# THE AUSTRALIAN NAVAL ARCHITECT





Volume 24 Number 4 November 2020



A helicopter from the Royal Australian Navy Anzac-class frigate HMAS *Ballarat* takes off from the flight deck while conducting integrated operations with the Arleigh Burke-class guided-missile destroyer USS *John S. McCain* in October (US Navy photograph)

# THE AUSTRALIAN NAVAL ARCHITECT

#### Journal of

### The Royal Institution of Naval Architects (Australian Division)

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#### Cover Photo:

The recently completed 32 m catamaran *Coolgaree Cat*, built by Aluminium Marine in Queensland for the Sealink Townsville to Palm Island and Magnetic Island service (Photo courtesy Incat Crowther)

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### **RINA Australian Division**

on the World Wide Web www.rina.org.uk/aust

## From the Division President

Welcome to the November edition of *The Australian Naval Architect*. I trust this finds you all well and looking forward to the Christmas break in our strange new COVID-19 world!

A key role of the President of a professional institution is to constantly strive for the organisation to be the best it can be. This is realised by offering the membership what they value and what they need in order to achieve their professional development goals, and build on the skills and services required by employers and the industry.

To this end I am seeking your assistance to identify what the membership expects from the Australian Division of the Institution. Only through direct feedback from the membership can the Council be better informed and identify initiatives to improve and meet those expectations.

I am not only requesting the feedback from the membership but I would also ask that each member reaches out to the naval architects that they associate with who have chosen not to be members of the Institution. It is of interest to the Council to understand the reasoning behind the nonalignment of naval architects with a view to how we can become more attractive and satisfy their expectations.

Some examples of expectations that respondents may wish to consider would include:

- Professional development educational opportunities, certifications and seminars which will further your industry knowledge.
- Provide a platform/opportunity for exchanging views between local sections and other maritime industry professionals.
- Professional/social contacts and mentors.
- Satisfy your professional passion.

I therefore ask for your assistance in providing your ideas of how we can improve the services of the Institution and so make it more relevant to your needs. Please email your thoughts directly to me at gdmacdonald1000@gmail.com. Please remember to approach any non-member naval architects for their input.

I will provide a summary and feedback on responses received to this request in future columns in *The ANA*.

In a similar vein our Secretary, Rob Gehling, has delivered a working group report, *Greater Recognition of the Role and Capability of Naval Architects* for consideration by the RINA International Council. The paper, copies of which can be requested from Rob, addresses individuals' perceptions of their own capabilities together with industry's and employers' perceptions of our role and expertise, with the intention of identifying how we can raise our brand and educate prospective fields of employment.

The recent flurry of activity around maritime construction facilities continues apace with the recent completion of the shipyard at Osborne South ready for handover to ASC Shipbuilding to support the commencement of the \$45 billion Hunter-class anti-submarine warfare frigate program which will start in December when the first steel is cut for prototyping. The facility will support the construction of 23 naval vessels in South Australia, including 12 Attackclass submarines, 9 Hunter-class frigates and two Arafuraclass offshore patrol vessels.



Gordon MacDonald

The Federal and Western Australian Governments are also sponsoring a series of studies looking at the future development of the Australian Marine Complex (AMC) at Henderson in Western Australia.

Apparently the studies will encompass aspects such as wharf design, shiplift and docking options, vessel transfer paths, new berth options, security, utilities, facilities and amenities, and integrated transport solutions.

In the Pacific region the Australian Government will be investing \$124 million over 10 years which will include a joint Australia–Solomon Islands project to construct a border and patrol boat outpost in Solomon Islands' western provinces to support the Islands' Police Force and other Solomon Islands agencies to conduct remote patrolling and security operations, and will include a wharf capable of replenishing Guardian-class patrol boats (two provided by Australia), accommodation buildings, and storage facilities.

We are indeed living in interesting times at the moment, however this level of investment in the maritime community is building a great future for our industry.

Gordon MacDonald



## Editorial

What an extraordinary year 2020 has turned out to be. When the November 2019 edition of *The ANA* was published, we had no idea that Australia was about to experience forest fires of a scope and intensity not before recorded in the world. In NSW alone, some 5.5 million hectares of land was razed, mainly forest. Most fires were started by lightning in very dry fuel after a prolonged drought. Hot, dry and windy conditions produced by an unusual combination of weather events resulted in a fire storm which I expect few of us will forget — it was a summer which we don't want to see repeated, but experts in global warming warn us not to be complacent. Those interested in the story of these fires might find the report of the inquiry into the fires in NSW informative and interesting reading [1].

If that was not enough, the whole world has been turned upside down by a global pandemic. In the marine world, shipping has been greatly disrupted and the cruise industry severely hit. It will probably be some time before we see a return to something like normal — in the meantime, new cruise ships continue to be built (although the shipbreaking industry is booming).

Future developments in alternative fuels continue apace, including hydrogen which could provide great opportunities for Australia as countries seek to reduce carbon emissions in the hope of mitigating risks of a future where fires like those we experienced last summer could become commonplace. Despite the uncertainties of our world today, *The Australian Naval Architect* continues to be published to provide news of interest to Australian members of the RINA and news of section activities.

*The Australian Naval Architect* was born in Western Australia in 1997. The first edition, published in March 1997, was edited by Kim Klaka. He handed the task over to David Lugg who was the editor for the following three editions. When David was unable to continue in that role, *The ANA* came east to NSW and a new editorial team, Phil Helmore and I, took over. Our first edition was that of July 1998. This edition is the 90<sup>th</sup> we will have produced.

I doubt that either of us would have imagined that producing a new edition of *The ANA* every three months would be part of our lives for at least the best part of a quarter of a century. We have not tired yet — after all, our century is but two and a half years away. Hopefully we can continue in the years to come to make our Australian journal interesting and informative.

#### John Jeremy

1. *Final Report of the NSW Bushfire Inquiry*, 31 July 2020, available at https://www.nsw.gov.au/nsw-government/ projects-and-initiatives/nsw-bushfire-inquiry.

### **Docking for RAN Flagship**



The LHD HMAS *Canberra* stemming the Captain Cook Graving Dock at Garden Island in Sydney on 13 November. The docking is part of an extended maintenance period (aka refit), the first such maintenance period since the 28 800 t ship was commissioned in November 2014 (RAN photograph)

## COMING EVENTS

#### **NSW Section**

The NSW Section has one technical presentation remaining for the year:

2 Dec Rob Gehling, RINA

Are Naval Architects More than just Designers? This presentation will be held as a video-conference webinar hosted by the RINA using the Zoom platform. Registration is required, see the flyer on the NSW Section Events web page.

Unfortunately, due to COVID-19 restrictions, SMIX Bash 2020 has been cancelled. However, the news is not all bad; James Craig has already been booked for SMIX Bash 2021!

#### **ACT Section**

The ACT Section has a final technical presentation for the year:

1 Dec Dave Warby and the Team, Warby Watersport Spirit of Australia 2 and the World Water Speed Record

This presentation will be held as a webinar hosted by the RINA using the Zoom platform. Registration is required, see the Section Events page of the ACT Section website.

#### America's Cup 2021

The 36th America's Cup Match will be held in Auckland, New Zealand, from 6 to 21 March 2021 and will see the defender, Emirates Team New Zealand, racing against the winner of the Prada Cup for the Challenger Selection Series, with the challenger being the first team to score seven points.

The racing schedule for the America's Cup match has two races per day planned for March 6, 7, 10, 12, 13, 14 and 15. Additional reserve days have been scheduled, but the intention is to complete the event on the weekend of March 13-14, weather permitting. The winner of the America's Cup will be the first team to score seven points.

#### HPYD7

HPYD is the series of conferences on high-performance yacht design organised by the Royal Institution of Naval Architects NZ and the University of Auckland.

Due to the COVID-19 restrictions, the coming conference

will have both a physical and an online presence, timed to suit European time zones. The technical sessions will be recorded and be available online.

The provisional schedule for HPYD7 is as follows:

#### Thursday 11 March

0700-1200	Technical presentations
1700–1830	Local industry presentations
1930–2100	Public session

Friday 12 March

0700-1200 Technical presentations

You can follow HPYD on Facebook or LinkedIn, or sign up on the conference website for their mailing list to receive the latest news.

See www.hpyd.org.nz for more details or, for general information, email info@hpyd.org.nz; or for sponsorship opportunities, email sponsorship@hpyd.org.nz.

#### AOG Energy 2021

The Australasian Oil & Gas Exhibition & Conference is set to return to Perth in 2021 renamed as AOG Energy, re-energised and celebrating 40 years with a two-day event, showcasing local capabilities and exploring future opportunities. The annual exhibition and conference is the largest oil-and-gas event in Australia, featuring over 300 exhibiting brands and over 8700 global visitors.

The Conference features three Forums dedicated to Industry Supply, Subsea and Knowledge, all housed on the show floor and focusing on the opportunities and challenges in times of transformational change.

AOG Energy 2021 is scheduled for 10-12 March 2021 at the Perth Convention and Exhibition Centre.

#### Indo-Pacific 2022

AMDA Foundation has provided an update for the Pacific International Maritime Exposition which was to be held in August 2021, with that show now planned for May 2022 due to the fallout from the COVID-19 pandemic and renamed the Indo-Pacific International Maritime Exposition instead. In its news release announcing the change, organiser AMDA Foundation noted that "the Indo-Pacific has become



increasingly central to world commerce, international stability and security.

"Key Australian and international stakeholders, as well as the world's naval defence and commercial maritime industries, are increasingly focused on the "Indo-Pacific". It is, therefore, appropriate that the name of the event, which provides a platform for discussion in the national interest among those key groups and is an essential engagement and promotional opportunity for industry, should reflect that focus." The inaugural Indo-Pacific exposition will also be held in Sydney, with precise dates to be announced shortly. AMDA says that once the world has transitioned past the aftermath of the pandemic, it intends that its expositions will resume their normal biennial cycle, with Indo-Pacific returning to its regular timing in the latter half of odd-numbered years i.e. during the second half 2023.

Planning for the 2022 International Maritime Conference (IMC2022) will commence early in the New Year.

## **NEWS FROM THE SECTIONS**

#### ACT

#### Methods for Reviewing a Weight Report

David Whittaker, ex-Principal Naval Architect, ASC Shipbuilding (now BAE systems), Air Warfare Destroyer Alliance, gave a presentation on *Methods for Reviewing a Weight Report*—*As Applied in the AWD Project* as a webinar using RINA's Zoom software platform with the Chair of the ACT Section, Warren Smith, as MC on 25 August. This presentation attracted 35 participating on the evening, including the Chief Executive of RINA, Trevor Blakeley, in London.

Introducing his presentation, David said that for those who have been given the job of regularly reviewing their project's weight report (typically a job which you are given very early in your career) the second question that comes to mind after 'How am I going to do this?' is 'If I think it is wrong how can I present an objective case for rejecting it without redoing the calculation until I find an error?'.

David prepared and shared his presentation because, although weight reports are invariably prepared for naval projects and the Defence project office always assigns someone to check such reports, he realised that no procedure had been written for how such an audit is supposed to be undertaken. David shared some techniques adapted from financial auditing and big data analytics to identify portions of a weight report that may be suspect and justify closer investigation or recalculation.

David remarked that the biggest challenge with the weight report goes to the person who has to prepare the thing. The task typically goes to someone only slightly more senior to the one given the task of checking it, or sometimes to someone more senior but judged to have a 'quiet' personality. To those individuals he offered his unreserved sympathy. Their task is not only to complete the mammoth report, but also to ensure that it is correct in a situation where any experienced management will assume it has some mistakes. Alternatively, a project team brought in from another industry may not see any need for the report at all. In either case, the individual or team preparing and maintaining the weight report has the challenge of doing what is, at best, considered a tedious task while still getting it right. How do they check their own work to ensure this?

David distilled his experiences in checking the weight reports received from Navantia for the AWD project. Question time was lengthy (nearly as long as the presentation itself!), and elicited some further interesting points.

November 2020

David's presentation was recorded, and is now available on the RINA YouTube channel (see *The Internet* column). A copy of the written paper is available on application to the ACT Section Secretary at rinaact@gmail.com.

#### The Type XXI U-boat

Tim Lyon, Consulting Naval Architect and Naval Historian, and current Vice President of the ACT Branch of the Military History Society of Australia, gave a presentation on *The Type XXI U-boat — The True Story* as a webinar using RINA's Zoom software platform with the Chair of the ACT Section, Warren Smith, as MC on 22 September. This presentation attracted 43 participating on the evening, including the Chief Executive of RINA, Trevor Blakeley, in London.

The Type XXI U-boat was the first true submarine. It is often cited as the one weapon which could have won the Second World War for Germany. The Type XXI is a major link in the chain which leads from the first submersible boat to the Collins-class submarines serving in the Royal Australian Navy today. However, the history of the Type XXI is mired in myth and mystery. Tim provided a moreaccurate account of the capability of the Type XXI U-boat as finally constructed by sifting through and analysing available archival information. Tim made it clear that the performance of the Type XXI did not match that which was originally envisaged and reported by the German high command, and discussed the reasons for this difference. The



Type XXI U-boat (Drawing from Military Wiki website)

Type XXI with its more streamlined hullform was originally anticipated to achieve 19 kn submerged, though it finally achieved 17.2 kn under trial conditions and the maximum underwater speed recorded in war logs was still lower, at 15 kn. The adoption of dispersed modular construction of this submarine also created challenges. The presentation is perhaps a timely reminder for submarine designers and navies today that achievement of projected performance of submarines can be challenging if all elements don't come together as envisaged.

Tim pointed out that this presentation was half the length of the full two-hour version which he has previously given to the ACT Branch of the Military History Society of Australia. Question time was lengthy and elicited some further interesting points.

Tim's presentation was recorded, and is now available on the RINA YouTube channel (see *The Internet* column).

#### **Committee Meeting**

The ACT Section committee held a meeting using the Zoom software platform on 20 October to discuss technical meetings for the remainder of the year and develop a plan for potential presentations in 2021.

Provisionally we have:

- David Warby and the Warby Motorsport team have agreed to give a presentation on *Challenging the World Water Speed Record* via Zoom on or after 24 November, following the trials conducted at Blowering Dam on 7–8 November.
- John Kecsmar of Adhoc Marine Designs has agreed to give a presentation on *The Structural Design and Fabrication of Aluminium High-speed Vessels: The Good, the Bad and the Ugly* on 27 April 2021, as an update of the presentation given to the Singapore Branch of RINA some seven years ago.
- Harry Hubbert of Greenroom Robotics has agreed to give a presentation on 25 May 2021.

It is anticipated that the section may also have presentations from incoming graduates or ADFA students and a range of other speakers which are yet to be confirmed.

#### **Directorate Navy Engineering**

In separate news from the ACT, the former Naval Technical Bureau within Navy Engineering Division of the Department of Defence has undergone some internal restructuring which is aimed at strengthening the project liaison roles within the Division and supporting the continuous Naval Shipbuilding effort, while remaining within the same overall staffing constraints. The consequence is also a change of name to Directorate Navy Engineering. Those in the Department and the defence industry who had become familiar with the Navy Technical Bureau will now need to become familiar with the new name.

Martin Grimm Lily Webster

#### Queensland

#### **Controlling Marine Engine Emissions**

Lachlan Colquhoun, Marine Engine Sales Manager Australia and New Zealand, MAN Energy Solutions, gave a presentation on *Controlling Marine Engine Emissions* as a webinar using RINA's Zoom software platform with the Secretary of the Queensland Section, Ash Weir, as MC on 8 September.

Lachlan started his presentation by giving a brief history of MAN Energy Solutions, which included building the first

diesel engine. He went on to provide an overview of the types of emissions produced by internal combustion engines used in marine applications, and some of the key drivers behind current and future emission limits set by the IMO and local regulators. Lachlan discussed the marine fuels which are currently being investigated and their relative benefits from the emissions-reduction, shipbuilder's and operator's perspectives. He then talked about some of the technologies employed by engine manufacturers to reduce or 'scrub' emissions and touched on some current areas of development.

Question time elicited some further interesting points about the fuels and technologies being investigated.

This was essentially similar to Lachlan's presentation to the NSW Section on 2 February which was recorded and is already available on the RINA YouTube channel (see *The Internet* column) [*Note that the volume is very low, so you have to turn it up to the maximum* — Ed.]

#### **3D Scanning in the Marine Environment**

Matthew Morgan of Blue Marble Marine, and Francois Dubois of C.R. Kennedy Survey Solutions, gave a presentation on *3D Scanning in the Marine Environment* as a webinar using RINA's Zoom software platform with the Secretary of the Queensland Section, Ash Weir, as MC on 13 October and attracted 27 participants on the evening.

Blue Marble Marine specialises in scanning and modelling vessels for surveyors, builders and naval architects. Applications include hydrostatic analyses, hull and interior rebuilds, build monitoring for quality assurance and compliance documentation. Clients rely on Blue Marble Marine to deliver 3D electronic models, point cloud data, lines plans and full-sized plots. Matt discussed the technology and the techniques which he uses when he 3D scans a boat. In particular, he discussed the advantages of the new 3D scanning system, gave examples of jobs he has completed, and discussed some of the challenges he faces when scanning and post-processing his results.

C.R. Kennedy is Australia's authorised reseller of Leica Geosystems, the world leader in survey technology and instrumentation. The company provides expert training and support on all their products and the staff has many years' experience working in survey/construction industries. Francois discussed some of the technical features of the scanner and explained how it operates. He also discussed how different 3D scanners are being used in other industries and what is possible with their technology.

Matt and Francois also discussed their current project, where they are trying to simplify the importation of the 3D scan data straight into Maxsurf for stability uses, saving the modeller a significant amount of post-processing; this is a work in progress.

Question time was in lengthy and elicited some further interesting points.

This presentation was not recorded.

Ash Weir

#### Tasmania

#### The King Island Wave Energy Converter

Scott Hunter, Chief Technology Officer, Wave Swell Energy, gave a presentation on *The King Island Wave Energy Converter* as a face-to-face meeting with an audience of 20 in the Auditorium at the Australian Maritime College and the Deputy Chair of the Tasmanian Section, Daniel Clayton, as MC on 28 October. This presentation was also streamed live and attracted an additional 27 participants on the evening.

Wave Swell Energy has developed a unique unidirectional oscillating water column (OWC) technology which tank tests have indicated is more efficient than bi-directional OWC technologies. The company is currently developing a 200 kW pilot project, to be deployed at Grassy on the south-eastern coast of King Island in Bass Strait. The unit will be situated in about 6 m water depth and will supply energy into Hydro Tasmania's advanced hybrid power station, making it the first power station in the world to simultaneously generate energy from waves, wind and solar. Much of the construction has taken place in and around Launceston, Tasmania, with the sea tow to King Island expected to take place at the end of the year. Commissioning will take place soon after this in early 2021.

An outline of the technology and the project was presented.

[There is a video animation of the proposed installation at Grassy on the Wave Swell Energy website, https://www. waveswell.com/king-island-project-2/, with the air turbine being driven by the oscillating water column underneath — Ed.]

Scott's presentation was not recorded. Gregor Macfarlane

#### Western Australia

#### **Response-based Design and Classification Society Rules**

Yuriy Drobyshevski, Principal Consultant and Director, NavTec, gave a presentation on *Response Based Design and Classification Society Rules: Evolution Towards a Common Basis* as a webinar using RINA's Zoom software platform with the Chair of the WA Section, Piotr Sujkowski, as MC on 26 August, and attracted 34 participants on the evening. This presentation was prepared jointly by Yuriy and Michael Morris-Thomas, Principal Engineer, INTECSEA–Worley, and was an extended version of the topic presented by them at the RINA Offshore Marine Technology stream of the Australasian Oil and Gas exhibition and Conference (AOG) 2020.

The presentation reviewed developments in response-based design of floating structures against recent trends in design codes, and rules of classification societies in particular. As floating systems are increasingly used for offshore developments, the response-based design becomes a preferred approach. This is especially relevant to Australia's industry, where new facilities have been installed in cycloneaffected areas in recent years. Backed by developments in metocean science, availability of long-term metocean data and growing computer power, response-based methods have been utilised increasingly over the last 20 years.

The offshore design codes, on the other hand, have also been developing: several classification societies have updated their rules in recent years and the revision process of ISO standards is ongoing. In their latest revisions, class rules provide an interface between the response-based analysis and structural design of offshore units, which would meet class requirements.

Yuriy's presentation compared examples of vessel responses in different locations, their interpretation through the class rules, and calibration of safety factors, environmental and dynamic combination factors. As the evolution of responsebased methods and design codes continues, they are on a trend towards adoption of a structural reliability framework, as a general basis for design of offshore systems.

Question time was short, but elicited some further interesting points.

Yuriy's presentation was not recorded.

#### **Dynamic Mooring Analysis for Ships**

Tim Gourlay, Principal of Perth Hydro, gave a presentation on *Some Recent Developments in Dynamic Mooring Analysis for Ships* as a face-to-face meeting with a limited audience of 22 at the Meeting Place Community Centre, 245 South Terrace, South Fremantle, with the Secretary of the WA Section, Syed Zaidi, as MC. The presentation was also streamed live using RINA's Zoom software platform on 14 October, and attracted an additional 20 participants on the evening.

Tim's presentation gave an overview of some recent research in dynamic mooring analysis as it applies to shipping in Western Australia. Topics covered included:

- Collaborative research with MARIN on side-by-side moored ship motions in waves.
- Collaborative research with University of Ghent on passing ship effects for 400 m containerships.
- A coupled ship and harbour method for dynamic mooring analysis in Geraldton.
- The effect of long waves and second-order wave loads on moored ship motions.
- Multi-year hindcasts of moored ship motions on the Pawsey supercomputer.

Tim Gourlay is a mathematician who likes to climb ship pilot ladders. As the founder of Perth Hydro in 2016, he undertakes ship hydrodynamics computer modelling and full-scale measurements for companies in Western Australia. He is the author of the *MoorMotions, SlenderFlow* and *SubmarineFlow* software packages, and a regular user of *Wamit* and *Octopus* ship-motions software. He has undertaken over 70 ship motion trials on bulk carriers, tankers, container ships and cruise ships in Hong Kong, the Torres Strait, Broome, Port Hedland, Geraldton, Fremantle, Albany and Esperance, as well as wake and wave-induced motion trials on many smaller vessels.

Question time was lengthy and elicited some further interesting points.

Tim's presentation was also recorded and is now available on the RINA YouTube channel (see *The Internet* column). *Syed Zaidi* 

#### **New South Wales**

#### **Committee Meetings**

The NSW Section Committee met on 1 September and, other than routine matters, discussed:

- SMIX Bash 2020: Sydney Heritage Fleet has stopped the use of *James Craig* as a venue for the foreseeable future and, as a result, SMIX Bash 2020 has been cancelled; however, we have booked *James Craig* for Thursday 2 December for SMIX Bash 2021.
- TM Program 2020: Presentation scheduled for 29 July on Covid-19 and Cruise Ships postponed to 14 October.
- TM Program 2021: Ideas for presentations for 2021 canvassed and to be followed up.

The NSW Section Committee also met on 13 October and, other than routine matters, discussed:

- SMIX Bash 2020: All sponsors, members and friends have been advised of the cancellation of SMIX Bash this year; all registrants have been refunded; those sponsors who have requested have been refunded and others have rolled over sponsorships to next year.
- TM Program 2021: Venues for face-to-face presentations are being booked; three presentations already signed up, and other proposals are being pursued.

The next meeting of the NSW Section Committee is scheduled for 24 November.

#### Ferry Radar Preservation

Sean Langman, Managing Director of Noakes Group, gave a presentation on *Ferry* Radar *Preservation: a Link to a Once-working Harbour* as a webinar hosted by Engineers Australia with Phil Helmore as MC on 2 September. This presentation attracted 70 participants on the evening.

#### Introduction

Sean began his presentation by saying that the Rosman ferry *Radar* has been restored to full working order, and will comply with all AMSA's NSCV requirements.

*Radar* was built in 1947 which, coincidentally, was the same year in which the floating dry dock (which Noakes has also restored) was launched. Many people have asked the question 'Why preserve old kit, rather than building new?' Sean said that he believes firmly in the basic naval architecture and engineering which went into these vessels and, as they worked then, there is no reason why they shouldn't continue to work now, as well as showing the links to the past.



Radar at Circular Quay in 1955 (Photo Bill Allen) The Australian Naval Architect

The new ferry was launched as *La Radar*, because the name *Radar* was already registered with the British Admiralty in 1947. As time went by, *Radar* fell off the BA list, and Charles Rosman renamed his ferry *Radar*.

Radar and Rodney/Regis/Regalia



Radar (foreground) and Rodney/Regis/Regalia (Photo Graeme Andrews collection)

Here Sean showed a photo of two Rosman ferries, *Radar* and *Rodney/Regis/Regalia. Rodney* became famous when she took out a party of spectators to watch the American heavy cruiser, *USS Louisville*, depart Sydney Harbour on 13 February 1938. Many passengers crowded onto the upper deck and moved to the starboard side to see as *Rodney* passed *Louisville*. Turning in *Louisville's* wake off Bradley's Head, *Rodney* capsized and sank with the loss of 19 lives. She was eventually raised and refitted, being born again as *Regis* and, subsequently, *Regalia* [*For further details of the* Rodney *incident, see the* From the Archives *column*—Ed.]

#### Lines Plan and General Arrangement Drawing

The lines plan and general arrangement drawing of *Radar* are being used today to input data and to analyse her stability. In addition, they are scanning her hull shape to see how much (if anything) has changed and how to incorporate that into the stability data.

Radar was built by Reg Adams, Clayton & Co., Shipbuilders and Engineers, at North Sydney — right at the current Noakes site where she was restored. Reg Adams, Clayton & Co. was famous for the many timber seagoing trawlers which the company built [*including a number of Danish seiners which operated out of Eden for many years*—Ed.]



*Radar*'s builder's plate (Photo courtesy Noakes Group)

Berry's Bay in 1892

Here Sean showed a photo of Berry's Bay in 1892. The large



Lines plan of *Radar* (Drawing courtesy Noakes Group)



Berry's Bay in 1892 (Photo courtesy Australian Register of Historic Vessels)

vessel on the slipway in the centre of the photo is exactly where *Radar* was built by Reg Adams, Clayton and Co., and subsequently restored and re-launched by Noakes Group.

#### Berry's Bay in 1947



Berry's Bay in 1947 (Photo courtesy Noakes Group)

*Radar* can be seen on the right-hand side of the photo of Berry's Bay in 1947, berthed alongside the big shed. The little white building in the centre of the photo is the same one from which Sean was making this presentation. The slipway in front if it is where *Radar* was built.

#### Berry's Bay in 2018

The photo of the Noakes site at Berry's Bay in 2018 shows that the little white building is still there (top centre), and illustrates the diversity of craft which they handle. Of note are the following:

- *Kurrewa IV* ex *Morna* (top, blue sail cover), designed by William Fife III and built by Morrison & Sinclair at Longnose Point, Birchgrove, on Sydney Harbour in 1913. She competed in six Sydney–Hobart yacht races and won line honours in four. She is now being restored for her 110th anniversary in 2023.
- LLCs (two, upper centre), the LHD Landing Craft (LLC) which were purpose-built for the RAN's Landing Helicopter Dock (LHD) ships.
- *Warren* (centre), Noakes' tug which they use to move their vessels around.
- *Proclaim* (centre), ex-Nicholson Bros ferry, also built by Morrison and Sinclair at Longnose Point, and now part of the Rosman fleet.
- STS *Young Endeavour* (lower centre, blue cover at bow), the British Government's bicentennial sail-training gift to Australia, in refit.

#### **Radar on Sea Trials**



Radar on original trials in 1947 (Photo Graeme Andrews collection)



Berry's Bay in 2018 (Photo courtesy Noakes Group)

Charles Rosman ordered a new ferry from Reg Adams, Clayton & Co. following the *Rodney* incident. *Radar's* purpose was to be more stable than *Rodney* and so she had more beam, and the wheelhouse was purposely low to enable her to pass under the Roseville Bridge, where no other ferries at the time could go—this would expand the Rosman services. The upper-deck bulwarks were set inboard, and sloped inwards (making them difficult to climb over) and did not extend so far aft as those on *Rodney*. Stability tests had shown that, if *Rodney*'s upper-deck bulwarks had been set inboard (limiting the number and transverse movement of passengers), she would not have capsized.

#### Radar with Top Deck Enclosed



Radar with top deck enclosed in 1955 (Photo Graeme Andrews collection)

*Radar* had the top deck enclosed by about 1955. However, the stability book had not been updated since she was built! Noakes have therefore had to go through everything. They have lowered the centre of gravity from this photo, and therefore have betterer stability characteristics. Due to the refit construction, the vessel will not have any bilgewater, and so there will be no unaccounted free surface effects.

The sponson band always rusted and, in the photo, you can see rust streaks below the sponson on the white topsides.

#### Radar in 2010



*Radar* in Rosman livery in 2010 (Photo courtesy Noakes Group)

*Radar* was much loved as the Northwood ferry. Thousands of children travelled to and from school in her, and she was also used as a spectator vessel for the 18 ft (5.50 m) skiff fleet.

#### November 2020

#### **Refit 2013**



Radar sponson refit in 2013 (Photo courtesy Noakes Group)

*Radar* had been well built, with hardwood planks and frames. The decks were planked with teak which Charles Rosman had obtained from HMAS *Adelaide* for the decking on the ferries *Radar*, *Regal* and *Royale*. However, the teak decks were attacked by corrosion of the steel dump-spike fastenings, and the hardwood sponsons and stanchions were attacked by corrosion of the steel rod fastenings; other fastenings in the vessel were bronze and copper. Under the deadwoods was a lead shoe, which had been cast on site.

*Radar* came into Noakes' yard in 2013 to have her sponsons replaced. However, when they removed the sponsons, they found electrolytic rot had affected the stanchions as well. The planned sponson refit turned into a seven-year refit of the whole vessel!

#### **Electrolytic Rot**



Electrolytic rot (Photo courtesy Noakes Group)

Steel is a ferrous metal and corrodes. The insert in the photo shows a halo of corrosion around the steel fastening. As the electrolytic current passes through the corrosion, it degrades the timber. Timber vessels are living things, and react to their environment and electrolytic rot. The sponsons on small monohull ferries are wide so that, when they come alongside wharves and roll, their superstructures don't hit the wharf.

The refit started with the sponson band but, when removed, they found that every single stanchion behind the band was affected by electrolytic rot, and the topmost planks had also been degraded, so that the superstructure had separated from the primary ribs and stringers. The refit escalated!

#### Refit 2019



*Radar* refit in 2019 (Photo courtesy Noakes Group)

Noakes had five ferries in service, and did not need *Radar* to meet the demands of the various schedules. So, they signed a commitment to have her back in service for the Biennale of Sydney in 2020. Since its inception in 1973, the Biennale of Sydney has provided a platform for art and ideas, showcasing the work of nearly 1800 artists from more than 100 countries. Today it is considered one of the leading international contemporary art events, recognised for commissioning and presenting innovative thought-provoking art from Australia and around the globe.

When removed from the water, the vessel had a significant hog in her keel (visible in the photo). They made the sheer line look OK and, with the conversion from wet-wood to dry-wood construction (of which, more later), she has ended up with a slight hog.

#### Radar in the Shed

They moved *Radar* into the shed. The top two planks in the photo are showing the extent of the electrolytic rot, looking like charred patches where the sponson band came off.

#### **Foredeck Work**



Foredeck work on *Radar* (Photo courtesy Noakes Group)

The stanchions all had to be replaced, and here the boilermaker is boring a hole for a 316 stainless steel fastening. They would have preferred to put laminated timber frames in the bow but, having to work to a timeline, they ended up putting stainless steel frames in the bow section. Also visible in the photo is the massive stempost.

#### **Internal Structure**

The photo shows the new deck clamp, the ribs and the foreand-aft stringers, all bronze fastened, with roved copper nails holding the planks.

They ended up changing the structure of *Radar* from wet wood to dry wood construction. In wet wood construction,



*Radar* in the shed (Photo courtesy Noakes Group)



Internal structure on *Radar* (Photo courtesy Noakes Group)

the planks are stacked on top of each other and, on the outside, the seams are caulked with oakum and/or cotton, hammered into the seams with a caulking iron, then payed with putty. When back in the water, the timber swells with the wood and tightens on the cauking in the seams.

#### **Splining and Sheathing**



Splining between *Radar*'s planks (Photo courtesy Noakes Group)

They deliberately left *Radar* out of the water for a long time to completely dry the timber for the change to dry wood construction. They then ran a spline saw down each seam to remove all oakum and/or cotton, tar, read lead, etc. The seams were painted with Everdure, and then gluefibre mixed with a high-temperature epoxy payed in, and a softwood spline driven into each seam. This gives a monocoque external shell, and the internal ribs, stringers, etc. are just coming along for the ride.

The big problem is the interface of the garboard planks

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Sheathing *Radar*'s hull with GRP (Photo courtesy Noakes Group)

with the keel. The rabbet has been adzed out on each side of the keel, and the edges of the garboard planks fit into it. However, the slight hog in the keel means that the rabbet is no longer in a straight line and the garboards don't have a perfect fit. They ended up having to back-fit from the inside, using silicon-bronze screws, rather than twisted copper boat nails, so she is not all rove fastened. The planks were glued onto new ribs, and so there is a combination of new and old methods. This gives low maintenance and a longer lifespan.

The monocoque shell is sheathed on the outside to ensure the total exclusion of water, but the GRP sheathing does not gain any structural credit.

They recycled as much as possible of the original sponson. On the topside there is a slight tumblehome, and it tapers forward and aft. Many shipwrights said that the only one who could replace the sponson as original was Old Bert. However, they used an adze to get the shape, and used a massive steam box to bend the sponson, infused everything with epoxy and gluefibre, and built up the correct shape.

#### Forepeak

The tank in the background of the forepeak photo is the black-water tank. The only access to the forepeak is through a watertight bulkhead, and they have painted the whole of the compartment gloss white with an epoxy finish. All seams were done with a large brush, keeping the water out.



Forepeak on *Radar* (Photo courtesy Noakes Group)

If the compartment filled with water, the water would find its way into the timber which would swell and could lead to failure. They have sufficient layers of GRP to cope, and so this will be OK, and they will have no internal free surface from bilgewater.

The athwartship floors down low are through-bolted to the keel and help to support the garboard planks (so that there is no flexibility) and to transfer the loads upwards.

#### **Engine Overhaul**



Sean with the overhauled Gardner 8L3B (Photo courtesy Noakes Group)

Sean really enjoyed this refit, because of the engine in particular. *Radar* was originally fitted with a Gardner 8L3 engine. However, they had numerous Gardners onsite, and they picked an 8L3B which is basically the same as the 8L3, but 40 years newer and has 50 hp (37 kW) more power. They sent several engines to Dave Shaw of Shaw Diesel in Auckland, New Zealand, for overhaul, and he did a fantastic job on them.



Reinstalling the engine (Photo courtesy Noakes Group)

There are few changes to the engine from original, except that the engine controls are better and, to fulfil safety requirements, they had to fit various guards.

To reinstall the engine in the vessel, they had to build a special lifting frame to go through the side entry and down through two decks. Sean, being a rigger by trade, loved this bit! In the reinstallation photo, you can see the marriage of different timbers on the sponson band; some original and some new oregon.

**Mechanical Works** 



Mechanical works on *Radar* (Photos courtesy Noakes Group)



More mechanical works on *Radar* (Photos courtesy Noakes Group)

All mechanical works on board are to AMSA's NSCV requirements. They went to the trouble of fitting stainless steel pipework for longevity. The Gardner engine sits in a stainless steel bath which captures everything, and nothing goes into the bilge. The old adage used to be that you never had to do an oil change on an English engine, you just kept pouring oil in! The original concrete ballast was left in the bilge, and everything went in over the top.

#### The Artwork



Artwork on Radar (Photo courtesy Noakes Group)

The artwork on the vessel is a statement of inclusiveness, and the amalgamation and marriage of two cultures. In the Pacific, tattooing was done by women, on women. Each piece of the artwork on the vessel tells a specific story from a particular area of Australia or the Pacific. There has been a massive displacement of shipbuilders (men's art) from Sydney Harbour, and women's indigenous and Pacific art, and Sean loves the fact that the art on Radar has been applied by a man - himself!

#### **Radar Re-launching**



Radar's re-launching ceremony (Photo courtesy Noakes Group)

Sean has great affection for Radar. She was re-launched on 4 May 2020, which is Sean's mother's birthday, with an indigenous women's ceremony, from the same place she was launched in 1947. The photo shows that there was little social distancing at the ceremony. Following the launch, COVID-19 restrictions slowed operations significantly.

#### The Noakes Team

Noakes had a team of 38 people working on the refit, with all manner of trades, and all working to a condensed time frame to have the vessel completed in time for the 2020 Biennale of Sydney which took place in June through September.

#### **Statistics**

The statistics of the refit make interesting reading:

- Total labour hours (since June 2019) 5000
- Labour cost \$500 000
- Hours worked (last 4 weeks) 3000





#### Radar's refit team (Photo courtesy Noakes Group)

5

- Trades working on the refit 35 8
- Apprentices working on the refit
- Specialist contractors engaged
- Materials purchased and contractor costs (since start of refit) \$320 000 \$1.2 million Approximate value of refit Refit commenced May 2013 Time vessel out of water 2473 days (6.8 years)

The apprentices learned a lot of valuable new (to them) skills.

*Radar*'s street value is nothing like the \$1.2 million price tag, but her heritage value is enormous. They are now trying to find a place to do her original ferry runs. Rosman is the only company now running timber ferries on Sydney Harbour, and people love getting on board, but not getting off! There is a line from the Sydney Opera House to the Harbour Bridge where cruise ferries have to wait for a wharf allocation. Sean has been in the situation (as master of the vessel) where the allocator has asked how many passengers he has to disembark, and after advising 160, the passengers don't want to disembark! Imagine running a steam tram down Flinders Street in Melbourne - everyone would want to get on and not off!

The intent is to use Radar as a spectator vessel for the 18 ft (4.55 m) skiff fleet.

There has been some pushback about the artwork and the colour scheme. However, the artwork was especially for the Biennale of Sydney, and the intent is to revert to the Rosman colour scheme after the Biennale finishes.

#### Conclusion

The Rosman ferry Radar has been restored to full working order. She currently has a Certificate of Operation for 50 passengers, while she completes AMS's NSCV requirements for a larger number of passengers. Complying with mechanical requirements has been straightforward. They have moved some ballast forward from aft, and the lightship will be lighter and the vertical centre of gravity lower than before. Complying with stability and flooding criteria for Class 1E will be interesting following her upcoming inclining experiment.

#### **Ouestions**

Question time was lengthy and elicited many more interesting points.

The certificate was subsequently posted to Sean, and the "thank you" bottle of wine delivered via an eGift card.

Sean's presentation was recorded, and is now available on the RINA YouTube channel (see The Internet column).



Radar back in operation for the Biennale of Sydney 2020 (Photo courtesy Noakes Group)

#### **Cruise Ships and COVID-19**

Robert McMahon, Marine Engineer, Michael Kelly, Pilot, Port Authority of NSW, Bernie Farrelly, Project Manager, Tas Bull Seafarers Foundation, and Sr Mary Leahy, Stella Maris Chaplain and Regional Coordinator for Oceania, gave a presentation on *Cruise Ships and COVID-19* as a webinar hosted by the Institute of Marine Engineering, Science and Technology in London using the Panopto platform on 14 October. The President of IMarEST, Kevin Duffy (in Germany at the time!) MCed the event and provided the keynote speech. This presentation attracted 147 participants on the evening.

This presentation was all about understanding and solving some of the technical, management and operating problems arising on cruise ships and other vessels due to the COVID-19 outbreak. How can microscopic COVID-19 pathogens transmit from person to person, bring the international cruise industry to a standstill, and immobilise some of the world's largest warships? The presentation looked at this question from the perspective of maritime professionals responsible for the safe, efficient and seaworthy operation of ships under their management oversight.

Question time was short due to the length of the presentations, and only a few of the questions were able to be answered in the time available.

This presentation was recorded, and is now available on the RINA YouTube channel (see *The Internet* column). *Phil Helmore* 

## **CLASSIFICATION SOCIETY NEWS**

#### Nick Brown to Take the Helm at LR

Nick Brown, the head of Lloyd's Register's Marine and Offshore Division, will be taking the helm as the firm's new CEO, effective 1 January 2021.

After 14 years at LR, including five as Chief Executive Officer, current CEO Alastair Marsh has decided to step down from his role and retire from the firm's board, effective 31 December 2020. Marsh has a view to remain with the firm in non-executive and advisory roles in the future, LR said.

"It has been an absolute privilege to lead Lloyd's Register over the last five years. I have had the pleasure of working with so many committed and talented colleagues, and I am enormously proud of everything we have achieved together, supporting our clients while fulfilling our purpose to make the world a safer place", said Marsh in a statement.

Nick Brown, 45, will succeed Marsh as group CEO and join LR Group's board on 1 January. In the interim, he will continue in his role as the head of Marine and Offshore.

"Alastair is an exceptional business leader who has transformed the company during his tenure. Following the significant investment in new systems and processes, LR is a far more agile and customer-focused organization, with a strong growth platform in innovative digital services, whilst also achieving greater operational excellence. The company has also diversified its portfolio through acquisition,



LR CEO-elect, Nick Brown (Photo courtesy LR)

expanding into new industries", said LR Chairman, Thomas Thune Andersen. "As the company writes its next chapter, this is a logical time for change and Nick has all the right qualities to lead us to further success".

Brown's successor at LR Marine and Offshore will be announced at a later date.

The Maritime Executive, 26 August 2020

#### LR Grants AiP for SHI Ammonia-fuelled Tanker

Lloyd's Register has granted Approval in Principle (AiP) to Samsung Heavy Industries (SHI) for its ammoniafuelled tanker design, a key progress milestone in the joint development project which LR and SHI announced with industry leading partners MISC Berhad and MAN Energy Solutions in January 2020.

To meet the International Maritime Organization's 2050 ambitions on halving greenhouse gas (GHG) emissions from 2008 levels, zero-carbon vessels need to enter the world fleet by 2030. Ammonia is among the zero-carbon fuels which are being considered by maritime stakeholders and, with the award of this AiP, SHI will forge ahead with its exclusive development of a relevant fuel gas supply system and detailed ship design. It aims to commercialise these developments by 2024.

Jong-Hyun Youn, SHI EVP and head of design, said "The ammonia fuel design project led by SHI brings all relevant stakeholders spanning from the fuel supplier to operator and it will result in a commercial outcome."

LR Group CEO designate and Marine and Offshore Director, Nick Brown, said "LR is working with leading

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industry partners to make deep-sea zero-carbon vessels a reality within this decade. Shipping needs action, not words, to deliver on the IMO's 2050 GHG ambitions and this challenge calls for collective action and industry collaboration. Following the announcement of the ammoniafuelled tanker joint development project in January, we are delighted that SHI has made steady progress on the fuel gas supply system and detailed ship design."

In its 2020 Energy Prediction report, the International Energy Agency forecasts that the use of ammonia and hydrogen as vessel fuels will expand and will account for 60% of marine fuels by 2060. Similarly, BP announced in its 2020 Energy Prediction report that the portion of non-hydrocarbon fuels such as ammonia, hydrogen, biofuel and others, will increase to 85% of 2018 total energy amount by 2050.

LR News, 24 September 2020

#### **DNV GL Alternative Fuels Conference**

DNV GL recently held its second annual DNV GL Alternative Fuels online conference. Some 2000 attendees listened to presentations from industry experts on the fuels, technologies and markets which hold great promise in powering shipping's journey towards a carbon-neutral future.

"De-carbonisation is the grand challenge of our time," said Knut Ørbeck-Nilssen, CEO of DNV GL Maritime. Throughout the three-hour event, attendees heard about the challenges of decarbonisation and how meeting the IMO targets for 2050 would affect maritime stakeholders — from shipowners, charterers and cargo owners to shipbuilders, designers, engine manufacturers, fuel suppliers, financiers and policy makers.

The conference looked at a variety of alternative fuels, as well as options for conventional fuels and their positives and challenges. The presentations covered the uptake of alternative fuels; scrubbers; LNG; DNV GL Maritime's flagship report, *The Maritime Forecast to 2050*; methanol as a ship fuel; ammonia as a ship fuel; the tanker market; and a panel discussion explored the end users' perspective of decarbonisation.

Reaching the targets will require application of technology which is currently under development, acceptance of lower speed and deployment of large volumes of zero-carbon or carbon-neutral sustainable fuels. Looking at the emerging landscape of alternative fuels in shipping, Ørbeck-Nilssen said "Not only is the number of potential fuels expanding, but the meandering variables of fuel availability, price and policy measures which could enable or negatively impact each choice, make the fuel decision much more difficult. In these extraordinary times, we must make sound decisions today which protect our tomorrow, while keeping our eyes fixed on the horizon for the fuels and innovations which will propel our journey forward."

The full programme and speakers included:

- Opening address: Knut Ørbeck-Nilssen, CEO DNV GL Maritime
- Uptake of alternative fuels: status and trends: Christos Chryssakis, Business Development Manager, DNV GL
- Scrubbers: Experience and outlook: Kai Låtun, Director Sales and Public Affairs, Yara Marine Technologies

- LNG's pathway to decarbonisation: Krishna Achuthanandam, Marine LNG Business Development Team Lead, Shell LNG
- DNV GL Maritime Forecast to 2050: Øyvind Sekkesæter, Environmental Consultant, DNV GL
- Experience with methanol as fuel: Ayça Yalcin, Director Market Development EMEA, Methanex
- Ammonia as a marine fuel: Hendrik Brinks, Principal Researcher, DNV GL
- Tanker market adapting to future expectations: Catrine Vestereng, Vice President, Global Segment Director Tankers, DNV GL
- Panel discussion: End users' perspectives on decarbonisation: Harry Robertsson, Technical Director Stena Teknik, Kostas Vlachos, Chief Operating Officer, LATSCO Marine Management, Daniel Gent, Energy & Sustainability Manager, UECC.

Access to the seven presentation recordings and slide decks may be requested at

https://www.dnvgl.com/maritime/webinars-and-videos/ondemand-webinars/alternative-fuels-online-conference-2020. html

DNV GL News. 20 October 2020

#### ABS Offers Majority of Annual Class Surveys Remotely

In an industry first, ABS is now able to conduct almost all classification annual surveys remotely on eligible vessels, after moving to further expand its remote offerings. Launching 10 additional remote survey options in April, ABS now offers the most comprehensive set of remote survey options in the industry, with a total of 28 surveys and audits able to be delivered remotely.

"The industry is telling us that they want our services delivered remotely, particularly in the current challenging environment, and I am proud that we are providing the most comprehensive remote services portfolio in the industry," said Joe Riva, ABS Vice President and Chief Surveyor. "We are delivering the next generation of classification today through surveys conducted anywhere in the world at any time, without interrupting operations for surveyor attendance."

The new remote services include Annual Hull Survey, Annual Machinery Survey, Annual Automation Survey, Annual Dynamic Positioning Survey, Annual Navigational Bridge Layout and Equipment/Systems Survey and Annual Load Line Inspection, when authorized by Flag Administration, for the first time.

Eligible vessels include general cargo vessels, barges (other than tank barges), tugs, offshore-support vessels and liquefied natural gas carriers under 15 years of age, with a few qualifying criteria. ABS now allows alternate annual surveys to be conducted remotely, except the fifth annual survey, which has special survey requirements.

ABS has also extended its remote survey and audit services to existing equipment manufacturing and external specialist clients enrolled in ABS programs.

For more information ABS Remote Surveys visit www. eagle.org.

DNV.GL

ABS Press Release, 21 April 2020



### WHY USE NAVAL SERVICES FROM DNV GL

DNV GL PROVIDES ASSURANCE, CERTIFICATION AND TECHNICAL SUPPORT TO GOVERNMENT AND NAVY

## FROM THE CROWS NEST

## World's Largest Container Vessel LNG Powered

*CMA CGM Jacques Saade*, the largest liquefied natural gas (LNG)-powered containership in the world was launched in Shanghai on 25 September. The vessel was built by China State Shipbuilding Corporation (CSSC) Hudong and Jiangnan, and takes the name of the CMA CGM group's founder. The vessel has a capacity of 23 112 TEU and is fully powered by LNG.

LNG was chosen as the fuel for a number of reasons. A real technological breakthrough contributing to environmental protection, LNG offers the following benefits over existing fuel oil-powered ships:

- 20% reduction in CO<sub>2</sub> emissions;
- 99% reduction in sulphur emissions;
- 99% reduction in fine particles emissions;
- 85% reduction in nitrogen oxide emissions; and
- the Energy Efficiency Design Index (EEDI), which measures the environmental footprint of a vessel, is improved by 20% compared to a conventional vessel.

The overall result is a reduced carbon footprint and improved air quality, particularly for populations living in coastal areas and in port cities.

The vessel also features cutting-edge innovations to optimise energy efficiency through improved hydrodynamics. The bulb has been seamlessly integrated into the hull profile and the bow is straight. The propeller and the rudder blade have also been optimised, along with the Becker Twisted Fin.

Principal particulars of CMA CGM Jacques Saade are

400 m
61 m
16 m
CMD-WinGD 12X92 DF
63 840 kW

#### CMA CGM website

#### Ocius Technology's Beth Christened

The first of Ocius Technology's new generation 6.8 m Bluebottle unmanned surface vessels, *Beth*, was christened on 19 August.

The christening was by Mark and Jill Bethwaite, in honour of Mark's first wife, the late Carolyn Elizabeth Bethwaite, the name being in memory of the "beth" in Elizabeth, and only coincidentally similar to Bethwaite! Due to COVID-19 restrictions, the christening took place at Ocius Technology's premises at the UNSW Randwick campus, and was streamed live via the Google Hangouts platform.

There was a small number of elite guests present at the christening, with 30 participating online. Guests included RADM Lee Goddard, Commander Maritime Border Command; Adrian Turner, Founding CEO of CSIRO Data 61 and now CEO Minderoo FireFund; Chris Jenkins, CEO Thales Australia; Belinda Hutchinson, Chair Thales Australia and Chancellor University of Sydney; Dr Stu Anstee, Robotics Lead DST Maritime Underwater Group; and Prof. Ian Gibson, UNSW Sydney. High-performance sailors present included Steve Quigley, Brett Van Munster and Tom Addis.

Robert Dane, founder and CEO of Ocius Technology, welcomed the guests and participants and opened proceedings with a few words about Ocius, climate science, the development of the Bluebottles, and thanked the whole team for their sterling efforts over the years.

Mark Bethwaite, Chairman of Ocius Technology, also welcomed the guests and participants, and said that the Bluebottles are the world's best USVs with regard to power, payload and performance. They can also be towed behind any capable vehicle, and launched from any boat ramp in Australia, an advantage which cannot be claimed by any competitor. The new Bluebottles are scheduled to undergo sea trials off Sydney, and will then head to Darwin, although progress has been delayed by COVID-19 restrictions. They are currently collaborating with Charles



CMA CGM Jacques Saade under construction (Photo from CMA CGM website)

Darwin University in Darwin. Defence and Navy are, of course, key clients.

Jill Bethwaite christened the vessel *Beth* with champagne, using the Ocius wording *God bless this ship* Beth *and all those who* don't *sail in her!* 

Following the christening, Ocius provided champagne toasts for the guests, followed by drinks and canapes.

The speeches and christening are now up on the Ocius website at

https://www.ocius.com.au/blog/christening-of-beth/

#### Phil Helmore



Mark Bethwaite making his speech (Photo courtesy Phil Helmore)

#### WWSR Spirit 2

On 8 October 1978, 42 years ago, Ken Warby blasted across Blowering Dam to set his second (and current)World Water Speed Record of 317.6 mph (511.1 km/h), with the return kilometre of 328 mph, and a kilometre exit speed of 345 mph, thus becoming the first person to officially break the 300 mph and 500 km/h barriers, the only person to ever design, build and drive a boat to a World Water Speed Record, and still the only person in the world to hold this record. Happy anniversary, Ken!

Dave Warby of Warby Motorsport is attempting to break his father Ken's World Water Speed Record in *Spirit of Australia* in their latest vessel, *Spirit of Australia 2*.

The new horizontal stabiliser for the vessel has been mounted on the new vertical stabiliser and sub-frame in Dave's workshop in Newcastle, and painted. The engine was run up and systems were tested alongside the workshop in mid-September [*For video (and audio!) of the engine test, see the Warby Motorsport Facebook page* — Ed.]

Blowering Dam level is currently sitting at around 80%. The team returned to Blowering Dam on the weekend of 7–8 November to continue working up from 250 mph (402 km/h) towards 300 mph (483 km/h) (see report elsewhere in this issue).

Warby Motorsport Facebook page

#### WWSR Longbow

Britain has re-entered the contest for the World Water Speed Record with a new vessel, *Longbow*, having commenced construction in April 2018.

The *Longbow* team has been progressing construction, but is being severely hampered by COVID-19 restrictions



Spirit 2 with new stabilisers fitted (Photo from Warby Motorsport Facebook page) in Lancashire, England, with Project Coordinator, David Aldred, and his wife Gill having to work on their own. It is interesting to read on the website how the dimensions of *Longbow* were decided: the length of 29 ft 6 in (8.99 m) was dictated by having 13 in (33 cm) between the transom and the workshop rear wall (enough to accommodate the rudder when fitted), and about the same between the bow and the workshop doors. At the sides, there will be 1 in (2.5 cm) between the door frames and the side of each sponson at the widest. With the sponsons now taking shape, *Longbow* is too wide to turn over in the shed to complete construction when the time comes — she will have to be turned over outside!



Longbow's sponsons taking shape (Photo from Longbow website)

#### The Australian Naval Architect

WEC Group in Darwen, Lancashire, has commenced construction of the trailer on which *Longbow* will sit when not out on the water.

[For further details, visit the Longbow website, https://www. jet-hydroplane.uk/— Ed.]

#### Longbow website



Longbow's trailer under construction at WEC Group (Photo from Longbow website)

#### **Team Britannia**

Team Britannia is a multi-million-pound British bid led by ocean adventurer, Alan Priddy, to design and build *Excalibur*, the fastest and most fuel-efficient wave-slicing powerboat to circumnavigate the globe for the much-coveted Union Internationale Motonautique (UIM) world record, currently held by New Zealander Pete Bethune at 60 days 23 h 49 min in *Earthrace*.

*Excalibur* was launched on 2 October, and is lying safely at the Hayling Yacht Company, Hayling Island, Hampshire, UK.

However, Alan Priddy now says on the Team Britannia website "Faced with the global uncertainty of how the COVID-19 pandemic is going to move next means that it is near-on impossible to make any immediate plans for the future. And sponsorship opportunities for Team Britannia have gone into freefall, making another battle to be fought.

"By far the biggest problem we are faced with is the restricted movement of personnel by land, sea and air and, until there is an accepted inoculation for COVID-19, the chances of getting in and out of countries quickly are slim to non-existent. As you are all aware, our story is as much about what happens on the land as it does at sea, and although there is a faint possibility that we could get around the world by refuelling at sea, it is strictly forbidden under the rules dictated by the UIM. Any records would therefore be invalid. It would also mean that our wounded and injured part of the project would not go ahead. It would be grossly unfair not to include them after all the hard work and dedication they have put in over the years.

"So, we are down but not out, and we are beat but not dead, which is a bonus. I am going to have a rest and regroup for a while, and I can assure you that I will deal with whatever is thrown at me. Our day will come but, when that is, I have no idea. We may have lost the battle, but we have not lost the war!"

Team Britannia website

#### SP80 Aims for World Sailing Speed Record

The world sailing speed record is currently held by Australian Paul Larsen in *Vestas Sailrocket 2* at an average speed of 65.45 kn (121.1 km/h) over the 500 m track. *SP80* is the vessel being designed and built by three young engineering students from the Swiss engineering school École Polytechnique Fédérale de Lausanne (EPFL) to attempt the world sailing speed record in 2022 and take it back to Europe. To achieve their goal they are aiming for a speed of 80 kn (148 km/h) using a boat with shaped hulls, propelled by a the usual kite wing, while the overall stability is achieved via super-ventilating hydrofoils.

How do you build a prototype when the world has stopped turning and everyone has to stay at home? As the first confinement measures were being announced in March 2020, nobody at SP80 really had an answer to this question. Yet, by dint of the motivation expressed by implicated students and engineers, as well as the infallible support shown to the team by their partners, the prototype model has been launched and has been undergoing optimization tests for several weeks.

#### The confinement/A necessary reorganisation

Last March, just as the prototyping team welcomed new members at the start of the semester, the COVID-19 crisis forced EPFL to close down its facilities. As a result, construction on the model was halted. Without access to the workshops, they focused on finishing up the design and preparing the construction protocols by discussing via videoconferences. Work from home was rapidly established, thanks notably to the SP80 partnership with Dassault Systems via 3DS Academy.



SP80 prototype model under test on Lac Léman (Photo from SP80 Facebook page)

#### November 2020

#### A slow but worthwhile engagement

Meanwhile, the team kept looking for a suitable workshop which also met social-distancing regulations. The INARTIS Foundation proposed an ideal solution by providing an office near EPFL. Several weeks later, as confinement measures mellowed, some EPFL collaborators were allowed access to campus. The LPAC laboratory and the SKIL fablab became crucial in operations by producing the parts which students conceived months before and, in June, the rhythm picked up, with new parts being produced every few days, thanks in particular to the responsiveness of Swiss Composites. The team in charge of electronic systems also got to work.

#### The reward: launching the prototype

In the end, it only took four months after the start of confinement for the prototype model to launch at the Club Nautique Morgien (a technical partner for the tests) on Lac Léman, Switzerland. Since July, the team has been testing and optimising the model of the final boat off the coast of Morges. Each outing on the water has allowed the team to fine-tune details, all of which constitute steady progress towards the record.

SP80 expects to attempt the World Sailing Speed Record in 2022.

SP80 website

### **GENERAL NEWS**

## New Ship for Trinidad and Tobago Launched in Tasmania

Incat Tasmania's latest vessel, a 100 m catamaran destined for Trinidad and Tobago, was floated out of Incat's drydock on Hobart's Derwent River on 9 October.

Incat commenced construction of *Buccoo Reef* early in 2019, and all major machinery and equipment has now been installed which, together with electronic systems, are being commissioned and tested in readiness for sea trials planned for November. The ship, Incat's hull 094, will be delivered later this year for service on the seabridge between Port of Spain, Trinidad, and Scarborough, Tobago.

The passenger deck, with capacity for 1000 persons, is divided into three lounges which incorporate a range of bars and food-service areas together with passenger toilet facilities.

The expansive vehicle deck offers 175 full-height truck lane metres plus capacity for 182 cars, or if trucks are not carried, then the ship can accommodate 239 vehicles. Passenger access from the vehicle deck to the passenger level is via stairs or elevator. The vessel layout also includes cabins to accommodate up to 14 crew.

*Buccoo Reef* will achieve a top speed of over 40 kn with powering by four MAN 16V 28/33 STC marine diesel engines, each rated at 7280 kW, Wartsila WXJ 1200 SRI waterjets and ZF 53500NR2H gearboxes.

Passenger comfort is enhanced with a Naiad Dynamics active ride-control system combining active trim tabs aft and a retractable T-foil located at the aft end of the centre bow.

#### NUSHIP Supply arrives in Western Australia

The Royal Australian Navy's new replenishment ship, *Supply*, arrived at HMAS *Stirling* on 5 October.

NUSHIP *Supply* will now undergo an outfit period to install specialised equipment which could not be installed overseas for security reasons, such as the close-in weapons system, the communications suite, Typhoon and the combat system. A team of experienced Navantia and defence industry specialists will complete the work.



Buccoo Reef afloat in the Derwent River after her launching on 9 October (Photo courtesy Incat Tasmania)



NUSHIP Supply departing Ferrol for her voyage to Australia. NUSHIP Stalwart (A304) is being fitted out at the nearby berth (Photo courtesy Navantia)

Navantia Australia's Chairman, Warren King, said "The arrival of NUSHIP *Supply* marks a significant milestone for Australia and demonstrates our commitment not only to the Royal Australian Navy but also to Australian industry, which is so important to support these ships over their expected design life and more."

Navantia Australia's Managing Director, Alfonso García-Valdés, said "The local development and management of the Navantia designs by Navantia Australia, supported by the Strategic Agreement Principles document signed with Defence earlier this year, offers substantial opportunities for Australian industry."

"Navantia Australia already has over 300 Australian companies as part of our local supply chain. The crossplatform commons program which we are developing will provide more long-term opportunities for platform sustainment, innovation and upgrades and enable a robust Australian supply chain to be reliably available."

The AOR Program has generated hundreds of jobs for Australian workers who operate behind the scenes in the Australian Defence industry. A number of Australian and Western Australian companies are involved in both construction process and fit-out, including Taylor Bros, SAGE Automation, Australian Maritime Technologies, Sofraco Engineering, Capability by Design, Communications Design & Management and Sypaq Systems. ASP Ship Management, Scaf-West and the Onsite Rental Group are performing vital support during the fitting out.

60 direct jobs have been created with Navantia Australia and further indirect jobs through industry partners associated with the AOR Sustainment Support program, which will be conducted in both Sydney and in Western Australia.



#### New Osborne Shipyard Completed

South Australia's world-leading shipyard at Osborne South was completed and ready for handover in September.

The Prime Minister, the Hon. Scott Morrison MP, said that around 2500 direct jobs would be created under the Hunterclass frigate program, which now starts in December when the first steel is cut for prototyping.

"Our continuous naval shipbuilding program has changed the skyline at Osborne on the Port Adelaide River but, importantly, it's delivering thousands of local jobs while boosting the economy and strengthening Australia's defence capability, the Prime Minister said.

"Founded on a \$535 million investment by the Australian Government, Osborne South is now a world-leading shipyard where Australian steel comes in at one end, and state-of-the-art warships come out at the other."

"I commend South Australia for the way in which they have managed COVID-19, particularly for keeping vitally important projects like Osborne on track and on time throughout the pandemic, providing a major boost to the local economy but also to the defence of Australia.

The Finance Minister, Senator the Hon. Mathias Cormann, said that Australian Naval Infrastructure had constructed the new facilities at Osborne on time and on budget — delivering on the Government's ongoing commitment and progress towards creating a sovereign continuous naval shipbuilding program, generating secure employment for Australian shipbuilding for generations to come.

"More than 25 000 t of steel, of which over 85 per cent was locally made here in SA, was used during the build.

"At peak construction, more than 730 people worked on this project, with 97 per cent of contracts let to Australian businesses, making this a truly sovereign project." Minister Cormann said.

Over the next four months, ASC Shipbuilding will take control of the shipyard and start training their shipbuilders on the technology which has been installed for building warships efficiently and effectively.

#### New Navy Survey Capability Deployed

A new type of small survey craft which will improve Navy's geospatial survey capabilities has been deployed from HMAS *Adelaide* for the first time.

The inaugural launch of *Polaris* from *Adelaide* took place on 29 October off the coast of Townsville during Exercise Sea Wader.

*Polaris* is part of a range of new equipment delivered to the Maritime Geospatial Warfare Unit. The new equipment, which also includes a Fly Away Survey Kit and the Remus 100S Autonomous Underwater Vehicle, aims to modernise the collection and processing of geospatial data by Navy hydrographers.

*Polaris* (built by Yamba Welding and Engineering) is equipped with a range of technologies, including a multibeam echo sounder, side-scan sonar, and sub-bottom profiler, and has an ability to deploy its own autonomous underwater vehicle.

The Navy's Hydrographic, Meteorological and

The Australian Naval Architect

Oceanographic Group has four deployable geospatial support teams which have been training for the past 12 months on the new capabilities being delivered under the SEA1770 project.



The survey boat *Polaris* was deployed from HMAS *Adelaide* for the first time during Exercise Sea Wader 2020 (RAN photograph)

## Keel Laid for first Offshore Patrol Vessel to be built in WA

The keel-laying ceremony for the first of the RAN's new offshore patrol vessels to be built in Western Australia was held in September at the Civmec facility at Henderson.

The first of ten OPVs to be built in Western Australia, *Pilbara* as she will be named, will join her sister ships *Arafura* and *Eyre* which are being built by ASC Shipbuilding at Osborne in South Australia.

Since construction commenced ahead of schedule in March, the Luerssen and Civmec teams in WA have made significant progress on building the blocks which, when complete, will form the 1600 t, 80 m long OPV.



The keel-laying ceremony for the future HMAS *Pilbara* at Civmec in Western Australia (RAN photograph)

## Austal Delivers 83 m Trimaran Ferry to JR Kyushu Jet Ferry

Austal Australia delivered *Queen Beetle* to JR Kyushu Jet Ferry at a ceremony held at the company's shipyard in Henderson at the end of September.

The 83 m high-speed trimaran ferry is the first of its kind to be delivered to Japan and has been custom-designed to provide an enhanced passenger ferry service between Fukuoka, Japan, and Busan, South Korea.



The 83 m high-speed trimaran ferry *Queen Beetle* (Photo courtesy Austal)

Speaking at the delivery ceremony, Austal's Chief Executive Officer, David Singleton, said that *Queen Beetle* was a unique vessel which will set a new benchmark for high-speed ferry travel in Japan.

*"Queen Beetle* offers international ferry passengers a truly impressive, enhanced travel experience, with new levels of comfort, luxury and amenity previously unavailable on any ferry in Japan," Mr Singleton said.

"Austal's trimaran hull design allows up to 502 passengers to travel with complete freedom to enjoy the many amenities on board, including lounges, bars, a kiosk, a retail shop and a playground, while cruising at speeds up to 37 kn.

"We're distinctly proud and delighted to be delivering this exciting new ferry to Japan and congratulate Kyushu Railway Company President, Toshihiko Aoyagi, and JR Kyushu Jet Ferry President, Masayuki Mizuno, on this latest and, dare I say greatest, addition to their fleet."

Featuring a customised interior designed by Eiji Mitooka of Don Design Associates in Japan, *Queen Beetle* includes two classes of seating plus compartments for groups and families, a children's play area and nursing room, a café and bar, duty-free shop, lockers for luggage and all-access spaces for wheelchairs and prams. An outdoor viewing deck further enhances the on-board experience for passengers.

During sea trials, *Queen Beetle* achieved impressive speed, seakeeping and passenger comfort results, utilising Austal's new Marinelink technology which provides real-time

monitoring, control and analysis of vessel performance, on board and remotely. With the benefit of Austal's Motion Control System, *Queen Beetle* was able to reach trial speeds in excess of 40 kn whilst maintaining outstanding stability and passenger comfort.

More than 200 Austal Australia employees were directly engaged on the design and construction of *Queen Beetle*, and the company drew on more than 200 Australian businesses over the course of the project to help deliver the major export contract, worth over \$68 million.



Austal's Chief Executive Officer, David Singleton, and General Manager Planning at JR Kyushu Jet Ferry, Hitoshi Ogawa, marked the official handover of *Queen Beetle* at Austal Australia's Henderson shipyard on 29 September 2020 (Photo courtesy Austal)

## Shaping the Future of the Henderson Maritime Precinct

The Commonwealth Government and the Western Australian Government are sponsoring a series of studies to inform the future development of the Australian Marine Complex (AMC) at Henderson in Western Australia.

The studies will encompass aspects such as wharf design, shiplift and docking options, vessel transfer paths, new berth options, security, utilities, facilities and amenities, and integrated transport solutions.

The Minister for Defence, Senator the Hon. Linda Reynolds CSC, said that the AMC plays a vital role in providing support to Defence, commercial shipbuilding and repair, the resource sector, and offshore oil and gas.

"The AMC is a key sustainment hub for Australia's surface and submarine fleets, and is one of only two sites identified for shipbuilding under the National Naval Shipbuilding Plan," Minister Reynolds said.

"The Government is already investing up to \$1.5 billion in infrastructure at both Henderson and Fleet Base West at HMAS *Stirling*.

"I've been working closely with Premier McGowan and Minister Papalia on shaping the future of the Henderson Maritime Precinct.

"The Federal Government will invest more than \$9 million over two years to produce these detailed studies which will build on the strategic infrastructure and land-use planning which has been commissioned by the State Government.

"By leveraging off the Precinct's existing industry presence, these studies will explore opportunities to collaborate on technology development and innovation."

The AMC, located around 23 km south of Perth, was established by the Western Australian Government with Federal assistance in 2003.

#### Austal Patrol Boat for Tonga

Austal Australia has delivered the eighth Guardian-class patrol boat to the Australian Department of Defence.

The vessel, VOEA *Ngahau Siliva*, was gifted by the Australian Government to the Kingdom of Tonga during a handover ceremony at Austal Australia's Henderson shipyard on Friday 30 October which was attended by Her Royal Highness, Princess Angelika Latufuipeka Tuku'aho of the Kingdom of Tonga, the Australian Minister for Defence Industry, the Hon. Melissa Price MP, and the RAN Head of Maritime Systems, Capability Acquisition and Sustainment Group, RADM Wendy Malcolm.

Austal's Chief Operating Officer and CEO Designate, Patrick Gregg, said that VOEA *Ngahau Siliva* was the second Guardian-class Patrol Boat delivered to the Kingdom of Tonga under the Pacific Patrol Boat Replacement Project and the eighth delivered since December 2018. "We are very fortunate to welcome Her Royal Highness Princess Angelika, who is Tonga's High Commissioner to Australia, to the Henderson shipyard to celebrate the delivery of the second Guardian-class patrol boat, following the delivery of the VOEA *Ngahau Koula* in June last year," Mr Gregg said. "With this second vessel delivery to Tonga, we have now



The 39.5 m patrol boat VOEA *Ngahau Siliva* was designed and built by Austal Australia (Photo courtesy Austal)



From left: Austal COO and CEO Designate, Patrick Gregg; the Minister for Defence Industry, The Hon. Melissa Price MP; HRH Princess Angelika Latufuipeka Tuku'aho of the Kingdom of Tonga; Air Commodore Fiona Dowse, Senior Defence Representative WA; RADM Wendy Malcolm, Head of Maritime Systems, RAN; LTCOL Tevita Siu Fifita, His Majesty's Armed Forces Tonga; and VOEA Ngahau Siliva, Navigation Officer SBLT Peni T. Mau (RAN photograph)



Her Royal Highness Princess Angelika Latufuipeka Tuku'aho of the Kingdom of Tonga and Australian Defence Industry Minister, the Hon. Melissa Price MP, at the ribbon cutting ceremony for the official delivery of VOEA *Ngahau Siliva* (RAN photograph)

delivered eight of the 21 Guardian-class patrol boats contracted to the Australian Department of Defence. We're actually completing a vessel every three months and at any given time, we have five vessels under construction or fitout."

The Tongan crew, who have diligently observed all necessary COVID-19 safe protocols and procedures while completing

a comprehensive training program which Austal provides at its Henderson shipyard, have now taken delivery of the vessel and will depart for Tonga following further training and familiarisation with the Royal Australian Navy at HMAS *Stirling*, Garden Island, WA.

The Pacific Patrol Boat replacement contract was awarded to Austal in May 2016, with an additional contract option awarded in April 2018 taking the program to 21 vessels valued at more than \$335 million. Twelve Pacific Island nations including Papua New Guinea, Fiji, the Federated States of Micronesia, Tonga, Solomon Islands, Cook Islands, Kiribati, Marshall Islands, Palau, Samoa, Tuvalu, Vanuatu and Timor Leste will receive the vessels through to 2023.

VOEA *Ngahau Siliva* is replacing VOEA *Neiafu* (P201), a Pacific-class patrol boat which has been in service in Tonga since 1989.



Austal recently delivered the seventh Guardian-class patrol boat, PSS *President Hi. I Remeliik II*, to the Commonwealth of Australia for presentation to the Government of Palau (Photo courtesy Austal)

## Future USS *Mobile* Completes Acceptance Trials

On 12 October Austal announced that the future USS *Mobile* (LCS 26) had successfully completed acceptance trials in the Gulf of Mexico. LCS 26 is the 13th Independence-class Littoral Combat Ship (LCS) built by Austal USA in Mobile, Alabama, for the United States Navy.

Austal's Chief Executive Officer, David Singleton, said that *Mobile* (LCS26) was the third naval ship to successfully complete acceptance trials at Austal USA in 2020.



The future USS *Mobile* (LCS26) was built by Austal USA (US Navy photo)

"I know that the Austal USA team is particularly proud of this latest LCS, which is named after their home city of Mobile, and they have every reason to be proud given that this is the third ship built by Austal USA to have completed acceptance trials for the US Navy in 2020," Mr Singleton said.

"The successful completion of acceptance trials for *Mobile* in Mobile, during this challenging time in world history is an outstanding achievement and testament to the skills and commitment of the Austal USA team."

Austal USA's Independence-class LCS program is at full rate production, with five ships currently under construction including *Mobile*. The future USS *Savannah* (LCS 28) has been launched and is preparing for trials, and final assembly is underway on the future USS *Canberra* (LCS 30) and USS *Santa Barbara* (LCS 32). Modules for the future USS *Augusta* (LCS 34) are under construction in the module manufacturing facility.

## Austal USA Delivers USNS Newport to US Navy

USNS *Newport* (EPF 12) has been delivered to the United States Navy from Austal USA's shipyard in Mobile, Alabama.

USNS *Newport* is the 12th Spearhead-class Expeditionary Fast Transport (EPF) to be delivered to the United States Navy — and brings the total number of ships delivered to the Navy by Austal USA to 24 in ten years, including three this year.

Austal's Chief Executive Officer, David Singleton, said that the delivery of EPF 12 by Austal USA further strengthens the status of its Mobile, Alabama shipyard as an industryleading facility.

"Austal USA has now delivered 24 ships to the US Navy in just over ten years, including three in this year alone. This is a remarkable achievement and testament to the productivity and efficiency of the shipyard, which is now expanding to enable the shipbuilding and support of steel vessels," Mr Singleton said.

"The ongoing, successful delivery of both the Spearheadclass EPF and Independence-class LCS shipbuilding programs has positioned the Austal USA shipyard to pursue new aluminium and steel shipbuilding opportunities in the future."



USNS Newport (EPF 12) was constructed by Austal USA (Photo courtesy Austal)

The Spearhead-class EPF is a 103 m high-speed aluminium catamaran with a large, 1800 m<sup>2</sup> cargo deck, medium-lift helicopter deck and seating for over 300 embarked troops, providing a fast, high-payload transport capability.

The Austal-designed EPFs support a wide range of missions, from maritime security operations to humanitarian aid and disaster relief. An EPF's flexibility also allows it to support potential future missions; such as special operations, command and control, and primary medical operations.

One additional Spearhead-class EPF is under construction at Austal USA's shipyard; the future USNS *Apalachicola* (EPF 13), while the future USNS *Cody* (EPF 14) is scheduled to commence construction before the end of the year.

#### 40 m Catamaran Ferries from Incat

Incat Crowther has announced that construction is well progressed on a pair of 40 m catamaran passenger ferries at Afai Southern Shipyard, in Guangzhou, People's Republic of China.

To be operated by the Zhuhai Fast Ferry Company, the vessels will form the next generation of sleek, fast, low-fuel-consumption ferries operating in the Pearl River Delta region. Afai Southern Shipyard's winning bid for the project was underpinned by the partnership's ability to deliver a high-speed low-fuel-consumption vessel which offers a step change in passenger experience.

The vessels will accommodate 199 economy passengers on a single deck with VIP passengers having a dedicated cabin on the upper deck. The main passenger deck features all amenities aft to maximise crew comfort and deliver an open, airy cabin with clean forward visibility. The Incat Crowther 40 will be powered by twin MTU 12V2000 M72 main engines, driving Rolls-Royce Kamewa S71-4 waterjets.

The latest hullform is used for the vessels, featuring Incat Crowther's unique reverse bow which optimises hull efficiency and seakeeping characteristics, delivering reduced operating costs and exceptional passenger comfort. This proven hullform has been rigorously tested in service and continues to support Incat Crowther in delivering leading designs throughout the industry.

Incat Crowther has delivered over 50 ferries currently in operation in China.

Principal particulars of the new ferries are

Length OA	42.8 m
Length WL	40.8 m
Beam OA	10.0 m
Depth	3.20 m
Draft (hull)	1.20 m
Passengers	199
Crew	7
Fuel oil	7000 L
Fresh water	1000 L
Sullage	1000 L
Main engines	2×MTU 12V2000 M72
	each 1440kW @ 2250 rpm
Propulsion	2×Rolls-Royce Kamewa S71-4
	waterjets
Construction	Marine-grade aluminium
Flag	China
Class/Survey	CCS



40 m catamaran ferries for Zhuhai Fast Ferry Company (Photo courtesy Incat Crowther)



Starboard quarter of *Coolgaree Cat* (Photo courtesy Incat Crowther)

#### Coolgaree Cat from Incat Crowther

Incat Crowther has announced the launch of *Coolgaree Cat*, a robust 32 m catamaran developed specifically for the Palm Island and Magnetic Island runs, operating from Townsville, Queensland. Developed in close conjunction with the operator, Sealink Travel Group, the vessel offers critical improvements over those currently in service on the run. Optimised for through-life efficiency on the offshore Palm Island route, the vessel is a more robust and sustainable addition to the Sealink fleet.

Long-term value is enhanced by improved durability, with a clear focus on operational features including cargo handling, passenger vision, green-water shedding, cleaning and maintenance. Operational costs are reduced with the lower fuel burn seen during sea trials, despite being a larger and stronger vessel than those which it is replacing.

Boarding is via stern side gates or a port-side midship boarding door. The main deck features 206 seats in a mix of booth and forward-facing, with deep windows giving the cabin a light and airy feel. There is a large kiosk aft, in addition to multiple storage areas.

The upper deck seats 86 passengers in a mix of lounges and regular seats, and 26 exterior seats are available aft on the upper deck. The bulk of the aft deck is dedicated to containerised freight stowage, with space for 12 luggage trolleys and a cool room for a further three. The aft-end coamings of this deck have been reinforced to cope with the impact of the trolleys, whilst loading gates are specifically located to work with existing infrastructure.

The vessel is fitted with twin Caterpillar C32 engines, delivering 970 kW each, and propulsion is via fixed-pitch

propellers. Capable of speeds in excess of 30 kn, she has a fuel-efficient fully-loaded operational speed of 26 knots at only 60% MCR, offering increased time between main engine overhauls.

Incat Crowther's Technical Director, Dr Andrew Tuite said "In partnership with the operations team at SeaLink in Townsville, Incat Crowther has developed a functional robust ferry for unique operating conditions experienced to Palm Island. Incat Crowther is proud of the technicallyadvanced *Coolgaree Cat*, designed specifically for the Queensland environment and built in Queensland using world's-best shipbuilding processes."

Chris Briggs, General Manager of Sealink North Queensland, said "*Coolgaree Cat* has achieved the performance envelope we were aiming for and has actually exceeded our performance expectations in some areas. This result has been



Bridge on *Coolgaree Cat* (Photo courtesy Incat Crowther)

achieved through Incat Crowther's willingness to combine SeaLink's operational knowledge and experience with their expertise and industry-leading approach to designing aluminium passenger ferries."

Incat Crowther has a long-standing relationship with the Sealink Travel Group, earning the company's trust through proven well-considered and innovative vessel designs operating within the Sealink fleet.

Principal particulars of Coolgaree Cat are

Length OA		32.0 m
Length WL		31.5 m
Beam OA		10.0 m
Depth		3.00 m
Draft	(hull)	1.20 m
	(propellers)	1.80 m
Passengers		320
Crew	-	5
Fuel oil		5000 L
Fresh water		2000 L
Sullage		3000 L
Main engines		2×CAT C32 B rating
	0	each 970 kW @ 2100 rpm
Propulsion		2×fixed-pitch propellers
Speed	(service)	25 kn
1	(maximum)	30 kn
Construction		Marine-grade aluminium
Flag		Australia
Class/Survey		NSCV Class 1C/1D
	-	



Coolgaree Cat berthed at Palm Island (Photo courtesy Incat Crowther)

#### Farra Orla from Incat Crowther

Incat Crowther has announced the start of construction of a 27 m catamaran wind farm service vessel. The third in Penguin's Windflex 27 series, the vessel has been sold to Irish operator Farra Marine who will name her *Farra Orla*.

The vessel offers excellent speed, deadweight and seakeeping, making it capable of many roles in the offshore wind industry. The vessel features two working decks. A large working deck forward can accommodate up to four 10 ft or two 20 ft containers and is equipped with a deck crane. The aft deck can accommodate a 10 ft container. Both decks have multiple tie-down points for flexibility, accommodating every possible requirement or spares and equipment. The vessel has a deadweight of more than 50 t.



Starboard side of *Farra Orla* (Image courtesy Incat Crowther)

Inside the main cabin is a large wet room with multiple showers, toilets and lockers. The main-deck passenger space is large and open, with forward visibility, seating 24 personnel in comfortable suspended seats.

The upper deck features an elevated wheelhouse with commanding views over the bow for safe transfer operations, behind which is a crew space with mess, bathroom and food-preparation space.

The hulls feature two single crew cabins per side and bathrooms.

The Incat Crowther 27 is powered by quad Scania DI16 077M engines, each producing 662 kW. Propulsion is via quad Hamilton 521 waterjets, giving the vessel excellent manoeuvrability. The vessel will have an operating speed in excess of 29 kn.

The design is compliant with European regulations for the transfer of 24 offshore workers and will be classed with Bureau Veritas. It will be the first in the Farra Marine fleet, and the first such vessel operating under the Irish flag.

Penguin Shipyard in Singapore commenced construction on 3 September with delivery expected in the second quarter of 2021.

Principal particulars of the new vessel are

Length OA		27.1 m
Length WL		24.9 m
Beam OA		9.00 m
Depth		3.85 m
Draft (hull)		1.40 m
Personn	el	24
Crew		4
Fuel oil		35 500 L
Fresh w	ater	3500 L
Sullage		2500 L
Main er	igines	4×Scania DI16 077M
		each 662 kW @ 2300 rpm
Propuls	ion	4×Hamilton HM521 waterjets
Generat	ors	2×Cummins Onan 40MDDCF
Speed	(service)	29 kn
	(maximum)	31 kn
Constru	ction	Marine-grade aluminium
Flag		Ireland
Class/Survey		BV I № HULL ● MACH,
		Wind Farms Service Ship —
		M0, Sea Area 3

Stewart Marler

### *Spirit of Australia 2* Trials 7–8 November 2020

David Warby and the Warby Motorsport team completed their first trials of *Spirit of Australia* 2 following the installation of a new tailplane with a horizontal stabiliser on Blowering Dam during the weekend of 7–8 November. A number of test runs were undertaken on both days, with the boat being lifted in and out of the water by crane between runs.

During the Saturday runs, cross winds of around 10 km/h were experienced on the course and David reported that these had a greater influence on the new larger tailplane, thus preventing higher speeds being attempted. Tailplane incidence adjustments were planned for that evening.

On Sunday, the initial runs were completed in relatively calm conditions, but thereafter wind speed increased and waves rapidly picked up prior to the second set of runs. The wind persisted for the remainder of the day, again hindering attempts to achieve higher speeds. The peak speed achieved on the weekend was reported to be around 170 mph (274 km/h, 148 kn).

The team continued to monitor the behaviour of the rudder at higher speeds, with David reporting the boat "walking around" more than desired. The rudder adopts a supercavitating blade profile with a blunt trailing edge, just as was the case for *Spirit of Australia* in which Ken Warby achieved his water speed record. Aside from the rudder fitted to the boat, two alternative rudders were also available.

The craft is, in the meantime, also being fitted with a greater range of accelerometers and gyros to record the motion characteristics of the boat, the intention being to analyse this data following the trials.

The next trials are planned for March 2021.

Martin Grimm



Bow of Spirit 2 (Photo courtesy Martin Grimm)



Spirit 2 at low speed (Photo courtesy Martin Grimm)



Spirit 2 being lifted into the water at Blowering Dam (Photo courtesy Martin Grimm)



Underside of *Spirit 2* (Photo courtesy Martin Grimm)



Rudder on *Spirit 2* (Photo courtesy Martin Grimm)





Engine and tailplne support on *Spirit 2* (Photo courtesy Martin Grimm)

Tailplane on *Spirit 2* (Photo courtesy Martin Grimm)



Permanent tribute to Ken Warby at Blowering Dam (Photo courtesy Martin Grimm)

## THE INTERNET

#### **RINA Webcasts**

RINA has set up a YouTube channel and RINA webcasts can be viewed there. The RINA YouTube channel is at

https://www.youtube.com/channel/UChb1sfHbWfQmG-iwpp\_QGJg/videos

Bookmark this website and keep your eye on it!

Video recordings of presentations should be sent to Jaime Perez Martinez <jmartinez@rina.org.uk> at RINA HQ for uploading.

Branch and Section presentations are shown second from left in the top line. Click on *View full Playlist* to see the list, or click on the search function to the right of *About* in the menu bar, type the title of the presentation you are looking for (or at least the first few words thereof) and press Enter.

#### **ACT Section Webcasts**

The ACT Section webcasts recorded and uploaded within the last three months are:

- Methods for Reviewing a Weight Report As Applied in the AWD Project, presented by David Whittaker, ex-Principal Naval Architect, ASC Shipbuilding (now BAE systems), Air Warfare Destroyer Alliance, as a webinar using the Zoom software platform on 25 August 2020.
- *The Type XXI U-boat The True Story*, presented by Tim Lyon, Consulting Naval Architect and Naval Historian, as a webinar using the Zoom software platform on 22 September 2020.

Further recordings will be added to the RINA YouTube channel as they occur.

Lily Webster

#### **NSW Section Webcasts**

Engineers Australia has agreed that copies of presentations recorded using their WebEx software platform can be transferred to RINA and uploaded to the RINA YouTube channel.

The NSW Section webcasts recorded and uploaded to the RINA YouTube channel within the last three months are:

- Design and Construction of the RAN's New Hunterclass Frigates, presented by Levi Catton, Managing Director/SEA5000 Technical Advisor Ship Integration, Gibbs & Cox Australia, as a webinar hosted by Engineers Australia on 20 May 2020.
- Investigation of Sediment Transport Processes near Tidal Energy Devices, presented by Christelle Auguste, PhD Candidate, Australian Maritime College, as a webinar hosted by Engineers Australia on 3 June 2020.
- *RSV* Nuyina: *Australia's New Icebreaking Research and Supply Vessel*, presented by Clive Evans, Maritime Systems Lead—Research Supply Icebreaker Project, Australian Antarctic Division, as a webinar hosted by Engineers Australia on 1 July 2020.
- Ferry Radar Preservation a Link to a Once Working Harbour, presented by Sean Langman, Managing Director, Noakes Group, as a webinar hosted by Engineers Australia on 2 September 2020.
   November 2020

• *COVID-19 and Cruise Ships,* presented by Robert McMahon, Marine Engineer; Michael Kelly, Pilot, Port Authority of NSW; Bernie Farrelly, Project Manager, Tas Bull Seafarers Foundation; and Sr Mary Leahy, Stella Maris Chaplain and Regional Coordinator for Oceania, as a webinar hosted by IMarEST in London using the Panopto software platform on 14 October 2020, with the keynote speech by the President of IMarEST, Kevin Duffy.

Further recordings will be added to the RINA YouTube channel as they occur.

#### Phil Helmore

#### **Qld Section Webcasts**

• *Controlling Marine Engine Emissions* presented by Lachlan Colquhoun, Marine Engine Sales Manager Australia and New Zealand, MAN Energy Solutions, as a webinar using the Zoom software platform on 8 September 2020.

This was essentially similar to Lachlan's presentation to the NSW Section on 2 February which was recorded and is already available on the RINA YouTube channel [*Note that the volume is very low, so you have to turn it up to the maximum* — Ed.]

Further recordings will be added to the RINA YouTube channel as they occur.

Ash Weir

#### WA Section Webcasts

The WA Section webcasts recorded and uploaded within the last three months are:

• Some Recent Developments in Dynamic Mooring Analysis for Ships presented by Tim Gourlay, Principal of Perth Hydro, as a webinar using the Zoom software platform on 14 October 2020.

Further recordings will be added to the RINA YouTube channel as they occur.

Syed Zaidi



Operated by Serco and built in WA in 1998, *Mercator 1* is a familiar sight in Sydney providing navigation training for the RAN (Photo John Jeremy)

## THE PROFESSION

#### **Survey Matters**

*Survey Matters* is AMSA's e-Newsletter relating to domestic commercial vessel (DCV) survey and is published approximately six times per year. You can request placement on the mailing list by emailing DCV Survey <dcvsurvey@ amsa.gov.au>. The e-Newsletters (including August 2020) are now also available online at

https://www.amsa.gov.au/news-community/ newsletters#collapseArea612

Items included in the August 2020 e-Newsletter included:

- Accreditation matters
- Mars matters
- All National Law exemptions extended
- Changes to EPIRB requirements
- Issuing temporary permits under divisions 3, 5 & 6 of exemption 7
- Regulated Australian and foreign flagged vessels becoming domestic commercial vessels
- General arrangement plans
- Documents listed on the AMSA 575 form: Fire Training Manual and Fire Safety Operational Booklet
- Electrical documentation requirements
- Fast craft documentation
- Navigating the AMSA organisation—who to contact and when
- Safety alerts and other newsletters

The item on *Accreditation Matters* is reproduced below. Items included in the October 2020 e-Newsletter included:

- Accreditation matters
- MARS Matters
- Certificate of survey renewal applications
- AMSA's new National Compliance Plan 2020-21
- Have you got the right tools for the job?
- Audit findings—EPIRBs and coastal liferafts
- Vessel descriptions in stability documentation
- Disputed deficiencies during initial survey

The item on *Have You got the Right Tools for the Job*? is reproduced below.

Phil Helmore

#### **Accreditation Matters**

Here is a look at the first six months of 2020 within the accreditation space.

Accreditation Renewals

The first accreditation renewals fell due in February this year. So far, AMSA has received 72 applications for renewal with 53 approved and 19 still in progress.

We find many applications are incomplete or contain illegible documents, which causes delay. When submitting an application please ensure that:

- All necessary fields are completed in full.
- Your signature remains strictly within the box provided.

#### The Australian Naval Architect

This ensures that we can crop it correctly for your ID card.

- Your photo is 45 mm × 45 mm on a white background, facing forward from the neck upwards. If possible, this should be scanned at 300 dpi.
- You supply current evidence of professional association membership. If you are submitting a receipt of membership you must advise the renewal and expiry date.
- You supply evidence of continued professional development. Submit copies of certificates from training courses, workshops or additional qualifications. If you don't have certificates tell us in the box and supply dates. Provide the date of subscription and name of any publications you subscribe to. Provide dates and names of any technical meetings or conferences you have attended. If you mentor, tell us who, what the subject is, and any dates.
- You submit a copy of your electrical license if you are accredited in categories e, f or m.
- Payment is made quoting the transaction reference number (TRN) shown in the top right corner of the application form. If you make a mistake on the application and print another one, a new TRN will generate. You must advise us which TRN you made payment against.

You are reminded to submit renewal applications three months ahead of your accreditation expiry date. The renewal application is available on the AMSA website. Due to COVID-19, all applications including supporting documentation must be emailed until further notice.

#### Audit Outcomes

Renewals haven't been our only focus this year. Since January we have sent nine letters to surveyors asking the recipients to show cause as to why we should not take action to revoke, suspend or vary their accreditation. These showcause processes have resulted in AMSA suspending the accreditation of three surveyors and varying the accreditation of another.

Audit outcomes have seen letters sent to ten surveyors, requiring a corrective action response. We have sent counselling letters to six surveyors for contravening the conditions of their accreditation, as set out in the Regulations.

Examples of contraventions included:

- Performing surveys outside of accreditation category. In this instance a surveyor provided a recommendation for a fuel tank construction survey, despite their accreditation not including an initial construction category.
- Failing to conduct renewal surveys to the scope required by the surveyor manual. A complaint emanated due to the surveyor's recommendations for a fleet of vessels omitting key safety information. The AMSA 901 forms did not contain adequate information for an AMSA delegate to renew the vessel's certificates of survey. AMSA formed the view that the surveyor contravened

section 32 of the regulations, after considering the missing details, indicated duration for each survey, the absence of details for the location and date of the surveys, and reports showing the hulls with heavy marine growth.

- Failing to conduct renewal surveys to the scope required by the surveyor manual. In this example a surveyor submitted a completed AMSA901 form recommending the survey. A subsequent AMSA inspection found the vessel was still under repair, with sections of the timber deck, exhaust pipework and insulation and weathertight hatches still to be fitted.
- Failing to notify AMSA that a written complaint was made against a surveyor. Although the survey in this instance was a 'risk evaluation' survey for a prospective buyer, the regulations do not distinguish between the purposes of a survey. The vessel was a commercial vessel and the surveyor was accredited.
- Failing to provide information requested by the National Regulator under Section 35 of the regulations.

An educative approach through counselling was the preferable compliance and enforcement action in these examples. However, surveyors should be aware that contravention of the conditions of accreditation may result in a different outcome. This includes infringement notices and/or variation, suspension or revocation of accreditation. The minimum infringement for any act or omission that contravenes a condition prescribed by the regulations is 60 penalty units (\$12,600 at time of writing) and is a strict liability offence.

#### Survey Matters, August 2020

#### Have You got the Right Tools for the Job?

Did you know that a surveyor is able to create their own survey forms, tailored to the type of vessel?

The range of surveyed vessels is significant. Passenger vessels, workboats, fishing vessels, small to large; you name it, there is probably someone operating it commercially and,



as surveyors, we are expected to provide services to this expansive range of vessels.

In order to increase consistency and reduce entry barriers for new surveyors, AMSA provides a range of "one size fits all" survey forms which surveyors may use. These are freely available on our website.

Nonetheless, some experienced surveyors develop their own survey reports tailored to the job. This ensures that they create an accurate survey record and reduce administrative hours. Tailoring survey reports to individual vessels, or types of vessels, is an effective way to stand out in the market.



hydrocompinc.com/uv • 603.868.3344 NavCad<sup>®</sup> • PropElements<sup>®</sup> • PropCad<sup>®</sup> • PropExpert<sup>®</sup> HYDROCOMP. Your Ideas. Our Tools. If the only tool you have is a hammer, it's hard to eat spaghetti! — David Allen.

Surveying a 6 m Class 2C vessel? Use the small outboard powered survey report.

Surveying a 70 m Class 1B passenger ferry, with ro-ro and dangerous goods? No problem, use the comprehensive survey reports which you have developed covering these elements.

Where does this ability come from and what are the conditions?

The Surveyor Accreditation Guidance Manual (SAGM) — Part 2, Section 2.9.1 (6) states that:

• A surveyor who submits survey reports and recommendations using MARS

is not required to use the forms identified in Annex 1.

This allowance is conditional on the recommendation and documents being directly uploaded in MARS by the surveyor. It is also conditional on the survey report having adequate and clear content for the kind of vessel being surveyed. Section 2.9 of SAGM Part 2 provides further details around these requirements.

As guidance, AMSA recommends that survey forms include at least the (relevant) information identified on the AMSA generic forms, allowing a surveyor to remove *irrelevant* content. For example, there would be no need to report on engineered seawater cooling systems on a report for a simple outboard-powered vessel. By cutting out irrelevant information, surveyors can reduce administrative time and provide a higher level of service to distinguish themselves in the market.

Please be careful with the trimming. Unclear submissions lacking relevant information may result in delay for your client or refusal of an application.

Survey Matters, October 2020

#### Float-free EPIRBS to be Required

This safety alert aims to raise awareness of the need for owners, operators, masters and crew of certain domestic commercial vessels (DCVs) to install a float-free emergency position indicating radio beacon (EPIRB) before 1 January 2021.

You will need to install a float-free EPIRB if your vessel is operating more than 2 n miles from land and:

- is more than 12 m in length; or
- is between 7.5 m and 12 m in length with no levelflotation fitted, and operating in Area B or C waters.

The requirement to install a float-free EPIRB is in response to incidents where commercial vessels have sunk too quickly for the crew to deploy their EPIRB in time, leading to a delay in search and rescue operations and a tragic loss of life.

[For further details, see the Safety Alert on the AMSA website, https://www.amsa.gov.au/news-community/news-and-media-releases/amsa-safety-alert-float-free-epirbs-new-requirements — Ed.]

AMSA DCV Safety Alert 08/2020



## **EDUCATION NEWS**

#### **UNSW Canberra**

#### Introduction

As announced in various places in August (including a joint media release from the Minister for Defence, Senator the Hon. Linda Reynolds CSC, and the Minister for Defence Industry, the Hon. Melissa Price MP, and a UNSW Canberra Media Release, both dated 18 August 2020) and as subsequently highlighted in the August edition of *The ANA* with a Letter to the Editor from Rear Admiral Col Lawrence RAN, Head Navy Engineering (p.4), a mention by the President of the Australian Division, Gordon MacDonald (p.2) and an article in the *Education News* (p.44), I, with my UNSW colleagues Ahmed Swidan and David Lyons, am indeed embarking on a new endeavour to stand up a new Naval Architecture degree program in UNSW Canberra at the Australian Defence Force Academy (ADFA). We are all excited about the prospect!

#### **UNSW Sydney**

While not wanting to duplicate what has already been published, we do want to share some thoughts about the journey we are taking. It would be remiss not to firstly acknowledge the foundations laid at UNSW Sydney (Kensington), a foundation on which we will surely be building. The first Bachelor of Engineering graduate in naval architecture from UNSW was Brian Robson in 1963. Since then over 400 have successfully navigated the program which, until the Australian Maritime College (AMC) began teaching naval architecture and graduated their first naval architects in 1992 (Michael Hunn and Gregor MacFarlane), was the only place at which you could study naval architecture at university level in Australasia. As one of those UNSW graduates myself (in 1982), I know our chosen field is specialised and tightly knit. Indeed, that characteristic is one which attracted me to it, along with a chat when I was in Year 12 with Prof. Tom Fink, whose comments rang much like those of Water Rat to Mole: *Believe me, my young friend, there is nothing – absolutely nothing – half* so much worth doing as simply messing about in boats" (Kenneth Grahame, The Wind in the Willows). I was drawn to a professional community which was small, where it was possible and reasonable to expect to engage nationally and internationally and build a broader perspective. Besides having an interest in ships, boats and the sea, being one in the order of a hundred naval architects in Australia sounded much better than being lost in an ocean of thousands of civil or mechanical engineers. Being a student in a class of 10 or 12 was also appealing.

During the last decade, the UNSW enterprise moved to review all courses across all faculties, short listing some 600 courses with less than 25 enrolments. This review sought to rationalise/prune offerings and improve delivery efficiencies; a totally understandable thing to do as a business. The naval architecture program's consistent yet small footprint was scrutinised, and a decision was taken to close the program, with no new enrolments from 2018. I believe that Em/Prof. Lawry Doctors (who retired in 2005 after contributing to the NA program for some 35 years full time and who still goes into his office regularly), plus Phil Helmore (27 years) and David Lyons (20 years), who steered the UNSW naval architecture ship in recent years, would all acknowledge that the University had long been looking closely at the program's viability.

The decision to close was met with disappointment and some resistance and protest from within the University, from the Royal Australian Navy, from the maritime industry and from alumni, but it was not to be overturned. In the way of things, as one door closes, another opens; and a proposal was made to stand up a new naval architecture program at UNSW Canberra (the same university but a campus geographically dislocated from Sydney and focused on supporting Australia's Defence establishment). This proposal was ultimately negotiated and agreed, culminating in the very positive announcements that were made in August this year.

#### **UNSW Canberra**

For those of you unfamiliar with UNSW Canberra and its home at the Australian Defence Force Academy, let me describe it briefly for you. As a tri-service officer-training institution, ADFA opened its doors to Midshipmen and Officer Cadets in 1986. The vision for such an institution had its roots in the 1950s. A first significant step towards its realisation was the military services recognising the value of a university education alongside officer training. It was in the 1960s that the services independently moved to incorporate university degrees in their training and education frameworks. In 1960 the Royal Australian Air Force (RAAF), using Point Cook in Melbourne as their RAAF College, built a relationship with the University of Melbourne to incorporate a degree program. In the process, the RAAF College became the RAAF Academy. It followed that the Army, operating from the Royal Military College (RMC), Duntroon, and the Navy, using HMAS Creswell on Jervis Bay, both negotiated with UNSW Sydney to provide the academic input to their respective officer education processes. In 1968, UNSW established the Faculty of Military Studies at RMC, offering degrees alongside military training over a 4-year (arts and science) and 5-year (engineering) period. A different model by the Royal Australian Naval College required Midshipmen to study at HMAS Creswell for one year and then complete their degrees by attending the UNSW Sydney campus for the remainder of their study.

It was then in 1976, under the Fraser Government, that approval-in-principle was ultimately given for the establishment of a tri-service academy. However, it was not until 1980 that the Bill establishing ADFA passed through the House of Representatives. In 1981, an agreement between UNSW and Defence was signed and construction began on the site adjacent to RMC. It was a natural choice for UNSW as the university provider in the new Academy and the UNSW Faculty of Military Studies staff moved "over the hill" to form UNSW Canberra's nucleus.

In the early days of ADFA, it was predominantly seen to be an undergraduate teaching institution. Some excellent research was done, but ADFA's purpose, and that of UNSW in partnership with Defence, was clearly to educate the

leaders of tomorrow's Defence Force. The military students (midshipmen and officer cadets), then and now apply to first become members of the Australian Defence Force (ADF) passing through officer selection boards, and then secondly, for university entry. Until the late "noughties" all undergraduate students at ADFA were military. They were in uniform and they have consistently numbered 1000-1200 to meet Defence force recruiting demands. However, there have been increasing numbers of sailors, soldiers and airmen who have transitioned into the officer ranks coming to ADFA to gain a degree, and they thus form the mature-age "advanced student" cohort. This wholly-military demographic began to change in 2011 with, firstly, a cohort of civilian engineering students sponsored by Defence and, more recently, in 2016 with regular fee-paying civilian engineering students joining the student body. However, since ADFA is a military establishment, and with its primary focus being for the military, the numbers of civilians in each discipline and year group is capped.

In contrast, at the postgraduate level, UNSW Canberra operates as a normal civilian university. There is no requirement for connection with the military to study here as a postgraduate coursework or research student. Perhaps this has been misunderstood or not well advertised to the Australian population because of our military location and association, but it is gaining greater attention and publicity in the 21st century, and numbers are growing.

The ADFA environment has evolved, while maintaining its primary mission, to now be a vastly different place to what it was in 1986. Specifically, for UNSW Canberra, the original 12 schools comprising the University College have amalgamated over time to become four schools and the resulting School of Engineering and Information Technology (SEIT) is now the largest school in all of UNSW (based on staff numbers). The relationship between the Commonwealth and the University has also become more formalised with a regularly-reviewed agreement and rolling contract between the parties for delivery of education (undergraduate and postgraduate). The postgraduate coursework students now significantly outnumber the undergraduates and the research student numbers more closely align with trends on the Sydney campus. The uniqueness of the ADFA environment does present some challenges for attracting research students, as the opportunity to transition students directly from the undergraduate student body to research degrees is minimal. Those in uniform leave immediately after graduation for further training and to join ships, squadrons and units.

## School of Engineering and Information Technology

SEIT currently offers degrees in the traditional disciplines of Aeronautical, Civil, Mechanical and Electrical Engineering. We are the only institution in the ACT doing so, which was an argument for opening up to fee-paying students. The School's research focus areas span the multidisciplinary areas of advanced electromagnetics, advanced materials and impact dynamics, control, hypersonics, imaging, optimisation and design, and trusted autonomy. Underpinning these is expertise in relevant fields such as materials, structures, structural response, fluids, fluid-structure interaction, design and multidisciplinary optimisation. Across all these is a clear opportunity to develop naval architectural/maritime related projects. Examples could be a systems approach to maritime capability and design development, studies in vulnerability and survivability, and the use of CFD for novel hydrodynamic solutions.

The breadth of SEIT activity, but our relatively small specific discipline groupings, dictates that we cannot do everything, nor have everything available in terms of equipment and facilities. That said, we are well resourced. We have the fastest gun for projectile impact dynamic research in the Southern Hemisphere. We have an advanced set of cyber-security laboratories. We have wind tunnels and shock tunnels and hypersonic tunnels and flumes. We also have nationally- and internationally-respected centres: the Capability System Centre, UNSW Canberra Cyber, UNSW Canberra Space, and the Centre for Quantum Computation and Communication Technology. What we don't have in the maritime space is a towing tank, or a ship manoeuvring basin, or a bridge simulator, or a training vessel. However, we do have an existing cooperative and collaborative agreement with the AMC to be able to access their facilities and expose our students to them. We look forward to building that relationship with the AMC. We also have local access to the ADFA pool and boatshed which could support experimentation and student experience. We clearly, too, have the benefits of a special relationship with Defence and the Navy.

Our Head of School, Professor Scott Tyo, wrote to staff recently with reference to the School's mission statement, which is to foster Australia's future technology decision makers and advance the technological state-of-the-art to shape our region's defence and security future. He summarised that "SEIT aspires to create an engaging and supportive learning environment where:

- the people who want to contribute to Australia's defence and security future choose to be;
- world-leading research informs an outstanding educational experience; and
- Australia's leaders begin their educational journeys and return throughout their careers to become the best in their fields."

He also emphasised that "We focus on Defence. We are proud of it. We are good at it. We are not afraid to say it."

Returning to the class size issue which led to the closure of the naval architecture program in Sydney, this is not an issue in the context of UNSW Canberra. Indeed with 1000–1200 undergraduate students, the staff/student ratio is very good for the students. A standard year-based cohort for mechanical and civil engineering may number 15–20. Our vision for naval architecture is in the order of 15 students per year group, being a mix of trainee officers and civilians.

#### **Naval Architecture**

As stated earlier, the team which has been assembled to deliver the naval architecture program comprises Ahmed Swidan, David Lyons and myself. It is possible that others may be recruited and part-time or sessional support may be engaged, and that other staff in the School may contribute but, for the time being, we are the team. Ahmed served as a marine engineer in the Egyptian Navy and in the merchant marine, earned a PhD from the AMC, and was lecturing there before joining UNSW Canberra in 2018. David, following a significant management and consulting career, joined UNSW Sydney part-time in 2000 and full-time in 2014, and worked shoulder to shoulder with Phil Helmore and Mac Chowdhury in delivering the naval architecture program there until its demise. He transferred to UNSW Canberra and SEIT in September this year, bringing with him much corporate knowledge. I had a 20-year naval architecture career in Navy Office before taking up an academic role with UNSW at ADFA in 1998 and have been, *inter alia*, responsible for the maritime-flavoured technical electives in the School since then.

As a team, we aspire to build a world's best practice naval architecture program at UNSW Canberra, but we desire, as does Navy, our distinction to be a grey-ship focus. This is in line with the Navy sponsorship of the program which we expect to be rolled into the main agreement when next negotiated. It is noted that Navy operates vessels of all types but, to begin with, we expect that our emphasis will be on surface ships, including high-speed craft and not submarines. We will begin with the undergraduate program and, in time and as appropriate, grow postgraduate offerings and morespecialised electives. We will accept research students as they align with our, and the broader School's, interests and capabilities.

Given the rich history made at Kensington, this might be seen as a transfer of the program from Sydney to Canberra, but it also represents a conscious effort to tailor the program for Navy in support of the current Defence White Paper, the continuous naval shipbuilding policy, and the requisite foundational skills development in the discipline.

The disciplines of mechanical and aeronautical engineering as currently taught at UNSW Canberra have significant commonality. The differences between the standard aeronautical and mechanical engineering degrees are six core courses and three electives for aeronautical versus five core courses and four electives for mechanical engineering. One of these differences occurs in the second year: Fundamentals of Flight for aeronautical versus Mechanics of Machines for mechanical engineering. Therefore, there are eight differentiating discipline courses in the third and fourth years.

In line with the existing mechanical and aeronautical engineering programs, eight differentiating discipline courses in third and fourth years are proposed for the naval architecture program, building on a common foundation with mechanical and aeronautical engineering. However, these eight courses are prescribed as a mega specialisation within the School, and less opportunity for free choice in technical electives will be the result.

At UNSW Sydney, the naval architectural program had also run in parallel with mechanical engineering for the first two years. This led to an arrangement whereby students who satisfied the requirements of the first two years of an accredited mechanical engineering four-year degree program at any Australasian tertiary institution could be admitted



UNSW Canberra students and staff at Pacific 2019 — a shape of things to come (L to R) SBLTs Sean Buckland, Jeremy Witherspoon, Simon von Limont and Cameron Harper with A/Prof. Warren Smith and Dr Ahmed Swidan The students presented papers on their Year 4 thesis projects related to developments for Subs in Schools (Photo courtesy Alaa Osman)

into the third and fourth years of the program leading to the Bachelor of Engineering degree in naval architecture. The proviso was that the Head of the School be satisfied that the courses studied at the other institution were equivalent, and that their recommendation was given. This arrangement is similarly proposed for the program at UNSW Canberra, and it might be considered a "2+2 model". This will be advertised, and it is expected that several students in the naval architecture program will take advantage of this transfer opportunity.

So, at this stage, as we write program and course learning outcomes, frame courses and scaffold materials, we seek stakeholder input to help us assure that our aspiration to build a world's best practice naval architecture program is achieved. We have prepared a survey and will be distributing it through the community but, in the event that we have not identified you or your organisation as a target recipient, and you would like to contribute to our success, please do not hesitate to contact me via email (w.smith@unsw.edu.au) or other means. We will be seeking information about your expectations of graduates, the number of naval architects in your organisation, your preferences for problem-solving tools, your willingness to provide work experience/ internships/supervision and sponsorship of projects and your ability to host visits.

#### **Summary**

In closing, it is important to note that our program has still to be taken through the University's Academic Board processes so, officially, the naval architecture program does not vet exist. Therefore, we cannot vet advertise for students. We are also not yet listed as an available program in the Universities Admission Centre (UAC) system. But all these things should be in place by mid-2021 and the first third-year naval architecture courses will be taught in 2022. This means that our first graduates have already begun their university education journey somewhere, being in first year (or higher) in 2020. The invitation will be there for those who are interested to join us.

Thus, the keel has been laid. We are, in 2020 and 2021, preparing our materials on the slipway. And then, all being well, in 2021 we will have launched, and we will be truly under way in 2022!

#### A/Prof. Warren Smith

Naval Architecture Program Coordinator School of Engineering and Information Technology UNSW Canberra

#### **UNSW Sydney**

#### Graduations

Nelson Tsang has completed his workplace integrated learning (the new term for industrial training!) requirements, and graduated on 17 August with his degree in naval architecture with Honours Class 2 Division 2. Congratulations, Nelson!

UNSW Sydney has two students still to graduate; both have completed coursework requirements, have completed their workplace integrated learning placements, but have yet to submit their reports, and are expected to graduate early in 2021.

Phil Helmore

A world-first research facility which was opened at the Australian Maritime College in October has state-of-the-art equipment which will aid better understanding of underwater collisions.

Australian Maritime College

**Understanding Underwater Collisions** 

The appropriately-named Underwater Collision Research Facility (UCRF) is the outcome of a four-year collaboration between Defence Science and Technology (DST) and the AMC. Under a Collaborative Research Agreement, Defence Science and Technology funded the purchase of equipment and the University provided the building capital works and support infrastructure to house the facility at its Newnham Campus.

The UCRF aims to provide means through which the complex, fluid-structure interactions involved in underwater collision events can be studied scientifically under laboratory conditions. Accurate knowledge of the response of the foreend structure of a submarine vehicle involved in a collision is important to the safety of the submarine structure and its crew

Developing an understanding of this behaviour may be considered somewhat similar to work performed to prove, and improve, the crashworthiness design of motor vehicles, but in water. Through this work, the technical risks associated with underwater and near-surface collisions, will be able to be accurately assessed, so that effective mitigations may be introduced.

The UCRF equipment includes an 18 kJ drop-weight impact tower capable of performing water backed experiments, a 1.2 kJ drop-weight impact chamber to perform fully-flooded experiments, a 900 000 fps high speed camera and a highresolution laser scanner.

The Defence Minister, Senator the Hon. Linda Reynolds CSC, said that the UCRF was an exciting development which would provide a better understanding of the impact of underwater collisions. "Researchers will look at ways of improving ship and submarine design which will keep our Navy crews safer by improving the safety of our submarines and autonomous underwater vehicles," Senator Reynolds said.

University of Tasmania's Vice-Chancellor, Prof. Rufus Black, said that the facility added to an existing suite of maritime research facilities which are the most advanced in the Southern Hemisphere.

The UCRF will be a centrepiece of the University of Tasmania's Maritime Defence Innovation and Design Precinct to be developed on the Newnham campus.

Australian Maritime College Principal, Michael van Balen AO, said that the UCRF would advance AMC's aim for the MDIDP to become an integral part of the national Defence Network.

"The UCRF will add innovative research knowhow to the work already done at our unique research facilities to advance defence and defence industry requirements," Mr van Balen said.

The UCRF could also play a role in:

Collision and design assessment of autonomous •

#### The Australian Naval Architect

underwater vehicles (AUVs) including those substantially constructed of composites.

- Shock qualification tests for equipment used on naval platforms.
- Support to offshore industry, such as in relation to pipelines and offshore structures subjected to impacts.

#### **Naval Group Apprentices**

Naval Group Australia has opened the call for its largest apprenticeship intake to date with applications open for apprentice fabricators to start in 2021.

The call for applicants for this latest round is expected to see at least 13 new apprentices commence in early 2021 and follows the successful placement of eight apprentices in local SA businesses in 2020.

Naval Group Australia shipyard operations manager, Rory Johnstone, said that the Attack-class submarine program was seeing a significant number of jobs created, including many apprenticeships across all trade disciplines.

"Manufacturing 12 regionally-superior submarines over the next few decades is delivering benefits to our country, local industry, local communities and creating thousands of jobs," Johnstone said.

"This includes both direct roles within Naval Group Australia and indirect jobs created to support the new program including all major trade types, engineering, project management, finance and the supply chain. "These apprentices get the opportunity to learn new skills with our industrial partners in South Australian businesses alongside experienced welders and boilermakers in preparation to work on the future submarine program.

"Our first two apprenticeship intakes received a lot of interest and I expect that it will be no different with this latest round opening today."

The managing director of local SA business Smart Fabrication, Simon Kennedy, said that apprentices learned new skills and were making a strong contribution to local businesses.

"The apprentices get to work with, and learn from, some of the best welders and fabricators that we have here at SmartFab," Kennedy said. "We teach them the key skills they need while they gain a qualification and earn a wage giving them the opportunity to set themselves up for life."

The 13 apprentices will have the opportunity to work in Naval Group Australia and MEGTs host network including Samaras Group, a multidisciplinary heavy engineering and construction company, or Smart Fabrication, a manufacturing and engineering fabrication company.

Once the apprentices have completed probation, they receive a letter of intent which will allow them to take up a role with Naval Group Australia following their apprenticeship and become one of the first tradespeople to work on the submarine program.

### Nuyina Progress



After a month-long journey of nearly 3800 n miles, Australia's new icebreaker RSV *Nuyina* arrived in the Netherlands at the end of August for the final stages of her testing and commissioning. The relocation of the ship to Damen's Vlissingen shipyards from Romania, where work was suspended due to COVID-19, will enable equipment manufacturers to check and test the installation of her complex systems. The ship was towed to the Netherlands because she needs to undergo sea trials before the issue of regulatory certificates required to conduct international voyages under her own power. After sea and ice trials, the ship is expected to be delivered to her owners, the Australian Antarctic Division, in her home port of Hobart in mid-2021

(Damen photo courtesy AAD)

## **MARITIME AWARDS**

#### LR Maritime Safety Award 2019

The RINA Lloyd's Register Maritime Safety Award for 2019 was won by Australian company, Life Cell Marine Safety, the designer and manufacturer of Life Cell, an innovative float-free buoyant device which stores all essential marine safety equipment, and is designed to keep people together in the water and provide a stable platform from which to facilitate rescue.

The judging panel commented:

- When considering maritime safety, it is easy for a professional society such as RINA to overlook the recreational and small commercial sector.
- It is easy to limit consideration of maritime safety to vessel design and the carriage of mandatory safety equipment.
- It is also easy to overlook measures which would improve the effectiveness of mandatorily carried safety gear.

- The panel concluded that the Lifecell constitutes a float-free package which improves the availability and effectiveness of safety gear, over and above a "grab bag", for use by survivors when a small craft sinks.
- Given the number of recreational and small commercial craft, this product has potential to enable the saving of many lives.

The award could not be announced as usual at the RINA 2020 Annual Dinner, and so was officially announced at the Annual General Meeting which took place online on 14 May 2020.

It is also worth noting that another Australian company, ASC Shipbuilding, won the LR Maritime Safety Award in 2017 for a shipyard rapid fire-response system.

### RINA - Lloyd's Register Maritime Safety Award

The Institution believes that safety at sea begins with good design, followed by sound construction and efficient operation. Whilst naval architects and other engineers involved in the design, construction and operation of maritime vessels and structures do not have a patent on such issues, nonetheless their work can make a significant contribution.

The Institution also believes that it has a role to play in recognising achievement of engineers in improving safety at sea. Such recognition serves to raise awareness and promote further improvements.

The Maritime Safety Award is presented by the Institution, in association with Lloyd's Register, to an individual, company or organisation which has made a significant technological contribution to improving maritime safety. Such contribution can have been made either by a specific activity or over a period of time. Nominations may be made by any member of the global maritime community, and are judged by a panel of members of the Institution and Lloyd's Register. The Award will be announced at the Institution's Annual Dinner.

Nominations are invited for the 2020 Maritime Safety Award



www.rina.org.uk/maritimesafetyaward

or by email to: maritimesafetyaward@rina.org.uk

Nominations should arrive at RINA Headquarters by **31 January 2021** 

Queries about the Award should be forwarded to the Chief Executive at: hq@rina.org.uk

### EILY KEARY AWARD

The Royal Institution of Naval Architects is committed to ensuring that all individuals, regardless of gender, faith or ethnicity, have equal opportunity to participate fully in all the Institution's activities. The Institution also seeks to encourage such equality of opportunity and involvement throughout the global maritime industry.

The annual **Eily Keary Award** recognises the contribution by an individual, organisation or part of an organisation to increasing equality, diversity and inclusion in their sector of the maritime industry. Such contribution may have been made by a specific activity or over a period of time. Individuals may not nominate themselves for the Award

Nominations are now invited for the 2020 Eily Keary Award.

The Award will be announced at the Institution's 2021 Annual Dinner.



Nominations may be up to 750 words and should describe the contribution which the individual, company or organisation has made.

Nominations may be forwarded online at www.rina.org.uk/EilyAward

or by email to EilyKearyAward@rina.org.uk

Nominations should arrive at RINA Headquarters by 31st Jan 2021.

Queries about the Award should be forwarded to the Chief Executive at: hq@rina.org.uk

### **RINA-**QINETIQ Maritime Innovation Award

Innovation is key to success in all sectors of the maritime industry and such innovation will stem from the development of research carried out by engineers and scientists in universities and industry, pushing forward the boundaries of design, construction and operation of marine vessels and structures

The Maritime Innovation Award seeks to encourage such innovation by recognising outstanding scientific or technological research in the areas of hydrodynamics, propulsion, structures and material which has the potential to make a significant improvement in the design, construction and operation of marine vessels and structures

The Award is made annually to either an individual or an organisation, in any country. Nominations for the Award may be made by any member of the global maritime community, and are judged by a panel of members of the Institution and QinetiQ. The award will be announced at the Institution's Annual Dinner.

Nominations are now invited for the 2020 Maritime Innovation Award. Individuals may not nominate themselves, although employees may nominate their company or organisation.



**Nominations** may be up to 750 words and should describe the research and its potential contribution to improving the design, construction and operation of maritime vessels and structures.

Nominations may be forwarded online at www.rina.org.uk/maritimeinnovationaward

or by email to: maritimeinnovationaward@rina.org.uk

**Nominations** should arrive at RINA Headquarters by 31st January 2021.

Queries about the award should be forwarded to the Chief Executive at hg@rina.org.uk

## **INDUSTRY NEWS**

#### New Chief Operating Officer for Austal

On 21 September Austal announced that Ian McMillan has been appointed Chief Operating Officer of Austal Australia, effective January 2021, following the transition by Patrick Gregg to Chief Executive Officer and Managing Director in the new year.

Austal's Chief Operating Officer will be based in Henderson, Western Australia, and will have responsibility for Australia, Philippines and Vietnam shipbuilding and sustainment operations, as well as management of Austal's interests in the Aulong commercial shipbuilding joint-venture in China.

Ian McMillan joins Austal from BAE Systems Australia, where he has held several senior executive roles since 2013, including Director of Shipbuilding and General Manager, Shipyards Western Australia. In his most recent role as Director, Maritime Sustainment, Ian was responsible for leading BAE Systems Australia's national sustainment business comprising more than 1000 employees across five locations around Australia, supporting multiple vessel classes for the Royal Australian Navy.

Announcing the appointment, Austal's Chief Executive Officer, David Singleton, and CEO-Designate, Patrick Gregg, said that Ian McMillan's 36-year depth of experience in the Australian and international defence industries, particularly in naval shipbuilding and sustainment, will add great value to Austal's Australasian operations.

"I am very much looking forward to working with Ian to further develop Austal's Australasian operations and maximise the opportunities ahead — in both defence and commercial shipbuilding and sustainment," Mr Gregg said.

"Ian's experience in winning and delivering major defence contracts and operating effective, efficient shipyards and sustainment operations will undoubtedly help us grow our business and achieve even greater returns on our strategic investments throughout the region," he added.

#### Australia and the United Kingdom Cooperate on Frigate Programs

In October Australia and the United Kingdom (UK) further strengthened their enduring defence relationship by signing a Memorandum of Understanding (MoU) to cooperate on building and delivering the next generation of cutting-edge frigates.

The MoU reinforces both countries' commitments to working together on delivering these important high-profile national programs and maximising mutual opportunities.

A key aspect of the MoU is a pledge for information exchange to ensure that shipbuilding best practice is shared and both frigate programmes deliver world-beating maritime capabilities to the Royal Navy and Royal Australian Navy.

The agreement also sets out a framework to enable both nations to utilise the Type 26 and Hunter-class programmes to create jobs and contribute to the growth of the UK and Australian economies, seeking to support small and medium-sized enterprises.

The UK Defence Secretary, Ben Wallace, said that the UK's

defence relationship with Australia was based on deep historical and cultural ties, reinforced by strong operational cooperation.

"The UK and Australia have always been natural allies and this agreement demonstrates this Government's ongoing commitment to the Type 26 shipbuilding program whilst supporting our Australian allies in designing and building the Hunter-class frigate.

"As we look to the future of our respective navies, our shared continued cooperation will benefit not only our close alliance but will also support the industrial supply chain to grow each nation's shipbuilding sectors," UK Defence Secretary Ben Wallace said.

The Australian Minister for Defence, Senator the Hon. Linda Reynolds CSC, said that there are currently seven Australian companies contracted for work on the UK's Type 26 programme.

"This agreement supports the close co-operation between UK and Australian industry," Minister Reynolds said.

"We are already seeing the benefits of cooperation on the two programs, with Australian workers involved in the Type 26 build ready to come home and help build the Hunter-class frigates in South Australia.

"This Government is committed to delivering a continuous naval shipbuilding program and the Hunter and Type 26 programmes provide significant opportunities to capitalise on our shared industrial capability with the UK.

"The MoU will support successful delivery of Australia's Hunter-class frigate program, while also growing key defence capabilities in Australia."

#### Australian Steel for Hunter-class Frigate Prototyping

In September the prime contractor for the Hunter-class frigate program, ASC Shipbuilding, signed a contract with South Australian company Infrabuild Steel Centre to support the manufacturing of the frigates at the Osborne South shipyard.

The contract is for the supply of around 120 t of Australian steel which will be used to support the construction of the Hunter-class frigates.

The Minister for Defence, Senator the Hon. Linda Reynolds CSC, said that the contract was a testament to the continued progress which was being made in the program.

"This contract follows my earlier announcement this year of a contract with Bluescope Steel to provide steel for the prototyping blocks. Both contracts are prime examples of growing our national naval shipbuilding enterprise with the support of Australian steel," Minister Reynolds said.

"The steel from Infrabuild's Port Adelaide facility will be used to make an initial six jig wagons which will hold and support the movement of ship parts around the state-of-theart Osborne shipyard.

"A total of 13 jig wagons will be manufactured, with the fabrication of the jig wagons from this contract marking the first work being done in the new yard.

The Australian Naval Architect

#### **Austal Acquires BSE Maritime Solutions**

On 23 October Austal announced that it is building on its growing global support business by entering into an agreement to acquire the Australian-based BSE Maritime Solutions Group (BSE Maritime Solutions). The acquisition of the business is at an enterprise value of \$27.5 million.

BSE Maritime Solutions is a leading ship repair and support business for defence, commercial, tourism, and luxury vessel customers, operating in Cairns and Brisbane. Current customers include the Australian Border Force, BAE Systems, Thales, and Svitzer. BSE Maritime Solutions employs approximately 60 permanent staff who will be offered employment with Austal.

The acquisition aligns with Austal's stated strategy of continuing to build the company's key support business. Revenue from Austal's support segment has grown at an annual rate of 28 per cent over the past four years to reach \$360 million in the 2020 financial year, providing reliable ongoing revenue in addition to Austal's shipbuilding operations.

Austal's Chief Executive Officer, David Singleton, said "BSE Maritime Solutions is a quality business and its acquisition aligns with our stated strategy of growing our support division, adding further scale to our operations on the east coast of Australia in addition to our existing support services at Henderson, Cairns, and Darwin.

"In particular, the acquisition provides Austal with dockyard and ship-lift capability in the northeast region of Australia — including the Pacific's largest mobile boat hoist, capable of moving 1120 t — supporting our existing and future customers and reinforcing our commitment to grow in the region. It further enhances our in-service support capabilities, currently provided across multiple facilities in Cairns, for the Austal-designed and built Cape-class and Guardian-class patrol boats."

Under the acquisition agreement, expected to settle at the end of November 2020, Austal will acquire all of the shares in BSE Maritime Group Ltd, Brisbane Slipway Holdings Pty Ltd, and Brisbane Slipways and Engineering Pty Ltd.

#### ASC Contract for Sydney Engineering Company

The prime contractor for the Hunter-class frigate program, ASC Shipbuilding, has signed a contract with Sydney-based professional services company GHD Group Limited (GHD) to provide up to 40 highly-skilled Australian engineers to support the prototyping at the Osborne South Shipyard.

The Minister for Defence, Senator the Hon. Linda Reynolds CSC, said that the contract demonstrates the role that the National Naval Shipbuilding Enterprise plays in creating 15 000 jobs for Australians.

"These engineers will form part of the broader shipbuilding workforce which is expected to grow to more than 6000 by 2030 to support a sovereign shipbuilding industry" Minister Reynolds said.

"The shipbuilding workforce is at the forefront of modern naval ship design and construction, driving a digital transformation of Australia's advanced manufacturing and engineering sectors" she said

The Minister for Defence Industry, the Hon. Melissa Price MP, said that the engineers would work across a range of disciplines including structural, outfit, layout and electrical until 2023.

"The creation of these jobs complements the work which ASC Shipbuilding is doing to upskill their current workforce to work on the Hunter-class program through their Diploma of Digital Technology" she said.

#### **PMB Defence Canadian Contract**

PMB Defence (PMB) has won a contract to supply submarine batteries to the Canadian Government for its Victoria-class submarines.

The Adelaide manufacturer, formerly known as Pacific Marine Batteries, will manufacture the lead-acid battery systems at its state-of-the art production, research and development and engineering facilities adjacent to the Osborne Naval Shipyard.

Built in 2020, the facility is designed for the primary role



Austal has entered into an agreement to acquire BSE Maritime Solutions (Photo courtesy Austal)

of manufacturing the main storage battery systems and sustainment of Tier 1 submarines, including Australia's Collins-class boats.

PMB Defence's CEO, Stephen Faulkner, said "The contract with Canada builds on the capability grown from the Collinsclass submarine programme in Australia and various new technology programmes we have with other international customers.

"This work further endorses our strategic objective to be the world's most credible designer and supplier of submarine battery systems."

The Royal Canadian Navy operates four Victoria-class conventional submarines which have been active in the service since 2003.

In June PMB purchased the EnerSys submarine battery business which, together with the new factory, has turned it into an internationally-oriented manufacturing business.

#### Whiskey Project Group Acquires Naiad Design and Yamba Welding

The Sydney-based Whiskey Project Group has acquired the Australian boat manufacturer Yamba Welding and Engineering (YWE) and the New Zealand-based naval architecture firm Naiad.

The Whiskey Project's tactical watercraft, *Whiskey Alpha*, was launched at Pacific 2019, and featured integrated technologies, complete modularity and a hull manufactured from carbon-composite materials.

"The formation of the Whiskey Project Group secures advanced maritime manufacturing capabilities in Australia, with a natural cross over of technology and skilled labour between government, specialist and leisure sectors over time," said co-founder Darren Schuback.

YWE, established in the northern New South Wales coastal town of Yamba by Bill Collingburn in 1974, is a supplier of watercraft for police, Marine Rescue NSW, coast guard, VMR, and defence in Australia. In the past 10 years YWE has built more than 200 vessels for Australian Federal and State Government agencies, including the Australian Defence Force, Australian Border Force and maritime security agencies, whilst Naiad, whose designs are built under license around the world, are popular for a wide range of Federal and State Government military, law-enforcement and rescue-agency vessels, as well as commercial, tourism, recreational and superyacht tender applications. As the



Police patrol boats built by Yamba Welding and Engineering (Photo courtesy YWE)

Whiskey Project Group, this expanded family of watercraft will offer their Federal and State Government partners the industrial assurance and efficiencies of dealing with one sovereign provider, one supply chain of over 50 Australian SMEs, and 100% design authority.

The deal includes Naiad, the New Zealand-based naval architecture business which YWE itself acquired earlier this year from founder Steve Schmidt. Naiad boats are built under license around the world for military, law enforcement and rescue-agency vessels, as well as commercial owners.

#### Indigenous Supplier for Hunter-class Frigate Program

The first Indigenous supplier has been contracted to the Hunter-class frigate project. ASC Shipbuilding has signed a contract with Indigenous Australian company, TQCSI-Yaran, to commence work during the prototyping phase of the Program.

The Adelaide-based company will audit and undertake quality, safety, health and environmental systems certification.

The Minster for Defence, Senator the Hon. Linda Reynolds CSC, said that the prototyping phase is on track to begin next month.

"Prototyping is an essential phase in the building of any complex warship. This will ensure that ASC Shipbuilding's workforce are thoroughly trained in using the state-of-theart digital equipment in one of the world's most advanced shipyards at Osborne in Adelaide," Minister Reynolds said.

"I am proud that BAE Systems Australia's Reconciliation Action Plan and strategic relationship with the Indigenous Defence and Infrastructure Consortium (iDiC) is opening up new opportunities for Indigenous businesses to win work and be an important part of the Hunter-class program.

"Indigenous businesses who are contributing to Defence programs are not only a key part of the Australian economy, but are also providing jobs and supporting the community they represent."

TQCSI Yaran is a majority indigenous-owned and operated business partnered with the Indigenous Defence and Infrastructure Consortium. The iDiC has proven capability in various direct and indirect procurement services to support large defence and infrastructure projects.

ASC Shipbuilding, the prime contractor for the Hunter-class frigate program, is a subsidiary of BAE Systems Australia which has developed a Reconciliation Action Plan and a Strategic Relationship Agreement with the iDiC.

Both initiatives provide opportunities for Indigenous suppliers to become part of BAE Systems' supply chain.

#### More Opportunities for Australian Industry

The Australian Government is examining more opportunities for Australia's local industry in the Hunter-class frigate program with three feasibility studies for Australian industry to participate in the build phase of the first three frigates.

The prime contractor, ASC Shipbuilding, has engaged Queensland-based Craig International Ballistics to investigate an Australian solution for ship bridge windows and armour protection. Adelaide-based REDARC Defence Systems has also been engaged to explore an Australian solution to LED lighting.

A third Australian company, the West Australia-based propeller manufacturer VEEM, is conducting a study to examine security requirements for local propeller manufacture in Australia.

Minister for Defence, Senator the Hon. Linda Reynolds CSC, said that the feasibility studies demonstrates the Government's commitment to maximising Australian industry content in the construction of Defence's new antisubmarine warfare frigates.

"These feasibility studies announced today build on a feasibility study already underway into locally-manufactured main reduction gearboxes for future Hunter-class batches," she said.

ASC Shipbuilding has committed to achieving 58% Australian industry content over the life of the acquisition contract.

The study findings are expected to conclude by the end of this year.

#### Large Machine Tool for Submarine Project

To help construct the Attack-class submarines at Osborne in South Australia, a 5-axis gantry machine is to be supplied by the Switzerland-based Starrag Group.

Described as Australia's largest machine tool, Starrag is supplying a Droop+Rein G 110TT HR100 C vertical gantry machine which is capable of handling both large hull elements and high-precision components for submarine construction. This large production machine features traversing paths of 14 x 13 x 3.5 m in the X-Y-Z axes and an 11 m turntable.



The Droop+Rein G 110TT HR100 C vertical gantry machine to be supplied to Australia (Image courtesy Starrag)

Starrag is collaborating with the Australian machine tool manufacturer H&H Machine Tools Australia. H&H will manufacture key components, supply qualified personnel to help install the gantry, and provide technical support for the entire life cycle of the machine, securing an ongoing role in servicing and maintenance in the future. Starrag will provide H&H with the necessary expertise through onsite training and quality control, transferring critical skills and autonomous ability to Australian industry.

According to the company, the Droop+Rein G 110 TT HR100 C owes its high precision to features such as the

hydrostatic guides in all linear axes, as well as the thermosymmetrical design of the milling unit with its integrated C axis. Milling heads can be changed automatically via a head change interface. Five different machining heads were selected for use on this project. The high-performance fork milling head features not only the ability to use the tool at any angle, but also the necessary prerequisites for heavyduty machining on five axes simultaneously. Alternatively, the machine can be used with one straight and one angled 100 kW milling head with a torque of 7500 Nm. A turret and a horizontal facing head are available for turning operations on the components.

The large, multifunctional machine supplied by Starrag from its Bielefeld, Germany, plant gives the operator optimum access. According to Starrag, the operator can reach any point on the workpiece thanks to the spacious cabin, which travels along the gantry and features a Siemens operator panel. The cabin can reach a height of 8 m and be moved towards the centre of the table.

The gantry's robustness was a factor in its selection. Starrag was able to support this from the success of a previous project carried out in South Australia, for which Starrag supplied four machines for aircraft construction. The company believes that, with proper maintenance, the machine will be operational throughout the entire run of the project.

#### Aegis Combat-system Upgrade

It was announced on 1 September that the RAN's Hobartclass destroyers will undergo an Aegis combat system upgrade. The ships will also have an Australian-developed interface installed to integrate the Aegis combat system with the rest of the ship's systems.

The Minister for Defence, Senator the Hon. Linda Reynolds CSC, said the Hobart-class destroyers are the most capable and lethal warships Australia has ever built, increasing our interoperability with the United States and allowing us to work even closer with our allies and partners.

"As part of the Government's \$270 billion investment outlined in the 2020 Force Structure Plan, we recognise that advanced long-range and hypersonic missiles and directed-energy weapons require the ADF to continuously build robust air and missile defence capability options," Minister Reynolds said.

"The Aegis combat system is the brain of Navy's integrated air and missile defence capability. In the face of compressed timelines and to protect Australian forces, Defence requires the agility to sense, decide and take action against contemporary and future threats."

"Recently at RIMPAC 2020, HMAS *Hobart* successfully conducted coordinated surface-to-air missile firing demonstrations using the current version of the Aegis combat system, demonstrating interoperability with the United States and our ability to field air missile defence capabilities."

"The upgraded version of the Aegis combat system for the Hobart-class destroyers will also be installed in the new Hunter-class frigates, providing Defence with worldleading technology while improving sovereign shipbuilding capability."

#### November 2020

As part of the Government's enterprise approach, the Australian interface will be designed and developed by Saab Australia, leveraging their combat management system experience gained across the rest of Navy's surface fleet. The Australian interface will also be common across both the Hobart and Hunter classes.

Work in Australia to install the new Aegis combat system and Australian interface in Navy's destroyers and frigates is planned to commence in 2024.

#### New Orders for Wärtsilä in Cruise Ship Sector

Wärtsilä is working with the Italian shipbuilder Fincantieri for the supply of a broad range of equipment to be installed in a number of cruise ships currently being built by the yard. The latest orders are for complete waste-treatment systems and fresh-water generators for two vessels — the order was placed in July 2020 - and for the entertainment systems for two new series of ships totalling eight vessels in all, the first orders for which were placed with Wärtsilä in the first quarter of 2020. In August 2020 Wärtsilä was additionally contracted for a complete technological package supply for two other vessels, including Wärtsilä 46F engines, selective catalytic reduction (SCR) solutions, hybrid scrubbers, automation, navigation and local entertainment systems, low location lights, valves, public address and general alarm systems. All these ships are owned by different cruise operators.

The waste-treatment solution includes the handling of both wet and dry waste. Wet waste is treated with Wärtsilä's Membrane Bioreactor technology and includes upstream handling which meets and surpasses the latest IMO regulations. The dry-waste package to be supplied will be the first for a large cruise vessel to incorporate Wärtsilä's Micro Auto Gasification System (MAGS), a novel technology which converts waste to energy, allowing the unit to be fuelled by synthetic gas from the waste. This is an eco-friendly solution which creates significantly lower levels of greenhouse gas emissions than conventional incinerators, thus meeting sustainability targets set by the ships' owner.

The Wärtsilä entertainment systems have been designed by Wärtsilä to provide the highest level of quality and performance which will ensure the ultimate passenger experience. For these new ships, Wärtsilä Entertainment will not only supply turnkey entertainment systems, but also LED architectural lighting, as well as the public address and general alarm systems.

The waste-treatment systems are scheduled for delivery in the fourth quarter of 2021. The entertainment systems will be delivered in line with the vessels' delivery dates commencing in 2022.

Earlier, in 2019, Wärtsilä received orders from Fincantieri for twenty Wärtsilä 46DF dual-fuel engines, twenty Wärtsilä 46F engines, eight Wärtsilä LNGPac fuel storage, supply and control systems, two Wärtsilä hybrid scrubber systems, as well as Wärtsilä Selective Catalytic Reduction (SCR) solutions, and Wärtsilä gas valve units for the cruise ships under construction at the yard.

#### Wärtsilä meets Needs of Canadian Coast Guard Icebreaker

Wärtsilä won a contract in July for the delivery and integration engineering of two retractable thrusters and a dynamic positioning (DP) system for CCGS *Amundsen*, a Canadian Coast Guard (CCG) icebreaker.



Wärtsilä is working closely with the Italian shipbuilder Fincantieri for the supply of a broad range of equipment to be installed in a number of cruise ships being built by the yard (Image courtesy Fincantieri)



#### CCGS Amundsen (Canadian Coast Guard photograph)

Wärtsilä was able to meet the CCG's challenging requirements for build quality and fitting the equipment in the existing space of the 98 m long, 1979 built Arctic Class 3 medium icebreaker, the only vessel in its class to be fitted with retractable thrusters and DP. The new thrusters will be integrated with the existing bow thruster, which is also a Wärtsilä product.

"The Platinum DP system will exceed the functionality desired by the CCG, and will enhance the DP capacity of the vessel to perform sailing and manoeuvring operations. By offering the most intuitive user interface on the market, Platinum DP also reduces the training requirements for successful system operation. The user interface plays a critical role in helping operators make the most of the system in the trying conditions found in Canada's Arctic waters," said Mike Ford, Sales Manager for Americas and DP at Wärtsilä Voyage.

The Wärtsilä equipment is scheduled for delivery in September 2021.

#### Wärtsilä powers World's Largest NGO Hospital Ship

Wärtsilä announced in October that Mercy Ships, a philanthropic organisation providing essential healthcare to needy patients in developing countries, will be utilising its engine technology in the organisation's new hospital ship.

When completed, *Global Mercy* will be the world's largest vessel of its kind, and will be powered by four Wärtsilä 32 engines. Wärtsilä will also provide a five-year service maintenance agreement.

The comprehensive agreement covers parts, field service, asset monitoring, and full technical support to keep the hospital ship running at all times. Mercy Ships expects to take delivery in 2021, and the ship's maiden voyage is planned later in the year to Africa where crew will provide vital surgical care at no cost.

The Wärtsilä engines are double resilient mounted, and comply with the DNV VIBR vibration classification. This smooth-running capability is of special importance for a hospital ship with onboard surgical operations taking place. The supporting maintenance contract is part of the company's Lifecycle Solutions offering. It provides guaranteed operational reliability with performance targets determined from measured data. The measurable indicators can include, for example, availability, reliability, and fuel consumption. The agreed targets are reached through automated key performance measurements, optimised maintenance, and remote advisory.

Previous hospital ships have all been conversions from passenger ships and other vessels. The 174 m long, 37 000 t *Global Mercy* is a one-of-a-kind ship. She features 12 decks, two of which are for the hospital, including six operating theatres, 102 acute care beds, and 90 self-care beds. The vessel accommodates a crew of up to 641 volunteers, and additional space can host up to 950 people at any one time when in port.



The latest Mercy Ships' floating hospital, *Global Mercy*, will be powered by four Wärtsilä 32 engines supported by a five-year service maintenance agreement (Photo courtesy Mercy Ships)

## MEMBERSHIP

#### **Australian Division Council**

The Council of the Australian Division of RINA met on the afternoon of Tuesday 15 September 2020 by teleconference under the chairmanship of our President, Gordon MacDonald, in Airlie Beach with links to Cairns, Gold Coast, Newcastle, Sydney, Canberra, Melbourne, Launceston, Adelaide and Perth.

Among the items discussed were:

#### **Registration as Not-for-profit**

Council continued progressing with its efforts for registration under Australian law, noting that the Institution is registered as a Charity in the United Kingdom.

#### Division Representation on Institution's (London) Council

As a number of members of the Division are understood to be interested in joining the Institution's Council, Division Council was informed that the Call for Nominations was normally published in *RINA Affairs* towards the end of the year.

#### Walter Atkinson Award 2020

Council thanked the WAA panel for its work and endorsed its selection of the Pacific 2019 IMC paper by Sally Garrett and Tom Durrant *Characterising the Southern Ocean and Ross Sea Wave Climate*, (nominated by NSW Section and published in the May 2020 edition of *The ANA*) as the best paper presented to a Division forum in the year to 30 June. Given that the authors are based in New Zealand, Council authorised the Secretary to make arrangements with the winners for presentation of the Award.

#### **Coordination of Section Technical Meetings**

Council agreed in principle to the development of a Division calendar page on the website to facilitate coordination of technical meetings so that the virtual meetings can be readily attended by members across the Division. It was agreed that coordination arrangements should be made between the respective Section meeting coordinators.

#### **Appointment of new Chief Executive**

Council noted that Chris Boyd had been appointed to succeed Trevor Blakeley as Chief Executive, commencing on 1 November 2020.

#### Next Meeting of Division Council

The next meeting has been tentatively scheduled for the afternoon of Tuesday 8 December 2020.

The draft minutes of the meeting are available to Council members on the Council forum and are available to other members by request to the Secretary.

#### **Pacific News**

While events over the past couple of months have conspired to prevent me compiling a Pacific News column for this issue, it should be noted that the recent Australian Budget included provision for an Australian-Solomon Islands border and patrol boat outpost (see https://www.defence.gov.au/ SPI/defence-pacific-engagement/patrol-boat-outpost.asp).

Rob Gehling Secretary ausdiv@rina.org.uk Phone 0403 221 631

#### **Changed contact Details?**

Have you changed your contact details within the last three months? If so, then now would be a good time to advise RINA of the change, so that you don't miss out on any of the Head Office publications, *The Australian Naval Architect*, or Section notices.

Please advise RINA London, *and* the Australian Division, *and* your local section:

RINA London hq@rina.org.uk Australian Division

	rinaaustraliandivision@iinet.net.au
Section	
ACT	rinaact@gmail.com
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Phil Helmore



#### NOMINATIONS FOR DIVISION COUNCIL

Nominations are invited from Corporate Members (MRINA or FRINA) and Associate Members (AMRINA) for election to Division Council for a term of two years from March 2021. The majority of these elected members must be Corporate Members. Nominations, which must be in writing and include the signatures of the proposer, seconder and nominee, should be received by the Secretary no later than Thursday 31 December 2020.

 Rob Gehling

 Secretary, Australian Division

 Mail:
 PO Box 462, Jamison Centre, ACT 2614

 email:
 ausdiv@rina.org.uk

 Phone:
 0403 221 631

## NAVAL ARCHITECTS ON THE MOVE

The recent moves of which we are aware are as follows:

Zia Ahmed has moved on from Thales Australia (in Sydney, but commuting from Canberra) and has taken up the position of Senior Systems Engineer with Nova in Canberra, on contract to CASG Ships Division of the Department of Defence supporting the acquisition-and-acceptance process for the RAN's new AORs under Project SEA1654 Phase 3.

Michael Andrewartha continues as Principal Engineer with VEEM, but has recently taken on a part-time position as a Fluid Dynamicist with Electro. Aero in Perth, a company developing electric propulsion technology for light aircraft.

Adam Brancher continues as Managing Director of Kedge, and has taken on the position of Managing Director of Southern Ocean Carbon, a carbon capture and sequestration start-up company, in Hobart. Friends can find out more about the company at www.southernoceancarbon.com.

Kathryn Dawes has moved on within the Naval Technical Bureau, Department of Defence, and has taken up the position of Signatures Cell Lead in Canberra.

Nathan Gale has moved on within KPMG Australia and has taken up the position of Associate Director in Sydney.

Mary Garcia moved on from Keppel Batangas Shipyard in the Philippines and took up the position of Project Administrator at Noakes Group in Sydney three years ago.

Martin Grimm has resigned from the position of Signatures Cell Lead in the Navy Technical Bureau, Department of Defence, following a career in the Navy Engineering Division (under various guises), with shorter placements at NQEA Australia, Transfield Defence Systems and Seastate during that time. His intention now is to enjoy family life, work on completing much-delayed home improvement projects and, hopefully, still find time to pursue his hydrofoil interests as a hobby.

David Lyons has moved on from UNSW Sydney and has taken up the position of Lecturer in the School of Engineering and Information Technology with UNSW Canberra. He will spend the next year developing the naval architecture program to suit Defence requirements, and working mainly from his home in Queensland. Face-to-face teaching of the Year 3 students will commence in Semester 1 of 2022 in Canberra, with that first cohort of naval architecture students graduating at the end of 2023.

Adrian MacMillan has moved on within Woodside Energy and has taken up the position of Sangomar FPSO Hull and Marine Lead in Perth.

Murray Makin continues as Naval Architecture Support Manager at Thales Australia, Garden Island, in Sydney.

Sean Mason has moved on from the WA Department of Transport and has taken up the position of Senior Naval Architect with the Australian Maritime Safety Authority in Perth.

Doug Matchett has moved on within the Australian Maritime Safety Authority and has taken up the position of Naval Architect in the Flag State Control section in Sydney, but now working from home in Wollongong in these COVID-19 restricted times. Minh Pham moved on from the Shipbuilding Industry Corporation in Vietnam in 2016 and has taken up the position of Chairman and CEO of Vietnam Shipbuilding Engineering in Hanoi, Vietnam.

Neil Pollock has moved on from DNV GL and is now consulting as Pollock Energy Consultants in Brisbane, supporting renewable energy and LNG projects onshore and offshore in Australia and South-east Asia.

Dauson Swied has been awarded his Master of Science degree in advanced mechanical engineering by Imperial College, London, returned to Australia, and has now taken up the position of Project Engineer/Manager with Baker & Provan in Sydney, providing heavy fabrication, machining and support services to the Defence, rail, mining and industry sectors.

Belinda Tayler has moved on from Noakes Group and is consulting as BT Marine, contracting to Defence as the Asset Transition Manager for the MDMS SPO (Maritime Docks and Marine Services System Program Office), a new SPO which is looking after the DMS (Defence Marine Support Services) contract, which basically includes all the support craft and tugs for the Royal Australian Navy.

This column is intended to keep everyone (and, in particular, the friends you only see occasionally) updated on where you have moved to. It consequently relies on input from everyone. Please advise the editors when you up-anchor and move on to bigger, better or brighter things, or if you know of a move anyone else has made in the last three months. It would also help if you would advise Robin Gehling when your mailing address changes to reduce the number of copies of *The Australian Naval Architect* emulating boomerangs.

Phil Helmore

### THE AUSTRALIAN NAVAL ARCHITECT

#### Contributions from RINA members for *The Australian Naval Architect* are most welcome

Material can be sent by email or hard copy. Contributions sent by email can be in any common word-processor format, but please use a minimum of formatting — it all has to be removed or simplified before layout.

Photographs and figures should be sent as separate files (not embedded) with a minimum resolution of 200 dpi. A resolution of 300 dpi is preferred.

#### November 2020

## FROM THE ARCHIVES

#### Ferry Rodney Incident

*Rodney* was one of the Rosman ferry fleet, built in 1937 by W.L. Holmes and Co. of North Sydney. Her 80 hp (60 kW) Vivian diesel engines could push her to 8 kn. The wooden ferry was 16.9 m long, had a beam of 4.7 m and was 33 tons gross. She was licensed to carry 211 passengers, 60 upstairs and 151 on the main deck.

In January and February 1938, USS *Louisville* (CL/CA-28), a Northampton-class cruiser, undertook a Pacific goodwill tour which took her to Hawaii, Samoa, Australia, and Tahiti. In Sydney Harbour for 18 days, she was one of seven foreign warships in Sydney for the sesquicentenary of the arrival of the First Fleet at Sydney Cove.

On the afternoon of Sunday 13 February 1938, thousands of Sydneysiders came to watch *Louisville* leave for Melbourne. The cruiser, with 600 uniformed sailors lining the decks, left her berth at Woolloomooloo with bands playing and onlookers cheering. She made her way towards the Sydney Heads under the command of Captain Robert Mathewson. Among the scores of vessels following the cruiser down the harbour was *Rodney*, skippered by owner Charles Rosman, whose passengers had paid a shilling to see off the American cruiser. Rodney had 150 passengers on board, less than her total licensed limit of 211. However, as the ferry drew alongside *Louisville*, excited passengers rushed upstairs so that the upper deck was carrying about 100 passengers, well in excess of the upper deck's limit of 60, and making the ferry top heavy.

Between Garden Island and Bradleys Head, *Rodney*'s passengers shouted to the skipper to take the ferry around to the cruiser's port side. As the ferry changed course to pass behind the stern of the larger ship, the crowd rushed over from ferry's port side to the starboard side, giving her a list. The shift in mass caused the ferry to roll precariously in *Louisville*'s wash, and *Rodney* began to capsize with passengers falling down the steeply-sloping deck. Passengers spilled into the water and the boat rolled over and sank within a couple of minutes in 15 m of water.



Rodney listing to port before capsize on 13 February 1938 (Photo courtesy Bill Allen)

Passengers grabbed at floating seats or each other to stay afloat. Others had been knocked unconscious and drowned. Passengers on the lower deck inside who could not break windows to escape were taken down to the bottom with the ferry.

The police launch *Cambrai*, carrying the police band, gave four sharp whistle blasts in a call for assistance. The Manly ferry *Barrenjoey* and 20 launches were nearby and came to assist. 16 band members aboard *Cambrai* jumped into the water to rescue those thrown from the ferry. Seven sailors from *Louisville* dived from the cruiser before an order for action stations was called. Life jackets, four lifeboats and two motor launches were quickly lowered from the cruiser.



Barrenjoey and other ferries and craft rescuing passengers from the sunken *Rodney* on 13 February 1938 (Photo from *Daily Telegraph* website)

*Louisville* took 26 survivors on board, 18 of whom were unconscious and taken to the ship's hospital for treatment by a navy surgeon; all but one survived. *Cambrai*'s crew rescued 20 and bandsmen attempted resuscitation on her deck. A large motor cruiser, *Celere*, took on board 15.

Survivors were brought ashore at the Man o'War Steps, adjacent to what is now the Sydney Opera House. 12 ambulances ferried 100 people to Sydney and St Vincent's hospitals.

Initially, police had thought 27 had died; however, before morning, eight of the missing had turned up. The final death toll was not confirmed until the ferry was raised from the bottom of the harbour and the bodies of seven of those trapped inside were recovered; 19 people died, of whom 17 were women, one a man and another a seven-year-old boy. *Louisville* continued to Melbourne that night. Two days later a ceremony was held on board and a wreath dropped at sea by the ship's seaplane. Some crew flew to Sydney the following Saturday to attend funeral services for victims.



Rodney being raised from the harbour bottom on 16 February 1938 by the Maritime Services Board's steam sheerlegs floating crane (Photo courtesy Australian National Maritime Museum)



Rodney emerging from the water (Photo courtesy Bill Allen)

After re-floating, *Rodney* was refitted and renamed *Regis* and returned to service. On 14 May 1938, the boat was repossessed by the mortgagee but rented by Rosman from June, still under the name *Regis*.

On 1 May 1939, the High Court of Australia found that the vessel had capsized through negligence. Charles Rosman lost his captain's ticket for three years, although he ran his

ferry business into the 1970s. Damages of £200 was awarded to one of the survivors, Laura Nagrint. As part of the ruling, the judge stated that if the fine was not paid within three weeks, the ferry would be put up for sale to cover the costs. *Regis* was put up for auction by the High Court on 27 June, but the highest bid of £1500 was below the assessed value.

Her name was changed again in 1939 to *Regalia* and she continued to serve in the Rosman Ferries fleet, moored at Mosman Bay through to the 1980s. She was used on Botany Bay in the 1980s and in 2004 sank in the Georges River off Taren Point and was broken up.

#### Wikipedia

[The Rodney incident subsequently started the Maritime Services Board's Chief Naval Architect, Bill Armstead, on a quest for stability criteria (then in their infancy) against which he could check the stability of Rodney and, then, other commercial vessels. He ended up with a copy of Jaako Rahola's doctoral thesis, The Judging of the Stability of Ships and the Determination of the Minimum Amount of Stability — Especially Considering the Vessels Navigating Finnish Waters (a stability landmark published in 1939; see The ANA, May 2017, Page 16). For many years, the watch-word at the MSB was "Remember Rodney"—Ed.]

#### A Pandemic Launching



Some are wearing face masks but social distancing was clearly to become a 21st Century concept. The official party and guests at a Cockatoo Dockyard launching during the Spanish Influenza pandemic a century ago (Photo John Jeremy Collection)

The Manly ferry *Freshwater* giving her passengers a taste of the sea on a regular voyage to Sydney from Manly. Built by the State Dockyard in Newcastle and completed in 1982, *Freshwater* and her three sisters are now approaching 40 years old. The NSW Government plans to replace these popular ships with 400-passenger Emerald-class catamarans. It could be a bumpy ride for some (Photo John Jeremy)

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