be carried when seriously fishing.

Paradigm's aft beam is accessed from the duckboard with a barbecue in the centre, large storage bins for dive bottles, ropes and fenders on either side and on the outer section to port, a hand bilge pump and suction hose that can reach any section of the boat should it need to be pumped out in an emergency. This hand pumping system can even be reversed to work as a fire pump and is mounted at such a height that the operator only has to rock backward and forward

with their body weight to pump, rather than using their arms. Mounted aft of the beam is the first electrically powered version of Australian Davits and Cranes raising duckboard using a system designed and built by ARRID to keep the electrical motor on each side calibrated. ADC's duckboard lifters are usually powered by a hydraulic motor driving both sides of the mechanism through a torque tube which sits behind the transom on a monohull. Obviously this is not possible with a catamaran as it would be hanging down in the tunnel or dragging in the water, so it was a case of all parties working together to find a better solution than individual hydraulic rams, as they are very difficult to keep in sync as anyone who has had hydraulic steering with individual rams can attest to. The raising duckboard will primarily be used for lowering divers into the water and when they are finished diving, they can swim onto the platform and take their gear off, instead of trying to

ABOVE: Sliding windows on both sides of the cabin for visibility and ventilation.

climb up a slippery ladder when tired and loaded down with dive bottles. It has, however, a second use in that it can be lowered to match the height of any pontoon or tender, making stepping onto the boat safe and easy as well as getting gear out of the tender.

At the forward end of the aft deck, to starboard is a custom built and digitally controlled eutectic fridge freezer and to port is a cabinet containing a washing machine-dryer and above it is the ladder to the flybridge. Moving inside the boat through the double doors is a toilet to port and a separate bathroom to starboard. These are set up separately so that guests can use both at the same time, leaving the owners their own private ensuite. To port forward of the toilet is a fold down writing desk, the TV and under the side deck behind the settee is the internal entrance to the port engine room. To starboard on the forward side of the shower is a pantry and under the side deck is the starboard internal engine room entrance. Forward of this is a U-shaped galley featuring 2 x 190L 24V fridge drawers and an upright 24V freezer in the inboard leg which also doubles as a breakfast bar.

FORWARD OF THE GALLEY AND SETTEE IS THE HELM STATION WITH ITS TWO COMFORTABLE SWIVELLING HELM CHAIRS

Outboard is a double sink unit, two convection-steamer-microwave ovens and in the forward section is a gas three burner hob. Forward of the galley and settee is the helm station with its two comfortable swivelling helm chairs. I am a big fan of individual chairs as they provide better support in rough seas and by swivelling they providing extra setting when entertaining and allow the helmsperson to talk to whoever is sitting behind them on the settee or working in the galley without having to twist their neck or get out of their seat. The helm station could only be described as comprehensive with 2 x 15" Raymarine touch screens and two even larger screens on the starboard side which are primarily set up for the FLIR camera and the system's monitoring displays ARRID developed, but to which all navigation information can also be sent and displayed.

The vessel is fitted with a Maretron fuel monitoring system that is so sophisticated it even measures the difference between the fuel temperature on the outlet and return side and takes into account the thermal expansion of the hotter return fuel in measuring the fuel usage.

As with every piece of equipment on *Paradigm* there are back-ups with the fuel, water and sullage tank levels being monitored by the Maretron system and the fuel tanks also having sight gauges as well as a clear panel in the top, so their levels and the quality of the fuel can be checked. I must admit that when we were asked to fit a FLIR thermal imaging camera to Bathurst in 2009 I thought it was a very expensive toy, however having steamed through the night at 22kts where its use made me feel as confident as during the day, I advised the fitting of one to our next new build and having used the FLIR to bring *Paradigm* into Manly Harbour at

Peter's unique Control Vapour Dampening system at work.

Expansive foredeck with twin anchor winch system. Safe and secure handrails and supurb visibilty from the helm.

night, I can say that it is just as useful at turning night into day in terms of visibility against the backdrop of the city mixed with street lights and cars. With all our boats we spent a great deal of time when laying out the drive station area so that all the critical controls fall to hand whether sitting or standing.

Either side of the drive station is a set of stairs leading down to the accommodation in the hulls with the owner's cabin and en-suite to starboard and the two guest cabins to port.

I have also put a lot of work into making our stairways as safe and user friendly as possible these days, as I have to admit that they were not as good as they could have been on some of our earlier boats. Again I think this is an area where some designers probably fit them where they can, rather than make stairs as ergonomically correct and therefore safe as possible. It was only after a very experienced joiner explained to me why the rules for stair treads and risers are critical in how safe they make you feel, that I started to design the stairs as close as possible to the rules rather than knowing they were there but not following them very closely.

THE FIT OUT OF PARADIGM IS DEFINITELY CUSTOM NAUTICAL RATHER 'PRODUCTION CARAVAN' STYLE WITH SOLID ROUNDED CORNERS FOR SAFETY AND THE RICHNESS THAT COMES WITH REAL TIMBER AND VENEER

The fit out of *Paradigm* is definitely custom nautical rather 'production caravan' style with solid rounded corners for safety and the richness that comes with real timber and veneer. Using teak as the fitout timber comes and goes in popularity with fashion, however it never really goes away as it is so practical, stable and easy to finish and maintain, especially when used in combination with a wax finish. Using wax on teak gives it a warm but natural finish and it is so easy touch up the inevitable bumps and scratches that come with everyday use. The teak theme follows through to a small section of waxed flooring in the entrance and galley, a laid teak back deck plus teak toe rails and beltings. Now before everyone thinks that it sounds like a lot of maintenance, the wonderful thing about teak is that if you let it go to its natural grey colour, its high silica content will keep it stable for years.

Powered by two Yanmar 6LPA-STE 315hp diesels *Paradigm* follows my principle of trying to use mechanically injected engines if possible on my long-range cruisers for their higher tolerance to the less than perfect fuel found in remote places and the ability of most mechanics to fault find and fix any problems without specialist diagnostic equipment. We first fitted these motors to a superyacht tender in 1998 and have used them many times since. They are based on the Toyota diesel that was used in the Landcruiser for a couple of decades and I have never heard a bad word about these engines and our owners have certainly had a good run from them over the years. With full load we achieved a top speed of 22.9kts on a two way average with the sweetest cruising spot between 13-16kts in regards to fuel burnt for progress made. The absolute accuracy of the Maratron fuel monitoring system will allow the owners to work the range available to them in all different conditions and speed ranges, plus once they have established a set of base figures they will be able to tell if the bottoms are getting dirty or the props need recoating by the changing figures.

AND NOW TO THE ELECTRICAL SYSTEM

ARRIDS brief was to develop a system that was not only as electrically efficient as possible but also where both the inputs coming from each power source and any outgoing loads, particularly the usually unnoticed ones like sleep modes on TV's and other electronics could all be monitored very accurately. I had noticed whilst staying on *Rehab* in Darwin that the inverter seemed to be turning on and off all night even though I had shut down every major load on the boat. When we sat down and thought through what could be causing the inverter to kick in, it was everyone's phones being charged using their domestic 240V chargers and things like the sleep mode on the TV and the clock on the microwave. Because these loads are so small, they seem irrelevant, however being so light they confuse for want of a better word the inverter making it start and stop which in turn becomes a drain on the batteries disproportionate to the actual loads. ARRID's system overcame this small loads issue by using 5V USB charging outlets directly from the house batteries for phone and camera chargers, which was a far more efficient way to do it.

I mentioned this issue of chargers running from the 240V system through the inverter to a number of clients that we had built boats for in the past and they all had a light bulb moment in realising why their batteries were always lower in the morning than they thought they should be. ARRID Australia designed and built many of the components for the electrical system and was installed by our electrician. It uses a combination of 2 x Kubota powered variable speed DC alternators, ultra-efficient DC alternators driving off the main engines, a large solar input combined with 2 x 24v house battery banks and two high quality Australian built Selectronic inverters. The outcome of this is that at anchor on a sunny day even in winter there is just enough solar power being produced to run the boat with two people on board on its own and in summer this input will nearly triple. When steaming, the two alternators driven by the main engines will pump in up to 500amps or 12kw into the system depending on the engine's RPM and if major 240V loads such as the air-conditioning or multiple loads such as the watermaker, eutectic freezer and even possibly the dive compressor are running simultaneously or it is cloudy for days on end,

ADC's duckboard lifter was modified for catamarans with synchronised electrical drivers.

ABOVE: Paradigm features large well lit engine rooms with good access to all equipment.

the variable speed DC gensets can be used to provide enough input to keep the systems happy. Interestingly this setup is not based around fashionable technologies like digital switching, instead it is built from the highest quality components using tried and tested systems as this has proven to be the most reliable and simplest to fault find in the most testing of environments.

We used the Selectronic inverters many years ago and had been advised then that Australia was the world leader in this type of equipment, but having replaced quite a number of imported inverters under warranty over the years, we have returned to the Selectronic

PARADIGM WILL ALLOW THE OWNERS TO INDULGE THEIR LOVE OF DIVING AND FISHING IN COMFORT AND SAFETY

units on ARRID's advice that these are best on the market. As the inverter has always been at the heart of our boat's electrical systems using the most reliable unit, particularly when it is locally made, just takes one more potential problem out of the equation. A problem such as a faulty inverter in the electrical system not only stops the boat functioning normally, it also has the potential to put stress on our relationship with the client as we buy products in good faith based on the manufacturer's claims, but do not have the technical expertise ourselves to judge one brand against another.

Proud to be associated with Peter Brady and Pathfinder Powercats

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So what we have in *Paradigm* is the reason why Australian custom design and boatbuilding is still alive although on a much smaller scale. There are still people wanting a purpose designed and built boat that is set up exactly for their personal requirements and Australian conditions rather than being a world boat designed and built mainly for larger but totally different markets. Whilst they cannot buy a semi-custom boat off the shelf and drive it away at the end of the boat show, they can enjoy the one-on-one process of planning and building and with it, the ability to inject a large amount of their own personality into the finished product. *Paradigm* is also a showcase of Australian technology from the design and construction of the boat itself, to the electrics and other equipment such as the duckboard lifter and the LifeCell flotation device.

We are still an innovative country and although a great many of our manufacturers have headed offshore there are still enough here battling on, although I am not sure if coming generations will put the same distinction or premium on made in Australian that ours and previous generations have, as they have so little connection to it these days.

Paradigm will allow the owners to indulge their love of diving and fishing in comfort and safety as they explore the Great Barrier Reef and as they get more spare time, will provide a self-sufficient long-range cruiser set up primarily as a live-aboard for a couple but with the room and facilities to sleep and entertain up to six guests if required.

Principals of Pacific Power Cats: Peter, Lorma and their daughter Chloe enjoying a quiet moment after another successful launch.

For us the development of *Paradigm* as the first in the Pathfinder 'M' series has shown that using the foundation of a tried and tested moulded hull as the basis for custom variations on a theme is a viable way forward for Australian boatbuilding, with an Offshore 45, a Pilothouse 51 and a 41ft Cabriolet already contracted to follow.