



# AMATEUR BOAT BUILDERS' ASSOCIATION

January to March 2013

## KIEWA — RELAUNCHING OF A GRACIOUS LADY



On Sunday 24th February, your scribe represented the Association at the relaunching of member Ron Lindsay's 100 year old auxiliary lugger Kiewa. This was the culmination of a journey which Ron had commenced when he acquired Kiewa from the Mews family in 1999. Along the way, Ron has willingly shared the journey with Association members and the many 'friends of Kiewa' who have appreciated the open days at his workshop as the restoration has progressed.



On relaunching day, it was a beautiful sunny afternoon and Ron, his wife Dora, shipwright Kevin Hart and all their close family and associates were dressed for the occasion in period costume. Ron & Dora arrived in a 1914 Hupmobile with very large smiles on their faces. Following the speeches, in which many a tale was told, very fittingly, Len Randell officially relaunched Kiewa with a bit of bubbly on her bow. We congratulate Ron and Kevin on a truly magnificent achievement and Dora on her patience and support as the project progressed in stages over so many years. And for Kiewa — another 100 years begins.

## February Technical Meeting — Henry Moorfield on Diesel Engines

(Bruce Cadee reports)

Henry's association with the diesel engine industry began about 54 years ago when he started an apprenticeship with the PWD in Jewell St, East Perth. When he became a tradesman in 1966 he started work with Geo Monkhouse. This was around the time that the W.A. iron ore industry began. From 1966 to 1972 Henry had a great time in the general diesel engine/fuel injection industry. In 1972 things got more difficult when Monkhouse began an involvement with Woodward Governors of America as an independent authorised service facility. Woodward supplied the engine speed control system fitted to many items of rotating equipment. Henry and Neville Monkhouse had many heated discussions as they learnt how to master this new equipment but master it they did.

By 1986 Henry had a young family and was spending half his time away from home working all over the state so he joined Whim Creek mining company as a Technical Officer responsible for 8 mines. He spent even less time at home and after 10 years, the gold ran out. Henry then worked as an electrical contractor in Perth building power stations for mine sites until he "retired". Henry is still consulting in the field of specialised switchgear and transportable switch rooms. This involves trips to Malaysia, Thailand & China working on design, specifications and supervising construction.

Henry's early dealings with ships began in his time with the PDW who were responsible for the engines on the State Shipping Service vessels including Gunga Din and HMS Moresby. Single engine vessels didn't require sophisticated governors but the introduction of variable pitch propellers, shaft alternators and more complex drive arrangements such as 4 engines with 2 engines feeding one drive and parallel shafts needed complex governing arrangements.

Henry's presentation was broadly focused on the keys to long engine life (Diesel or Petrol) which apply for all sizes of vessels;

- Lubrication oil
- Cooling
- Air supply
- Fuel supply.

### Oil

Oil is at the heart of all engines and must be looked after to avoid problems. Despite our boat engines not being continually operated at full load, Henry recommends using the grade of oils specified by the engine manufacturer especially with modern engines. With big stationary engines, the operating temperature affects the oil life dramatically and Henry bases the life of the oil on sampling and analytical analysis of the TBN number.

### Cooling

Modern engines contain a range of materials and without the correct additives in the system, the water that should be keeping the engine cool will end up in the bilge.

There are 2 systems of engine cooling. The simple open seawater circuit system uses a cast iron engine that has a pump which takes in seawater and pumps it through the block then out through the exhaust system.

The closed or header tank system has a small tank that holds water for cooling the block. There is a pump for circulating this water through the block and a heat exchanger. This system has another pump that takes in seawater and passes it through the heat exchanger. Seawater doesn't enter the engine. The circulating water must be a coolant suited to the materials used in the engine. It is typically 35% glycol and soft water. Henry has seen fires caused by leaks of flammable glycol and prefers a coolant made of Reverse Osmosis (RO) water and an additive other than glycol.

Thermostats are there to keep the exit water temperature as close to 90 deg C as possible in order to minimise wear of the engine components. Most wear of an engine occurs in the period until the engine gets warm. With big engines Henry keeps the power outlet below 25% until the water temperature reaches 90 deg C. "Cold starting is what kills your engine". Little heat is generated in the block below the head. "Most heat is in the cylinder head where the fire is". The engine designer arranges water passages throughout the engine to remove heat where it is most needed. The original design is based on having a thermostat in place which provides a certain amount of back pressure to ensure the water flows as required. Engines should not be operated for long periods without the thermostat installed.

Henry recommends never running an engine without load. Even when getting up to an outlet water temp of 90 degrees it is best to have the engine in gear and moving slowly through the water or running in the pen against the ropes.

#### Air

Air cleaners are still needed even at sea. The Fremantle tugs suffered significant wear until deck mounted air cleaners were fitted. This was even more critical in vessels handling dusty iron ore for the smelter at Kwinana.

Petrol engines require particular attention to ventilation of the bilge.

#### Fuel

Water in diesel fuel is disastrous as it causes the fuel to emulsify and block the fine tolerance passages within the fuel injector pump leading to hot spots and finally seizure. When in a seaway, wave action can stir up any water in the base of the fuel tank letting it pass through the system. The traditional primary fuel filter design has a glass bowl. Cyclonic action forces the fuel to flow down to the bottom of the bowl, up through the stem and out with the higher density water staying in the bottom of the bowl where it is clearly visible. Modern regulations may not allow glass or plastic bowls due to the risk of fire in event of breakage.

Maintenance of fuel tanks is critical. Over time you will make water in your fuel tank. As the tank cools during the night, water vapour from the air will condense inside producing water that settles in the bottom of the tank. To avoid this water being drawn into the engine, the tank should incorporate a low point sump to collect the water and a drain valve to allow for periodic removal. Drain valves should be fitted with a plug in the outlet to prevent leakage if the valve passes fuel or is accidentally opened.

Keeping the tank full of fuel when not in use will minimise the possibility of water from this source. Alternatively have the tank completely empty with the low point drain open.

Mt Newman Mining replaced the sight tubes on their locomotives with sight glasses in the side of the tanks and began to notice that "Grass" was growing inside the tank. This cladosporium

fungus was growing on the interface between the water and the fuel. A cladoside can be used to kill the fungus but it forms a black slime that goes through the system and blocks the fuel filters.

Henry was at a gold mine in the Tanami Desert when the diesel generators at the power station wouldn't run for more than 6 hours instead of the normal 250 hours before the filters blocked up. The cause was traced to the Shell fuel tank in Darwin that had used a cladoside to treat an outbreak but the fuel sent to the mine still contained a quantity of the biocide which killed the cladosporium present in the 1.4 million litre diesel tank at the mine site. The resulting slime was blocking the filters. They had to charter small planes to fly in filters from Darwin, Alice Springs and Melbourne to keep up with the rapid rate they were going through them. They needed to clean out the 400mm deep slime that was in the bottom of their 1.4 million litre tank to eliminate the problem. They were helped by large floods that prevented fuel deliveries for 14 weeks which allowed them to run down the tank and run off their 2 x 10,000 litre day tanks. You know you have cladosporium in your tank if the usually fawn colour fuel filter element is black and your engine lacks power through fuel starvation.

Good stationary fuel tank design has a 4 degree slope on the base of the tank draining to a sump fitted with a scour valve. Modern tank design now uses top entry and discharge pipework so that a pipe failure can't lead to draining of the entire tank. Also anti-siphon valves are included to prevent accidental emptying.

Diesel won't explode like petrol but a diesel fire is 4 times hotter so is very severe. Henry says "Make sure what is in the tank stays in the tank."

#### Propellers

A torque mismatch between what is required by the prop and what is produced by the motor at a certain speed will lead to excessive black smoke in the exhaust. This is known as being "over-propped".

#### Fuel Treatment Additives

Henry feels these are a "waste of time". If you look after the fuel in the tank as previously discussed there is no need to use additives for biological control. Additives can't restore contaminated or stale fuel to good condition. Henry feels 12 months would be maximum period to store fuel. If faced with this situation try to blend stale fuel with new fuel if possible.

#### Compression Ratio of Diesel Engines

Henry has seen them as low as 8:1 and as high as 22:1. The upper limit is governed by the load on the engine bearings. Modern engines may use a low compression ratio but the load on the bearings is still high due to the amount of turbo charging employed.

#### Black Smoke on Start Up.

The cold start button on some engines gives you 140% fuel or the mechanical governor on start-up can feed more than 100% fuel initially until it settles down. Both can cause excessive black smoke on starting.

#### Modern Injectors

Modern systems (Common Rail) continually run at very high feed pressures generated with multi piston pumps and use a computer controlled solenoid on each cylinder to admit the fuel. It can be optimised for the best possible combustion and minimal emissions. Modern truck engines

inject “blue” into the exhaust system to control nitrous oxide emissions. If you “run out of blue” the computer will only allow the engine to operate in limp-home mode with the output restricted to around 40%.

### Work on Marine Diesels

Henry has been out of the business for many years but feels R Moore and Sons might still have the skills to carry out this type of work and Peter Leggatt felt that Bruce Calder of East West Marine was worth considering.

### Stripping a Seized Engine

Henry’s recommendation was to remove the head, turn over the engine and remove the crankshaft then gently tap the pistons into the crankcase. Peter Russell suggested repeated applications of heat over a long period to break-up the rust.

### Recommended Spare Parts

Henry felt that every vessel should carry a set of fuel filters (primary and secondary) sealed in plastic bags.

### Safety

Never turn over the engine with the injector withdrawn unless it is contained in a jar for example. The fine high pressure jet can easily penetrate the skin. To find a dud injector in a multi-cylinder engine, stop the fuel flow to each cylinder in turn. If there is no change in the way an engine runs then that injector is faulty.

Members who attended this tech meeting were very fortunate to have the opportunity to hear from such an experienced person in his field. Henry’s presentation and sharing of his wealth of knowledge was greatly appreciated by those present. Henry also had a lifetime of little gems gathered along the way. His parting comment “tugs throughout the world have no safety shutdowns on their engines, only alarms. If you are stuck between a big boat and the dock you don’t want to lose your engine”. Thanks also to member Peter Leggatt for arranging for Henry to present to us.

## **February Toolbox Visit — Bob Walsh’s Lady Ita**

(Klaus Sussenbach reports )

The toolbox visit for Saturday 23<sup>rd</sup> of February was to inspect past President Bob Walsh's project, a David Payne designed trailerable motor launch. I was keen to see that boat as I had the study plans for it for some time – for a future project should the boat building bug take hold again.



The 90km trip to South Yunderup turned into a pleasant drive, freeway traffic being easy on that day. Quite a few ABBA members made the trip and could see the impressive sight of a boat being not far from completion. I happened to be the first to arrive and when I saw the boat in the driveway I checked again if it was the correct address, as it looked nothing like the one on the pictures of my study plans.

Bob is a first time boat builder and said he started this project about 5 years ago. Its quite a big boat to tackle, designed for flat plywood or lapstrake plywood sides. Bob choose to build her in strip planked polonia timber, glassed inside and out. For a first time project it is always wise to follow the designers lines and any arrangements that would affect the weight distribution of the vessel. I have a suspicion that Bob listened too closely to the advice given by several mates, quite risky in my opinion unless they are marine designers or experienced shipwrights.

So, what the plans show as a trailerable 8m long, 2.4m beam & 0.5m draft motor launch with a trailerable weight of 1000kg now requires a permit for trailering. Bob estimated Lady Ita's weight at 5 tonnes, with a length of 9m, about 2.7m beam and around 0.9m draft. He plans to keep her in the water on his private jetty for about 8 months a year and on a jinker where she is parked now over the winter. Unfortunately the wider beam does not allow launching at his own private launching ramp! Pity, this is a bit like buying a big 4WD that then does not fit inside the garage.

A major diversion from the original design is a raised forward wheelhouse with an inboard engine under its floor. The saloon also looks taller but that, perhaps, is a visual effect of the very different saloon windows. As designed, the boat looks a bit like the Halvorsen cruisers of times gone by, easy on the eye and easily driven by an outboard of around 30Hp in a well. Bob's modifications put the boat visually back in time quite a bit further and I could easily imagine her driven by a steam engine. There is even a fake funnel which, cleverly, provides headroom for the stairs from the wheelhouse down to the saloon.



Being a much heavier boat, Bob installed a Nissan 4 cylinder 65Hp diesel donk which is fed from a 160 litre tank just in front of it. He fitted an 80 litre water tank under a shelf in the saloon. I do not know what galley arrangements are planned with regard to cooking and refrigeration as nothing for that was installed.

Forward of the wheelhouse the original design shows a generous double bunk. In Bob's version, at the bottom of the steps is what looks like a quarter bunk on each side but, being quite short, the space might be used for some other purpose. There is a good size bathroom further forward, just aft of the large size anchor locker. The general sleeping arrangement was hard to interpret, the saloon not being sufficiently completed to make that obvious.

Aft of the saloon the original design shows a comfortable half roofed cockpit with a box inside the transom center to hide the outboard and an easy way to board the boat from a dinghy on either side of the motor box. Bob made no access through the transom to board her so, from a dinghy, this means climbing up the high sides at the wheelhouse sliding doors. This was scary enough from a ladder fixed to the ground when we visited, I think it might be even scarier from a bobbing dinghy on a rough day.

This boat has quite narrow side decks, barely a shoe's width, so boat handling such as fitting or taking in fenders, or letting go of dock lines could take steely nerves and a strict adherence to 'one hand for the boat and one hand for yourself'.



With the inboard engine there is now more aft space, right up to the transom, in Bob's version. Bob had enclosed this space all around with windowless canvas covers which, I assume, can be rolled up. The saloon roof also goes all the way back to the transom and from above it looks big enough to park a helicopter. Bob will stow his dinghy up there since there is no room for it on the now much shorter foredeck, due to the big raised wheelhouse. However, getting the dinghy up there safely from the water could be some task.

Another major diversion from the original plans is the replacement of 200kg of lead ballast at a specific midship location in the keel with having reinforced concrete ballast all along the keel. This keel looks deeper than the one drawn on my study plans but I might be wrong there. Anyway, with this long and, for a motor launch, relatively deep keel the boat should track very well on a straight course. It might be quite a different challenge to manoeuvre her in confined spaces with a cross wind due the single fixed propeller and the extra windage of the raised wheelhouse. If Bob is not familiar with the tricks of 'propwalk' yet he soon will be as I feel that being the only way getting her off his jetty, should the wind blow her onto it. Just as well his place is at the end of the canal where it is much wider than elsewhere or it would be a lot of backing and filling to turn her around.



I sincerely hope that the change to the raised wheelhouse and big diesel donk does not put the boats balance too far off. Balance problems make for a poor sea keeping boat and are often very difficult to rectify. I know that too well as my boat had a balance problem (a design fault btw.) and it was a major job to correct it.

The plans show a hard chine, the one on Lady Ita is quite rounded and Bob also fitted bilge keels for some reason. I guess the 65 horses of the big donk do help with the extra wetted surface of these added bilge keels. The first test run should tell.

The rudder looked unfaired as yet, just a stainless plate with reinforcement ribs welded on. It is supported by the skeg at the bottom, making it very strong. I would fair it though, the boat needing all the efficiencies that a fair shaped rudder blade can give with her single screw. An early stalling rudder blade does nothing to improve her turning circle. The rudder is hydraulically operated.



As a first time boat builder myself I know only too well the temptation of second guessing the designer is very strong. Fortunately I did listen to advice given by a professional, who had built several of my boat's design. I followed the lines almost exactly as shown on the plans and it paid off, evident by the many compliments she receives.

Well designed boat's lines do make the look of the boat and drastically changing these, like Bob did, takes a lot of courage and even more luck come launching day.

A very nice time was had by all at Bob's place. After completing the boat inspection we enjoyed excellent hospitality with a cuppa, cakes and lively discussions. The afternoon was all too soon over. We thank Bob for once again inviting ABBA members to inspect his project and we look forward to hearing that Lady Ita is ready for launching.

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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
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### APRIL 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, April 3rd, 2013. This will be slightly different to our normal tech meetings. The subject will be the development of the ABBA website — this marks the first step in a potentially exciting period in ABBA's evolution, please read on!

For some time now, there has been strong support for the development of an ABBA website which would facilitate many aspects of our association's activities including promotion to potential new members. Those members who were around in December, 2009, will remember Mike Beanland as our host when we paid a toolbox visit to his 'project', the ex ferry SS Perth at Henderson. Mike has been a member of our association since that time but unable to attend meetings due to his commitment to other boating committees and to his business, Perth Boat School .

Over this time, Mike has gathered both the knowledge and resources to undertake professional website development and he has very generously volunteered to make this available to develop a website for ABBA. Following a brief insight into website development, Mike will facilitate a discussion on the what, where, how, when, why of the future ABBA website. It's **OUR** website. What do we want on it? How do we want to use it? What do we want it to look like? etc. The input from members is crucial to the success of this venture. Your editor looks forward to seeing you there with your little pile of ideas to contribute.

### APRIL TOOLBOX VISIT

In October, 2008, we visited member Mick O'Shea's workshop in Henley Brook, where he was working on an Elliott Bay, fantail steam launch of about 23'. The boat was a very impressive imported fiberglass hull ready for fit out and a substantial component of the project was the building of a steam engine to power said vessel —in fact the boat was to some extent an accessory to Mick's interest in steam.

Well, the Emmamadeline has long since been finished, launched and provided enjoyable boating and steaming for Mick and family. He's now built a bigger steam engine which (you guessed it) needs a bigger boat. This month's Toolbox is a return visit to Mick's " Workshop to Die For", as former editor Mike Beilby put it, to see the initial building phase of the new boat, a 30ft Selway Fisher design Edwardian steam launch that Mick is constructing from scratch.

That will be on Saturday April 13th, between 2pm and 4pm at Grandis Cottages, 45 Casuarina Place, Henley Brook. The completed Emmamadeline will also be on show.

### **VOLUNTEERS NEEDED to write up the meeting and toolbox visits for the next month.**

Please email me before the technical meeting on April 3rd or if you want to write up the toolbox visit let me know at the meeting. Remember, this is essential if we are to keep the 'boat' afloat.