



# AMATEUR BOAT BUILDERS' ASSOCIATION

April May 2014

JUST LIKE A GOOD BOAT SHOULD LOOK

## **The Building of the 'Merry Rose'**

At our April technical meeting, long standing member Clive Jarman addressed a very good turnout of members on the building, sailing and modifications along the way of his Ian Oughtred designed Eun Mara ketch "Merry Rose". This is a classic amateur boat building tale – a keen and knowledgeable builder, a beautiful design and a focus that saw the boat built and a great deal of enjoyment had in quick time. Well done Clive (and Linda), she really looks like a boat should look.



The building of "Merry Rose" commenced on 17<sup>th</sup> Nov, 2000 and she was launched in late 2002. The standard Eun Mara design is 19 feet long and has two retractable centerboards but following consultation with the designer, Clive built "Merry Rose" 10% larger and with a single central centerboard. She is 22 feet long with a beam of 7.5 feet, and displaces about 2 tons. She is of a similar design, but larger than two other Eun Mara's known to have been built in WA, one in Kalamunda and the other in Manjimup.

Clive came very well prepared on the night with pictures of all stages of the building process together with the drawings and some pieces of hardware to hand around such as the patterns for the various bronze components that were individually cast for the project. This provided the backdrop for Clive's detailed and very interesting explanation of each step of the project.

The Eun Mara design is built upside down so following construction of a building jig, the first stage is to set up MDF frames on the jig. Planking can then commence. Clive used Queensland hoop pine ply for the planking. The planking is clinker and curves in two directions so there was a need to use 1/8 inch MDF to work out plank shape, using a long batten to mark out the curve. Each plank needed two scarfs over its length and the clinker scarfed out between planks at each end. Clive hand planed each scarf on the bench and then clamped them in place on the boat to epoxy each joint. The plank ends are bronze screwed into place at the bow and stem.



Nyata was used for the inner and outer stem, the bottom of the keel and the deadwood. Oregon was used for other framing. The inner and outer stem were laminated on the bench before being fitted to the boat at different stages of the process – the keel and inner stem prior to planking and the deadwood and outer stem later. A tongue and groove approach was used down the stem and in the deadwood components including the centrecase.

After 3 coats of epoxy and 7 coats of paint on the bottom, the "Merry Rose" was ready for turning over. This was achieved via an ABBA Toolbox visit on Sunday afternoon, 7<sup>th</sup> October, 2001 (See Mike Beilby's write-up at [www.abba.org.au](http://www.abba.org.au) under the Library tab, Nov Dec 2001 Newsletter).



Following the usual excitement of seeing your creation upright and looking just like the boat you knew you were building, the deck and internal framing and fitout of the interior proceeded. This included the inwales at the gunwales, main deck beams, floors and the main plywood bulkheads together with bow and stern flotation bulkheads.

Clive resolved early on to paint the inside of lockers and other inside areas as he went along including varnish where appropriate. This was a lot easier before the cabin trunk and other areas started to close off easy access to some of the internal areas.

Next came the build up of the self draining cockpit and the anchor well and substantial nyata king post on the foredeck. The very pretty cabin trunk and sheoak bright work followed. Here Clive opted for a bigger cockpit than the Eun Mara design and hence a slightly smaller cabin.

Clive then explained how he had devised a design to permanently accommodate the outboard motor in a boxed out section of the hull aft of the cockpit. This necessitated a small section of the deck being removable to allow the motor to be extracted if required. Clive emphasised the need for an overnight hold on proceedings following the boxing out of the motor enclosure in order to be in the appropriate mental state to cut the hole in the bottom of the boat for the outboard leg. The motor is a four stroke water cooled 8 HP twin Honda with charging capacity which unfortunately only operates at higher revs.

At this stage the remaining items required prior to fitting the deck were completed. The missen mast sits in the trunk aft and is drained. The main mast tabernacle is oregon wedged at the base so that the mast sits off the cross bolt. The bow sprit fitting is galvanized steel, painted and riveted to the stem with copper rod.



The deck is Burmese teak glued straight to the ply decking. Clive noted the need to wash the teak thoroughly with acetone to remove the natural oils near the surface and apply the glue quickly before the natural oil comes back to the surface. This process was adopted for all the teak decking including the toe rails which were left with their natural timber finish and are not varnished. After gluing of the teak decking to the ply was completed, the gauged joints between the deck planks were filled with black Sikaflex which was trimmed off flush after it cured. In this case, the Sikaflex was applied directly to the teak without magnetic tape in the bottom of the gauged joint (as has also been deployed successfully by member Mike Igglesden). Both methods have proved very satisfactory in operation – the powers of Sika! The deck planks themselves were also left in their natural state, to be scrubbed from time to time. However, Clive pointed out the importance of any scrubbing of the deck being undertaken across grain in order to avoid accelerated erosion between the ‘grain’ (annular rings within the timber) which would more quickly make the deck unnecessarily rough.

At this stage, the main building work of the basic boat was nearing completion. Construction of a number of essential remaining components followed. The center board was built using a core of 10mm steel with over laying ply laminations, all of which was encapsulated by fibreglassing over. The rudder was also fabricated from laminated plywood. Clive made his own patterns for the

very pretty oval window surrounds in the cabin trunk. These were then cast in bronze, polished and fitted with tinted polycarbonate windows.

Internally, a chart table and a two metre long bunk each side was built in. The timber main mast was built from new oregon timber that Clive procured from Austim and an old dragon mast became the raw material for the building of the missen mast and booms. Clive shaped the hollow spars from an initial box section which was glued with no screws. Ballast in the form of six lead bars was also fitted to a recess which had been allowed in the keel. All the fittings which had in most cases been cast in bronze and the centerboard were then fitted to complete the process. Clive made all his own blocks under instruction from Robyn Hicks as per the Endeavour and the rigging is hand spliced stainless steel wire.



Another ABBA and Old Gaffers afternoon gathering provided the horsepower to transfer the completed Eun Mara ketch onto a trolley and from the trolley to new trailer which Clive had had tailor made for the boat.

Good risk management dictated that the waterline and other crucial factors should be checked before any official launch so Clive and Linda found a quiet launching ramp up river to do a 'pre launch' which showed quite clearly what a superb job Clive had done with the build.

Mary Igglesden then officiated at the official launching of "Merry Rose" from the hardstand at Rockingham in late 2002. She made a very impressive sight – just what a classic designed and meticulously built boat should look like.



Clive and Linda subsequently trailed her to the South Australian Wooden Boat Festival where they met up with her designer, Ian Oughtred, who was similarly impressed.

Since launching, Clive has used the boat extensively including cruising to Rottneest and Quindalup. He has found that she sails best with a reef when the wind gets above 18 knots. He has sailed in up to 30 knots with a storm jib or stay sail plus a missen or a double reefed mainsail.

Experience over time has led Clive to make some operational modifications which he outlined to us in his presentation. He has replaced the rope main sheet horse with a bronze bar horse aft of the cockpit coaming, added a furler to the foresail and led all the halyards aft. All these additions have improved the sailability of "Merry Rose", particularly for single handing.

This project is the essence of what traditional amateur boat building is all about and Clive's very informative presentation was greatly enjoyed by all present. Thanks Clive.

Footnote: As indicated in the previous newsletter, "Merry Rose" has now been sold and is on her way to a new owner in Tasmania. Clive indicated at the meeting that he and Linda are taking a break from sailing to do other things. We look forward to hearing what Clive's next interesting project will be. – Ed

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## **May Toolbox Visit — Flying Moths And A Look At High Tech Boat Building**

Our May toolbox visit was to "Fastacraft" in Yangebup, owned and operated by shipwright, John Ilett, to see the latest incarnations of the new high speed moths. John does his own design and development work and had a completed boat to his latest design on show for us to inspect. John also gave us a detailed informal presentation on the background to the moth design, his state-of-the-art approach to design and the construction methods he deploys using 21st century procedures, materials and technology.

John Ilett is a shipwright trained in the 1980s and he worked for a number of firms including Thomas Craft and OceanFast. He went overseas for a period of time and amongst other high tech things, worked on Formula 1 racing car construction involving similar technology to the current Moth build. On his return, he established his current business substantially using the skills and techniques he had learnt overseas but he also does repairs to carbon fibre bikes and fibreglass boats. In his own time, he has always been a Moth sailor.



The Moth in Australia developed from a hard chine scow called an Inverlock 11 foot class which was established in 1928 in Victoria. In 1933, its name was changed to the Moth class and as the saying goes 'the rest is history'. See [www.moth.asn.au/mothinfo/history](http://www.moth.asn.au/mothinfo/history) for further information.

The Moth is an unrestricted development class 11 feet long. The class has very general rules which cover length, width and sail area. Historically Moths were scows until the mid 1980s when the skiffs began to emerge as better performers. By the late 1980s skiff type Moths had won the world championships in strong wind conditions in which they had traditionally been outclassed by the scows. At that time, their hulls were about 2 feet wide. By 1990 they were 14 inches wide and they are now 12 – 13 inches wide.

Moths remain a fairly popular class internationally and John pointed out that half the people currently involved in the America's Cup sail moths on the side. In WA, Moths are mainly sailed at South of Perth Yacht Club.

The latest Moths weigh in at 11 kg for the bare painted hull. The full sized boat weighs 35kg all up and is carried to the water on its side due to the center board with its hydrofoil being fitted from the bottom. Fully assembled a moth requires a trailer 2.2 metres wide but the entire boat can be fitted into a 400 mm wide box for transport when disassembled.

The original foil design for moths was developed from a foil cat in 2002 and had foils on each side of the hull. This was outlawed on Moths as this was deemed to be a multihull.

The current hydrofoil Moths have two single central foils – one on the bottom of the centerboard and one on the rudder. The centerboard foil is controlled by a wand hanging from the bow which skims the water and adjusts this forward main hydrofoil. The aft foil on the rudder is adjustable by rotating the joy stick. These Moths can reach a speed of up to 30 knots down or cross wind and can do up to 17 knots upwind.

The cost of a complete new Moth is \$23,000.



John has worked on the development of this new all carbon fibre design for several years and has now completed the build of the first boat which we were able to see at his factory. The main features of the new design are a fuller bow, more rounded hull and more rocker in the fore and aft direction.



The construction of this Moth is substantially carbon fibre 'pre preg'. This is a carbon fibre cloth supplied with the resin already (pre) impregnated in the cloth. This cloth is only slightly sticky to touch but its big upside is that it contains the minimum resin required and has no smell. In fact John's premises are the first that I have visited that have been doing this sort of work that had no lingering smell at all. The other big advantage of 'pre preg' is that it can be cut to almost exact

shape and placed in the mould together with other components of the build up without the operator handling any liquid resins or other 'messy' materials. Curing of the resin on completion of the layup is achieved by applying heat – generally by placing the component in a temperature and time controlled oven environment.



John ran us through a 'dry run' of this layup process which went roughly as follows;

- cut the piece of pre preg to the required shape to suit the mould.
- on the pre preg, peel the paper from the mould side and the release plastic film from the outer side.
- place the pre preg in the mould with the carbon (noted as about 0.2 mm thick) on the mould side. Here John showed us that there is a thin layer of relatively soft foam in the layup which can dent easily through the thin but very strong carbon layer.
- The type of carbon to be used needs to be selected. Both woven carbon cloth and unidirectional carbon (which tears in one direction) are available. Analysis and targeting of particular load areas allows the correct form of carbon material to be used.
- If there is a possibility that the pre preg may not contain enough resin for the job, additional pre preg resin can be added by using 'film glue' which is resin in a light fabric carrier. There is also no problem mixing resin brands if need be - all resins are epoxy.
- When the dry layup is complete, the breather for the vacuum bag is attached.
- The vacuum bag is then installed across the whole mould using double sided vacuum bag tape around the edge.
- The vacuum valve is then attached and connected to the vacuum pump. A vacuum gauge is usually used to check for leaks but John also had an ultrasonic leak detector at hand.



The whole mould is then placed in the oven to cure at 90-100 degrees C for varying times depending on the design and size of the moulding.

A two pack polyurethane varnish is then applied to provide the finish to the completed carbon fibre moulding.

All this technology is similar to F1 racing cars and aerospace technology.

In closing, John showed us a small scale model of his new design Moth which he had built as a tool to prove some aspects of the development as his design developed. He also used this model to develop the maximum transport dimensions of the new boat. The model de-rigs and dismantles exactly as the full size version now does and even came with its own scaled trolley.



This completed a most interesting visit which opened all of our eyes to the future materials and methods of boat building which whilst they may not all be available to the amateur at this stage, are clearly the direction that professional building of competition boats will be heading in the immediate future.

We thank John Ilett for making his premises available on Saturday morning and for sharing so much of his specialist and high tech knowledge so freely with us.

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## ADMINISTRATION NOTES

### ABBA COMMITTEE

President/Editor	Chris Davis	9387 5042
Sec/Treasurer	Bruce Cadee	9259 0844
General Committee	Rob Bingham	9246 0202
	Alun Dufty	9272 8905
	Harry Speight	9295 4518
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### JUNE TECHNICAL MEETING

The next technical meeting of ABBA will be held at the South of Perth Yacht Club as usual, 7.30pm for an 8.00pm start on Wednesday, June 4th, 2014.

Our presenter for this month is Roselt Croeser, who will be talking about his experiences with the junk rig. Roselt is a mining consultant by profession, a yachtie by inclination and a serial dinghy builder! He's been a member of TCYCWA for around 13 years and, in that time, has owned an MB21, a Space Sailer 18 and a Laurent Giles Vertue. The subject of his presentation will be his SS18 "Squirt" for which he designed and built a junk rig. He'll be talking about this and the lessons he learnt sailing Squirt with this rig.

### JULY TOOLBOX VISIT

Our next toolbox visit will be on Saturday **afternoon** July 5th, 2014, from 2.00 to 4.00 pm.

The toolbox visit will be to Fibreglass & Resin Sales at 111 Kew St, Welshpool, 6106, where the owner and manager, Charlie Urwin, will introduce us to the basics (and not so basics) of fibreglass materials and construction. Charlie has been in the business of composite construction for most of his working life and has expertise in its application to racing cars, light planes and gliders and to boats. We will learn about fabric types (fibreglass to carbon), resins (polyester to epoxy), resin mixes for laminating, resin and fairing and the most appropriate materials for different jobs.

### ADOPTION OF A NEW ABBA CONSTITUTION

Some years ago, your editor investigated the processes required to gain incorporation for the Association. On enquiry to the relevant government authority, it was found that the Association had in fact been incorporated many years previously and a Constitution already existed. That Constitution remains the formal instrument that determines how Amateur Boat Builders Association (Incorporated) is managed to the present day, but is out of date and substantially lacking in compliance with current requirements of the incorporation process for Constitution documents. Committeeman Rob Bingham has kindly undertaken a very thorough review and update of a draft new Constitution which has now been reviewed by your Committee.

Adoption of this new Constitution will require the necessary advance formal notice prior to a short Special General Meeting to be convened in conjunction with the August Tech Meeting. However, the draft is being circulated with this newsletter so that all members can review the document and raise any issues ahead of that meeting, thus hopefully avoiding amendments being proposed on the night. Any feedback or comment would be appreciated via email to your editor at [gonesailing@westnet.com.au](mailto:gonesailing@westnet.com.au) by the end of June please.

## ADMINISTRATION NOTES (Cont'd)

### **VOLUNTEER TEA GENTLEMEN FOUND THANKYOU.**

Peter Russell and Michael Wade have kindly volunteered as the new custodians of all things afternoon tea for Toolbox Visits. Thanks Peter and Michael.

### **SPECIAL NOTE -- SHIRTS & ABBA LOGOS**

Don't forget — if members wish to bring along their own shirts to the next meeting then Bruce Cadee can arrange for logos to be embroidered. Members can bring as many shirts as they like but the club will pay for up to 2 logos. If we could do this in batches if at all possible this would be best for our supplier.

### **ABBA LOGO**

Members are reminded that Bruce Cadee has made arrangements with Shaun Luong of Image Embroidery at 26 Tulloch Way, Canning Vale (Phone 9456 2324 Mobile 0403 250 389) for an embroidered ABBA logo. The logo can be applied to your own clothing (assuming it can be accommodated in their equipment) or to shirts, caps or hats purchased through Image Embroidery. Feel free to call in on Shaun to look at the limited range of clothing he has on site or visit the following web sites to choose your preferred style, size and colours. The weblinks below are only examples of the wide range available. Half chest measurements are included on the web sites to help ensure you select the correct size. Ladies styles are also available.

### **Clothing (excluding Logos)**

**Style 1300** – Aussie Pacific Mens Murray Polo, Navy/White/Ashe or White/Navy/Ashe - **\$20.00 + GST each**

**Weblink:** [http://www.aussiepacific.com.au/the-murray-polo-navy-white-s?color=Navy%2FWhite%2FAshe&primary\\_color=Navy&secondary\\_color=White](http://www.aussiepacific.com.au/the-murray-polo-navy-white-s?color=Navy%2FWhite%2FAshe&primary_color=Navy&secondary_color=White)

**Style 1304** – Aussie Pacific Mens Eureka Polo, Navy/White/Ashe or White/Navy/Ashe - **\$21.00 + GST each**

**Weblink:** [http://www.aussiepacific.com.au/mens/polos/eureka-polo-sky-navy-s?color=Sky%2FNavy%2FAshe&primary\\_color=Sky&secondary\\_color=Navy](http://www.aussiepacific.com.au/mens/polos/eureka-polo-sky-navy-s?color=Sky%2FNavy%2FAshe&primary_color=Sky&secondary_color=Navy)

### **Hats/Caps (excluding Logos)**

**Style 4199** – Headwear Brushed Heavy Cotton Cap, White/Navy (many other colours available too) - **\$6.50 + GST each** **Weblink:** <http://au.headwear.com.au/productDetails.cfm?&prodID=53&prodCatID=2&pageNumber=1>

(Also refer poly/cotton legionnaires hats Styles 4057 or 4126 for maximum sun protection under website sub heading 'Hats, Visor & Beanies' <http://au.headwear.com.au/productList.cfm?&pCategoryID=7>)

**Style 4199** – Headwear Brushed Heavy Cotton Cap, White/Navy (many other colours available too) - **\$6.50 + GST each (includes poly/cotton legionnaires hats for maximum sun protection under website sub heading 'Hats, Visor & Beanies')**

**Weblink:**

**Style 4223** – Brushed Sports Twill Bucket Hat, White/Navy (many other colours available too) -  
**\$8.00 + GST each**

**Weblink:** <http://au.headwear.com.au/productList.cfm?&pCategoryID=7&page=2>

To make your annual membership even more value for money, ABBA will pay for up to 2 logos per financial year to be applied to your items of clothing. The current cost to ABBA is \$7.15 per logo. There is no intention for this to be an ABBA uniform so the choice of style and colour is totally yours. If you are seen wearing the logo while building, working on or using your boat or anywhere for that matter it might get people asking questions and wanting to join our association. You are free to deal direct with Image Embroidery but please ensure you get an itemised invoice showing a separate price for the logo and present this to Bruce Cadee for reimbursement. Bruce Cadee is happy to take orders and liaise with Image Embroidery if you so wish.

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