# New Zealand Naval Architect

The New Zealand Division of the Royal Institution of Naval Architects | Issue 41 February 2014


## Captain Edward E. Ewbank, our new President

**As editor, it is my pleasure to welcome Captain Edward E Ewbank (better known as "Ted" in professional circles) as our new Divisional President and simultaneously thank Ian McLeod for all the work he has done for the Division during his extended term of office. I say "extended" because Ian's official term ended at the AGM April 2013 but was persuaded to hold the fort for several months pending the election of Ted.**

Thank you, Ian, for your leadership. It is good that you are still able to contribute to future Council deliberations in your capacity as Past President. Good wishes, also, as you settle into your new appointment as President of the NZ Marine Industry Association.

Ted does not need a long-winded introduction, but it would be a disservice not to record some of his unique achievements in the maritime industry, both nationally and internationally, and to the creation of this Division. He commenced his nautical activities as a cadet serving in the British Merchant Navy ultimately obtaining his master mariner's certificate which led to gaining a command. Sensing that aviation may offer a more comfortable lifestyle he joined TEAL, forerunner to Air New Zealand, as a navigator when bubble sextants were in vogue for celestial navigation. There followed a period learning to fly, he still reminisces about flying DC3s, but the sea was still in his blood.

*Captain Edward E Ewbank*

He was fortunate in being able to take advantage of the long stand down periods between flying duties to further his education in naval architecture, shipbuilding and yacht design, to complete course modules and practical design assignments, and to gain practical experience in design offices thus lead to formal qualifications in naval architecture.

His seagoing activities, which have continued from time to time throughout much of his career, gave him an intimate knowledge of the character and behaviour of ships and boats of many types. Such experience enabled him to make the qualitative design decisions that all naval architects must make in the early stages of the design process, with a good degree of accuracy.

By 1976, he was confident that he had achieved the necessary competence to design small craft and to take full responsibility for his own work. It was at that time that Air New Zealand, as TEAL had now become, was embarrassed by a surfeit of pilots and so he was able to negotiate a redundancy package that enabled him to set up his own design office.

His first major assignment was the preparation of the general arrangement and structural design of the full size steel replica of HMAT "Bounty" for the Whangarei Engineering Company (WECO) launched in December 1978.

## Inside This Issue

# Editorial

**And now to a second "welcome"; this time to the first Newsletter under Ted's Presidency.**

As indicated in the President's Report, Ted has had only a short period in the chair with part of that being spent overseas on pre-arranged business. However, in this relatively short period he is making his presence felt.

His initial aim is to deliver more value for members' subscriptions, part of which will be achieved through developing CPD courses whilst another part will be achieved through members' participation at the bi-monthly general meetings.

This newsletter has also a part to play. Ted would like to see the *New Zealand Naval Architect* appear quarterly during the months of February, May, August and November. It is possibly but co-operation from members in the form of articles, snippets of information, items of general interest, is all important. Please do not hesitate to contact me (mikekay@michaelkay.co.nz) if you can contribute in any way.

Another area where value can be added is making the Royal Institution of Naval Architects, and the associated substantial benefits of membership it offers, more widely known. As the CEO, Trevor Blakeley, so frequently points out there is a membership grade opening for almost anyone in the marine industry. If you know of someone practicing who is not a member find out the reason (Too expensive? What's the point? What's a naval architect?) and then point him or her in the direction of Trevor. I am sure he will respond promptly!

I do not pose the question "What's a naval architect?" facetiously. Ted alludes to this lack of understanding in his Report. Already on the home front we hear the term "yacht engineering" used in preference to "naval architecture" or the inclusion of "sail maker" lumped in to a proposed course for "upholstery"!

Readers do not need me to tell them that New Zealand has an outstanding record in a niche market of yacht and small vessel construction. As shown in an accompanying article in this issue, the industry is capable of innovative thinking and finding a solution to an unusual problem. It is interesting to note that the contract, to which the article refers, was awarded to a domestic designer/builder over overseas' competitors for precisely this reason.

It is disheartening to learn that a NZ Aid contract was given recently to an overseas company without any input, or professional opinions sought, from this Institution. It is further disheartening to learn that Fitzroy Yachts in New Plymouth and McMullen & Wing here in Auckland are also facing difficulties.
So what's the solution?

Clearly, we as an Institution need greater and wider exposure to decision-makers. All of us can play a part in this. Could this be through a "Ginger Group"?
"Ginger Group" definitions for consideration:-

1. A group within a sector or industry, seeking to inspire the rest with its own enthusiasm and activity, or

2. A group that actively works for a more radical change to the policies and practices of the industry, whilst still supporting the goals of the industry.

**Letters to the editor are welcomed and will be forwarded to the Council for consideration.**

**Keep the articles rolling in!!**

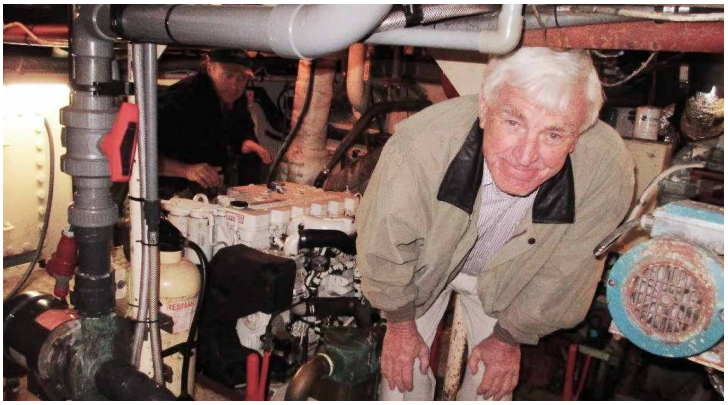
# Division News

## Visit to s.v. "*LORD NELSON*" at Auckland, Sunday, 27 October 2013


*The Lord Nelson Alongside Queen's Wharf*

***"LORD NELSON"***, a square-rigged, three-masted barque, is one of several tall ships participating in an epic world voyage, the title sponsor of which is the international law firm of Norton, Rose Fulbright. During the round-the-world voyage RINA members were invited to inspect the vessel 27 October. A small number of members accepted the invitation prior to the vessel being open to the general public.

*Below: Ted Ewbank in the Engineroom*



*Ted & Angelo reminiscing*

*Angelo Lavranos inspecting crew accommodation*

*continued . . .*

## Division News . . *continued*

***"LORD NELSON"*** is the first tall ship in the world to have been designed and built to be sailed by people of all physical abilities on equal terms -- from able-bodied to wheelchair users. This British-registered ship is one of two owned by the Jubilee Sailing Trust, a charity that promotes the integration of people of all physical abilities through challenge and adventure of tall ship sailing.

Facilities on board include a wheelchair lift between deck levels above, a hearing loop, a speaking compass and hydraulic power-assisted steering. Since its founding in 1978, the Jubilee Sailing Trust has taken over 38,000 people to sea, of which more than 14,000 were physically disabled, including 5,000 wheelchair users.

*Wheelchair Securing Port Side Upper Conning Position*

*Right: Wheelhouse & Chartroom*

*Ted & Angelo*

*Main Engine Controls*


*continued . . .*

## Division News . . *continued*

*Upper Conning Position & Talking Compass*

*Crew Accommodation*

Regrettably our visit was not well timed. A partial crew change was in progress, with the vessel's departure arranged for the following day. The inspection, therefore, was reduced to being a quick layman's look-see. A close examination of the facilities and meeting with some of the crew members with disabilities, which would have provided a useful insight to naval architects possibly tasked with designing a similar vessel for New Zealand, was a missed opportunity.

*Tall Ships Alongside Queen's Wharf*

*Rigging*

# Professional Development Opportunities

**Continuing professional development opportunities will be offered throughout the year in order to satisfy the Institution's CPD policy.**

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The first such course **– *Power and Propulsion requirements for Small Craft will be delivered by our President, Captain Ted Ewbank, FRINA on 5th March 2014.***

*At this session, Ted will present a summary of some of the currently available resistance prediction methods, and general procedure for their use.*

- *The use of propeller coefficients to specify the appropriate propeller and reduction ratio with consideration given to avoiding cavitation.*
- *An algorithm for a simple program which will perform the calculations using a form of polynomial equation enabling the calculation of the propeller coefficients for any proposed non-cavitating propeller in the B-screw series or the segmental section types, and for various propeller/nozzle configurations.*
- *"Small Craft" because the methodical series test examples given in the paper generally relate to smaller vessels rather than to "ships". The theory, however, applies generally.*

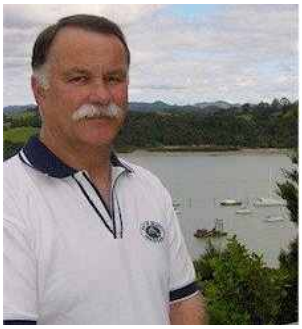
This CPD course is aimed at technician level practitioners, Associate Members and as a refresher for other RINA Members. Non RINA members are welcome to attend.

Secretary, Jason, will email registration and programme details in a separate communication to all members.

Members are urged to attend. An appropriate Certificate of Attendance will be provided to those attending.

# Industry News

**Royal New Zealand Navy Rapid Response & Environmental Assessment (REA)Vessels designed by Coastdesign Naval Architecture, and constructed by NSR Boats Ltd, Opua, Bay of Islands.**



*Alan Walker, MRINA*

Alan Walker, MRINA., principal of Coastdesign Naval Architecture, and the vessels' designer, can be justifiably proud of the successful outcome in delivering two 9.2 m vessels, TAKAPU and TARAPUNGA, to the Royal New Zealand Navy during 2013.

Coastdesign Naval Architecture, in conjunction with NSR Boats Ltd, received the Minister of Defence Award 2013, Category A for the "Design and Construction of Excellent Equipment for the NZ Defence Force" for this project

Alan writes "I was never one to shy away from a project that was a little different and after going through the proposal and tendering process, together with our consortium, eventually being awarded the design and build contract, the RNZN's REA (Rapid Response & Environmental Assessment) vessels project became a reality".

**Design Overview RNZN REA E2935 Vessel Project**

From the outset he knew that this project was going to be full of compromises and solutions to issues that could not be foreseen. The fact that the vessel had to

*Internal Construction*

*Wheelhouse*

be transported, on its trailer, on board a C-130 Hercules aircraft was difficult enough given the dimension envelope that his team had to work within, but later on the team found out that no water could leak or spill from the vessel while on the aircraft (salt water is a big no-no) and the design had to enable personnel in full battle dress to access the aft end of the aircraft cargo bay from the forward end of the aircraft, through the vessel. In addition, the specifications for the operational and performance requirements of the vessel were very specific. These varied widely requiring a vast array of equipment to be incorporated for differing operations and this added a further dimension of challenge to the development of the hull form.

From a design point of view the project was not just about the vessel; the team also had to provide road trailers, ramps to load the trailered vessel onto the aircraft, a cradle to secure the vessel to a ship and a method of lifting the vessel on and off the ship. The aircraft cargo space had plenty of length, so the vessel length (9.2m) was dictated by the overall towing length of vehicle and trailer. However the overall width was restricted to 2.7m and height on the trailer to 2.6m.

It was apparent from the beginning that the cabin top would need to be removable

*continued . . .*


and the original plan was to be able to lift it off so that it would sit on the forward deck while the vessel was in transit. However, as the final design saw the vessel cabin moved forward, the removable cabin top ended up being stowed behind the vessel in a specially constructed frame while in transit.

The first iteration of the vessel was a monohull, however, it was difficult to get the stability required when using the small crane with a 1m reach, lifting 250kg over the side of the vessel. Further stability issues with freeboard and overall height were found, so it was then decided to consider a catamaran hull.

For propulsion, the RNZN specified the use of twin Yanmar 370hp engines through Hamilton 242 jet units. Such a combination meant that the vessels would be capable of 40 knots with a complement of six personnel.

However the vessel was expected to be used at under 6 knots for about 80% of the time but it did need to have a cruise speed of 24knots, so given the waterline length, a planing hull was necessary. Conventional symmetrical cat hulls proved to be too deep to keep within the height envelope so it was decided to use the 'sea sled' type hull (previously used in a water taxi) with the tunnel width dictated by the required hull volume. At the first Preliminary Design Review (PDR) meeting the new concept prompted many questions and suggestions, mainly from the personnel that were to be the vessel operators, as they had particular ways in which they conducted their operations. That night Alan updated the design and the next day received the go-ahead to proceed to the Critical Design Review (CDR) stage.

With such a narrow beam-to-length ratio, weight and more importantly, balance had to be calculated very accurately and every component, expected load condition etc. had to be accounted for. An in-house spreadsheet was developed for this along with Autobuild (a specialised marine 3D structural program) to keep track of the weights and balance. The usual design circle involving layouts, weights and balance, and hydrostatics was gone around more times than Alan cared to remember. However, a workable solution to satisfy the CDR was achieved within a twelve month period.

Plan approval, with additional

*continued . . .*

stress and fatigue analysis on the lifting lugs in the vessel and the lifting arrangement, remained an outstanding issue. The vessel also required tie-down lugs to secure it to the trailer and these had to withstand 3G in any direction. Further analysis was required to be certain that these specifications could be achieved.

Because of the duration of the design and acceptance process, it was found that a number of items that had been specified were no longer available or models had been superseded. Equipment space was also limited and, due to additional items requested after the design had been completed, some minor changes to re-locate equipment were required.

However, with some lateral thinking by the build team, he not only managed to achieve a vessel package that exceeded the required specifications and the Navy's expectations, it allowed the vessel to be delivered ahead of time and on budget.

Speed Trials



A designer's true test is launching day and with a group of onlookers, the vessel was finally floating, on its lines – exactly where it was expected to. Fortunately, there was an extensive testing and training component and this provided an opportunity to put the vessel through its paces in a wide range of conditions before it was finally handed over.

The final step in the acquisition process was the marking of both hulls with the RNZN's pennant numbers which occurred early February 2014.

## Editor's Note

I was privileged to be invited to inspect the second vessel just prior to the marking of the second boat, A08. This visit confirmed the substantial amount of lateral thinking which had been put into the design and build, not only with the boats themselves, but also into the trailer configuration.

One intriguing feature was the "square panel" in the bow. This was in fact a door, hinged at the bottom, to be opened when the craft was loaded into the C130. Perhaps given ten guesses, an outsider would not guess the reason. The paragraph under "Design Overview" provides a hint ". . . to enable personnel in full battledress to access the aft end . . ."

Why so? The toilets for the flight crew are situated in the aft end of the cargo bay!

# President's Report

**I have had a very short term as president so far, having been elected as late as July last to the position, and no one having put their hand up for that honour at the AGM in April. However, there have been several significant developments in relation to our stated aims and interests in that short period.**

At a recent committee meeting, I proposed bi-monthly general meetings, to be convened on the first Wednesday of March, May, July, September and November of 2014. These may either be presentations, or gatherings at places of professional interest, for example yard visits. I would also like to start each general meeting, where appropriate, with Division business, at which members' suggestions and concerns may be heard, and at which the committee may outline the forward program.

I wish to deliver more value for members' subscriptions in the form of presentations which may meet the requirements of Continuing Professional Development (CPD), or be precursors to half or full-day courses which will meet those requirements, but which will require that fees be paid by attendees, to meet the costs incurred in presenting the course.

Imminent presentations will deal with power and propulsion, and stability.

On the topic of education, I recently attended, along with other committee members, an industry discussion on the proposed plans for ITO courses in marine technology to meet grades 1 to 6 as defined by NZQA. Several disciplines were covered, including marine design. Discussed also was a previously proposed course which, in my opinion, could easily be called a National Certificate in Naval Architecture, with similar course content as the national certificates in naval architecture available in Britain. Yet nowhere in the total discussion was "naval architecture" mentioned. I was subsequently given to understand that the term was not generally understood, and would deter prospective students who would assume that it was to do with the Navy.

Nevertheless, progress in the development of education in marine technology, by whatever name, is pleasing. Meetings on this are ongoing, and we will keep the membership advised.

Courses in which one or more of our council members are involved are currently being conducted at the University of Auckland Yacht Research Unit, Auckland University of Technology, and UNITEC.

And of course, there are the ongoing High Performance Yacht Design (HPYD) seminars which are jointly hosted by your Division.

News of the year's activities and events are no doubt covered in greater detail elsewhere in this newsletter.

I look forward to seeing you at upcoming meetings, and continuing to serve on council.

**Ted Ewbank**
*President*

**The seven-pointed star has been part of MAERSK's identity since 1886… and the story behind it is quite a romantic one.**

MAERSK

Where it all began: Anna Møller (A.P. Møller's mother) was accompanying her husband, Captain Peter Mærsk Møller on an ocean voyage. During the journey she fell seriously ill; at one point it seemed as if she might not make it.

Peter Maersk Møller stood on deck, looked up into a cloudy night sky and prayed for his wife's well-being. As he looked up, there was a chink in the clouds through which he saw a single star. That star gave him a sense of hope, and she later recovered.

That star of hope became his, and MAERSK's logo. In Peter's own words…

Peter Maersk Møller later wrote to Anna explaining the symbolism of the Maersk star, which by then was on the funnel of his first steamship, the S.S. Laura (1886): "The little star on the funnel is a reminder of the evening I prayed for you so dejectedly and anxiously, asking for the sign that I might see in the grey, overcast sky, a reminder that the Lord hears our prayers." Source: Maersk

# Council Update

## New President:

**Ted Ewbank** - ewbank@xtra.co.nz

## Resigned

**Rupert Shaw** resigned during the 2013 year due to business commitments

# Jobs Wanted

**From time to time we are contacted by people who are looking for employment in the marine industry here in New Zealand. Currently I have 2 CV's**

**Nicola Terenzi** is currently in New Zealand (from Italy) and is looking work in the marine industry.

She is a graduate in Yacht & Powercraft design from Southampton Solent University (June 2013) and completed a Nautical Engineering course, University of Genova, La Spezia Italy and is most recently worked in training at Chibro/Ilta Inox on Pressfitting Systems (Stainless and Coppernickel), Drainage Systems (Steckdrain) and bulkhead penetration (Hermetic).

**Dutta Sumita** from India: Pursuing AMIE SEC-B in Mechanical Engineering(5 PAPER CLEARED), Passed Section A (GPA 8.5) ,Distinction in (Diploma)Architectural Engineering, Bachelor of Science (Physics, Chemistry & Mathematics).

She is currently working with the Sula Shipping & Logistics Pvt. Ltd as a Project Coordinator Design.

**If anyone is interested in these candidates you are welcome to contact the Editor for more information.**



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