



AMATEUR BOAT BUILDERS' ASSOCIATION

October November 2021

AN ABBA TOOLBOX VISIT ON ANOTHER LEVEL



For our November Toolbox Visit we toured the Fremantle Sea Rescue Operations Centre on Cantonment Hill in Fremantle. The tower's appearance may not have changed all that much from the above picture taken around 1960 to the present day but it has seen a few changes in use over the years.



The Cantonment Hill Signal Station was built in 1956 for the Port of Fremantle. The station was short lived in its intended role, being replaced in 1964 by a similar facility built on top of the new Fremantle Ports administration building on Victoria Quay. The building then moved into department of defence ownership before it was sold back to the City of Fremantle in 2010. Over the years, the building fell into decay and was extensively vandalised inside and out.

In May 2014, Fremantle Sea Rescue submitted a response to the City of Fremantle's request for expressions of interest for the 'Establishment and Activation of Cantonment Hill Signal Station and surrounding area'. Finally in May 2015, after a lengthy process of negotiations and community consultation, the decision to award Fremantle Sea Rescue with the lease of the building was made.

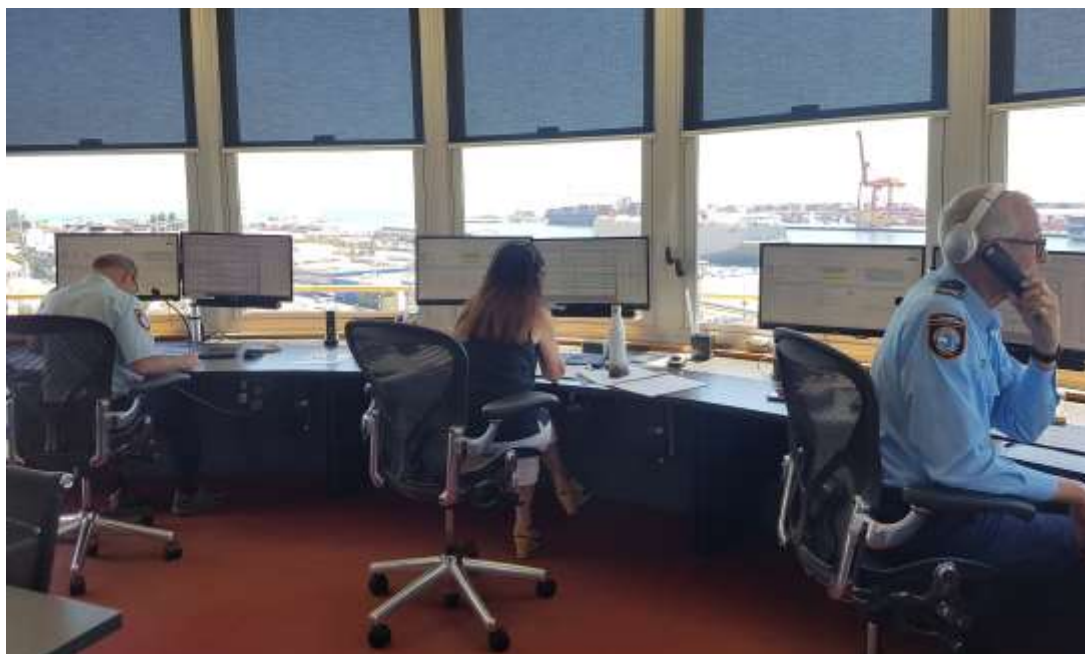
Due to poor state of the building, the City of Fremantle committed to a range of remedial works, including new windows, handrails and external paint. After these works were completed, the keys were handed over to the group in the first half of 2016.

The heritage value of the building was enhanced by both its restoration and continuing its original use, with the top floor now again dedicated to marine communications and commanding clear views of boating movements in the harbours, out to sea, to Rottnest Island, and up the Swan and Canning Rivers.



We started with a tour of the More & Meehan Radio Room on the top floor. From this facility, volunteers maintain VN6DI, a 24Hour, 365 day radio listening watch and vessel log on service. Annually, VN6DI logs around 30,000 radio calls from the boating public. VN6DI is the communications hub with all phone and radio calls to Fremantle Sea Rescue answered here, before being passed onto the on water operations team as required.

Utilising WAVE, the latest in Radio Over IP technology, a single operator can monitor all 11 marine radio frequencies from one console, or share the workload with other operators across a total of 5 consoles. WAVE is also remotely accessible, allowing operations personnel to listen and even transmit from anywhere in the world via their mobile device if required.



This is particularly useful in on-call situations, as crews can listen in on an incident unfolding whilst at home, or even in transit to the rescue vessel, ensuring they receive the most accurate information in real time. WAVE also enables after hours monitoring from home bases, which means volunteers can maintain VN6DI from the comfort of their own homes at night, whilst still using the radio infrastructure installed in the Operations Centre. WAVE also records and archives all incoming and outgoing calls, individually separated by channel, to make sure no details are missed and incidents can be reviewed.



We then move down a level to the training room. Our guide for the afternoon was Sophie. As well as her role as Community Engagement Officer she is a Senior Crew Member who volunteers for about 6 shifts a month on the rescue boats. Sophie was an excellent host who told us about the history and activities of the organisation and answered all of our questions.



The Fremantle Volunteer Sea Rescue people really turned on an a special and inclusive afternoon for ABBA. Around 2:00 pm, just before the tour started, we were standing in front of the tower chatting to Sophie when we saw two orange parachute flares in the sky over Leighton Beach. One of the radio operators reported our sighting to the Water Police. Later when we were in the tower we saw the Water Police heading out to sea through the harbour at pace toward the area of the flares. Sophie took a call from the Water Police who were trying to find more details of the sighting and she relayed the ABBA members' recollection of the incident to them.

I don't know how Fremantle Volunteer Sea Rescue did it for us but at 3:30 pm, as we were leaving, they arranged for a light aircraft to make an emergency landing in the water off City Beach. They even ensured that no one was injured in the crash.

Thanks again to Sophie and the Fremantle Volunteer Sea Rescue organisation for an informative and unforgettable afternoon.

SHOW & TELL

After our 2020/21 AGM at the October Technical Meeting, we held a Show & Tell with a focus on bilge pumps. Of course, speakers on any subject were most welcome and the range of contributions made it another entertaining and informative evening.

Ed Essers - Ed bought in an old Whale Gusher 25 double acting Bilge Pump that a friend gave him. He showed us the pump and told us how it worked and about its many good features. It needs a lot of cleaning up, but parts are still available for it and Ed is confident it will work again. Whale Marine are still based in Bangor, Northern Ireland where this pump was made. Ed had a similar Whale Gusher on his last boat and can attest to its simplicity, reliability and high capacity.



Rob Bingham - Rob has a 1943 Halvorsen double diagonal timber planked fast patrol boat. Restoring it was a 6-month project that took 5 years. While out of the water at Maylands boatyard, the timber shrank as expected but was basically OK when it went back in water. The boat was towed to RFBYC where the engines were refitted and it eventually made it to a pen at Cockburn Marina. Being the hoon that he is, Rob wanted to see how fast the boat would go on a choppy day. This caused some of the caulking to fall out and together with leaks from the rudder gland seals, the amount of water it was taking on was not ideal.

While in the pen the level alarm was going off which meant the water level was quite high. Rob wasn't too concerned and was working on a way to deal with the situation though the Marina Manager thought the boat was sinking and called Fremantle Sea Rescue. There can't have been too many emergencies at the time as the sea rescue team called their mates to come and have a look. This isn't the time that the owner of a sinking boat wants a crowd.



Rob managed to seal up most of the leaks and the 200 gph bilge pump was cutting in about every 15 minute which led to it being given the name "The Water Feature". Rob was using an automatic Rule float switch rated at 14 Amps. With a 24 Volt system, the bilge pump was drawing 6 Amps so it should have been fine. Rob went through 3 or 4 float switches that failed in service. He then bought a 20 Amp float switch that has worked fine since. Rob felt that the problem wasn't the current going through the float switch, but the number of times that it operated due to the continuous leakage of water into the boat. Rob thought that these cheaper float switches have a finite number of cycles before they fail.

Rob later installed another bilge pump in the aft section of the boat as the ribs every 2 feet apart with narrow drainage passages meant that it took some time for water entering at the back to make its way to the pump at the front. He recommended installing an aft bilge pump right up against the transom as water collects here while under way and ideally it shouldn't be allowed to accumulate in this location.

Rob's advice was to "Go berserk with the float switch and the bilge pump as you really want the bilge pump system to work when needed."

Chris Davis—Chris bought in a Henderson Mk 5 bilge pump which he said was a bit similar to Ed's Whale Gusher pump and felt it was a good bilge pump despite being made of plastic. It also had a label showing it was made in Bangor. Chris was right as Google tells us that Henderson is made (or owned) by Whale Marine in Bangor Northern Ireland.

When Chris purchased his current boat, it had a Henderson Mk 5 installed. He suspected a blockage or fault with the pump as it only moved a very small amount of water with each stroke of the handle. The pump is simple to open up to remove any debris and the non-return valves are easy to remove for service or replacement but this wasn't the problem. Connected to the end of the suction hose was a Strum Box or suction strainer. The one on Chris's boat was fabricate from stainless steel and looked well made but the diameter of the barb where it connected to the suction hose was only about 3/8" (10mm). The end of the hose had been greatly reduced to make it fit the small barbed connection and severely reduce the capacity of the pump. The lesson here is to get the basic engineering correct and avoid reducing down from the size of connection on the pump.

Chris also mentioned the need to use a proper suction rated hose to avoid it collapsing when being used. Chris now successfully uses a plastic Strum Box but the disadvantage is that the plastic floats and needs to be weighed down in the bilge.



Henderson Mark 5 Bilge Pump



Examples of metal and plastic strum boxes

Bruce Uren – Bruce shared his experience with corrosion of the stainless steel bolts securing the rudder gudgeon at the water line on his SpaceSailer 22. Stainless steel relies on a very thin stable oxide layer for corrosion resistance and is good when exposed to the weather above the waterline but slowly corrodes overtime when fully immersed, especially in areas deprived of oxygen which prevents the oxide layer from forming.

Bruce passed on a tip for securing fittings to the top of a fiberglass deck or cabin top with countersunk stainless steel bolts. Rather than fill up the complete hole with sealant, form a seal around the underside of the countersink on the bolt and secure from below with a nut. This will allow any water that does get in to drain out and will allow oxygen in to avoid corrosion.

316 grade stainless steel contains chromium, nickel and molybdenum. It is the molybdenum that helps prevent chloride attack. Other grades of stainless steel like 304 do not contain molybdenum and should not be used in a marine environment. Sources of 316 ss fasteners are Austain in Belmont but they can be pricy and only sell in large quantities. West Coast Fasteners in Balcatta sell in small quantities at better prices. 316 fasteners can be found in boat hardware stores and even Bunnings but ensure it is labelled 316 and not just stainless steel.

Bruce Cadee showed some photos of corroded bolts that were securing the prop shaft bearing support on Bob Harrap's Cole 26ft fiberglass yacht. They were possibly around 40 years old. The countersunk bolts that had been put in through the hull from the outside and then covered with epoxy before applying anti-fouling.



Both 316 and 304 grade stainless steel are essentially non-magnetic and can't be differentiated with a magnet. They can be differentiated by applying a drop of a chemical on the surface and observing the colour change. This test relies on the fact that 316 contains molybdenum but 304 doesn't. You can buy premixed test kits or find the chemicals and make up your own solution from a recipe on-line. There are also Positive Material Identification (PMI) machines that use X-ray Fluorescence (XRF) to quickly and easily give you the chemical composition of many metals. These machines are very expensive but companies can bring their equipment to you for a relatively low fee.

2007

Dear Mr. Crowley,

Here is a spot test to sort 304 SS from 316 SS. Make sure the area you test is clean and flat, if possible.

1. Add 1 drop concentrated hydrochloric acid and allow it to react for 1 minute.
2. Add 1 drop 6% sulfurous acid, wait 30 seconds.
3. A black stain indicates 316 SS. No stain indicates 304 SS.

Hope this is of help.

Thomas Kemp
- Erie, Pennsylvania

Avesta Moly-Drop Test 960

100% Stainless

Easy identifying of stainless steel grades

Avesta Moly-Drop Test 960 is an easy to use chemical test that helps differentiate 304 grade stainless steel from 316 grade.

Standard applications

With this simple chemical test you can check if your stock piece or scrap of stainless steel contains Molybdenum. This makes it possible to differ the steel grades 304 and 316. The test will identify the grade within 5-10 minutes through a colour change.

Features

- Can be used on stainless steel 300 series material to test presence of Molybdenum and thereby differentiate grade 304 (no molybdenum) from 316 (with molybdenum).



Easy identifying of stainless steel grade with Avesta Moly-Drop Test 960.



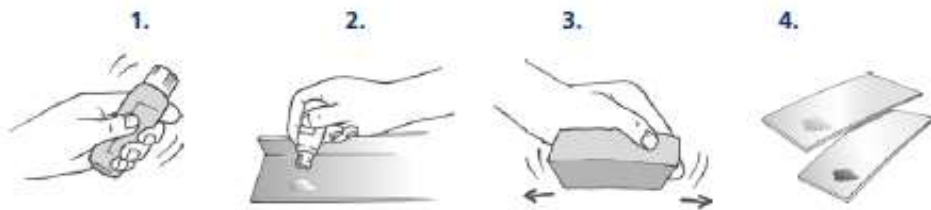
Testing 304 (EN 1.4301)



Testing 316 (EN 1.4430)

Avesta
Finishing Chemicals

Instructions for use



1. Shake the bottle well before use.

2. Apply 1-2 drops and wait 5-10 min.

3. Rinse thoroughly with water.

4. No colour change = grade 304.
Colour change to dark brown = grade 316

Packaging

Avesta Moly-Drop Test 960 is supplied in 30 ml bottles (≈ 200 tests).

Storage

Avesta Moly-Drop Test 960 should be stored indoors at room temperature. Bottles must be kept properly closed, in an upright position and inaccessible to unauthorized persons.

Worker safety

The product is corrosive and proper protective clothing should be used. In general users should wear acid-resistant gloves and eye protection.

Special conditions may apply from one country to another. Consult our website where updated Safety Data Sheets can be found.

Other information

For more information, please visit our website www.avestafinishing.com where you can find Safety Data Sheets and other useful information.

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Avesta
Finishing Chemicals

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Bruce Cadee told the saga of his trip from Maylands in a timber boat after having it out of the water for 10 days in warm weather. It started taking water but the single 500 gph bilge pump initially seemed to manage though after a while it stopped. He kept motoring, bailing and operating the bilge pump but eventually needed a tow back to his mooring in Bull Creek. The cause of the bilge pump failure was a short circuit when the water level rose high enough to reach the household electrical wiring connectors located out of sight under the engine. The lesson was if you didn't build the boat yourself, take the time to inspect the bilge pump wiring after purchasing it and don't assume the previous owner had done a professional job. Bruce subsequently added a second, independent pump, float switch, battery and solar panel, all with proper connections.



Peter Russell told of his experience of working on a Flyght Submersible sewerage pump that had a dodgy electrical connection in the underwater section of the supply cable. You can buy these pumps from the factory with a very long cable to avoid underwater joints but this wasn't done, presumably to save money. The joint was only a few metres from the pump and consisted of ordinary heat shrink, not waterproof heat shrink that contains glue. The wires were just crimped together and the whole thing covered in plastic with no effective waterproofing of the electrical joint under the water.

Michael Wade related a pump story from his days in the Public Works Department. One of their regular clients was what was then called the Special School at White Gum Valley. Here they looked after the most damaged children imaginable. When the school called with a problem, it was given the highest priority to get resolved. They had a recurring problem with a treatment pool. It was a small shallow pool with a simple chemical treatment system. The problem was a lack of water circulation despite the pump being in operation. Michael checked the pump and filter and found no problems. There was a Chemigem or similar system on the suction side of the pump that used a venturi to draw in treatment chemicals though a clear plastic tube connected to a saddle clamp around the pipe. Michael dismantled the clamp hoping to use it as an inspection port to help determine the problem. Looking into the opening in the pipe, he saw a small face looking back at him. Michael tried unsuccessfully to remove the object through the opening so had to cut the pipe. Michael produced the object from his pocket and we could all see that what he found was a plastic toy in the shape of a person. It was the face on the toy that he saw staring up at him. Michael has been retired for many years and still has the toy as a reminder of this unusual problem.

Michael then told us about another job he was asked to look at on his way home. There was an issue with the air conditioning system at Kalamunda Hospital. He went to investigate the problem and found a great crowd of experts gathered around pump that was not performing as expected. Michael asked about the history and was told that the pump had recently been removed, worked on and replaced. Just then, Michael's son Tim appeared at the door on his way home from school. Michael thought this would be a good learning opportunity and asked Tim for his input. Tim then said "the pump is running backwards". The lesson was that the more people involved, the longer it takes to find the solution.

Peter Russell raised the conundrum of the sawdust suckers and the presence of dead ducks on the floor where the sawdust was meant to come out. The ducks would roost near the exhaust of a large diameter fan but for weeks the fan had been running backwards and every time the fan was started, another batch of ducks came to an untimely end. The electricians were blamed again.

Michael told another tale about Carine TAFE that only ran for a few years. The Plant Room contained two expensive state-of-the-art axial flow compressors feeding a large single air receiver. The compressor would continually start then stop then start again. After some investigation and reading the manual, Michael noticed there were non-return valves on both compressor discharges with pressure switches located between the compressor and the non-return valves. It then struck him how do the pressure switches know what is happening inside the receiver. Michael took the top off the non-return valves and took out the flap. When he pressed the start button, the automatic control system started the compressors and the receiver pressure started to rise. Shortly after, the compressors stopped and all was quiet. The Plant Man was concerned and said "it hasn't done that before, are you sure you haven't f****d it up". After a few minutes, the compressors fired up again and the cycle continued. This is an example of what we were up against said Michael.

Ed mentioned a white food grade product that he uses to coat stainless steel bolts that he uses on his aluminium boat to prevent dissimilar metal corrosion and galling.

ADMINISTRATION NOTES

Congratulations and thanks to our committee members who were re-elected at our recent AGM

ABBA COMMITTEE

President	Rob Bingham	0419 995 422
Secretary	Bruce Cadee	0419 508 785
Treasurer	Andrew Minto	0415 852 333
Library	Rosemary Nayler	0427 717 050
Newsletter Editor	Bruce Cadee	0419 508 785
Website	Neil McKenzie	0424 533 063
General Committee	Chris Davis	0418 954 602
	Luis Gouveia	0477 172 881
	Bob Harrap	0407 991 901

FUTURE MEETINGS

December Technical Meeting

Our next Meeting will be on Wednesday 1st December in the Heritage Room at the South of Perth Yacht Club. 7:00 pm for a 7:30 pm start. Our speaker will be Colin Stevenson. Colin has been successfully sailing at SoPYC for many decades. Recently he sold his Spacesailer 27 "Dr Feelgood", but still sails on a another Spacesailer 27. About 7 years ago, he started building a smaller boat suitable for single handed sailing. I have walked past it many times and my guess is that it is around 20 ft long. It has a single sail and an unusual steering arrangement. Colin once told me he wished he knew about the Amateur Boat Builder's Association while he was building his boat. I'm sure we will all learn a lot from Colin's boat building experience.

Colin has kindly donated a box of boat related books to ABBA. They will be available for loan at the meeting.

Christmas Get Together

Our Christmas get together will be a visit to the "Wooden Boat Building in WA" exhibition at the Shipwreck Museum, 47 Cliff St, Fremantle starting at 2 pm on SUNDAY 12th December. The museum is just off The Esplanade and not to be confused with the Maritime Museum in Fremantle Harbour.

This community exhibition, presented by the Dutch Australian Foundation, highlights the importance of wooden boat building in Western Australia, and marks the 25th anniversary of the construction of the Duyfken replica in Fremantle. It is a free event but a donation to the museum of around \$5 would be much appreciated.

Note that this is a SUNDAY afternoon event. Hopefully ABBA members who have other activities or commitments on Saturdays that make it difficult to attend our usual Toolbox Meetings will be able join us.

There are many restaurants and food outlets within walking distance of the museum. You may like to bring family members and friends for lunch and a tour of the museum.

You can't make reservations at Little Creatures Brewery in Mews Rd but I will be there from noon to grab a table. If you would like to join us, please let Bruce Cadee know on 0419 508 785 before the day so I can get a suitable table. It is only a short walk to the museum.

ADMINISTRATION NOTES (Cont'd)

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

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

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 our Treasurer for reimbursement. Bruce Cadee is happy to take orders and liaise with Image Embroidery if you wish.