THE AUSTRALIAN NAVAL ARCHITECT

Volume 29 Number 2
August 2025

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The conference coincides with the prestigious Royal Australian Navy Sea Power Conference and the Indo Pacific International Maritime Exposition which is organised by AMDA Foundation Limited.

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AO FTSE HONFIEAUST ENGEXEC
Chief Executive Officer
Engineers Australia

KEYNOTE SPEAKER

PROF SCOTT TYO
Chief Platforms Division
Department of Defence, Australia

KEYNOTE SPEAKER

ALEX WALSH
Chief Nuclear & Capability Officer
ASC

KEYNOTE SPEAKER

MAL WISE
Principal
Australian Maritime College (AMC)

INDO PACIFIC
INTERNATIONAL MARITIME EXPOSITION

IMC 2025 is held in conjunction with **Indo Pacific 2025**
For more infomation: **event.indopacificexpo.com.au/IMC**
Contact the IMC Secretariat: **imc@amda.com.au**

THE AUSTRALIAN NAVAL ARCHITECT

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STS *Young Endeavour* alongside HMAS *Cairns* for open day in Navy Week 2025
(Defence Imaging)

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RINA Australian Division
on the
World Wide Web
www.rina.org.uk/publications

From the Division President

To all our Australian RINA members and everyone reading this freely distributed journal, welcome to the August edition of your favourite, informative and most relevant publication on Naval Architecture in Australia. And for this I must thank most whole heartedly Rob, Martin, Jack, Jennifer Trevor and Noel for devotion and skill at stepping in for bringing this edition together. Also thanks to all our other regular contributors such as Hugh for his recollections of the HMAS *Success* construction project.

It is truly with a sense of trepidation that I feel as I write this. Am I really fulfilling the goals of everyone who has gone before me? I feel this as I have personally felt the loss of some key people in RINA Australia Division, people who were founders of the Division and stalwarts in shaping it to what it is today. I can speak from personal experience of the teaching and mentoring I have received over the years and I can only try and hope that I can be using that experience to do the same again, "pay it forwards" as it were. One thing is for sure though, the maritime industry needs naval architects, and naval architecture needs people! RINA and indeed the Australian Division of RINA is needed to help the discipline live its best life.

Since February we have seen technical presentations on:

- "From Naval Architecture Dreams to Composite Engineering Reality" by Warren "Skip" Miller of Composites Consulting Group on 5 March
- "The Use of Wargaming as a Concept Analysis Tool and Aid to Requirement Development for Maritime Projects", by David Manley from University College London on 12 March
- "High-Speed Aluminium Craft: Modern Design Approaches" by Dougal Harris from Incat on 18 March
- "Reducing Australia's Shipping Emissions: Strategies for sustainable solutions" technical meeting hosted by PIANC om 25 March
- "Operating Marine Engines on Alternative Fuels" by Manulal Inasu of MAN Energy Solutions on 2 April
- "The Structural Design, Construction and Condition Monitoring of Sailing Craft Appendages" by David Lyons from UNSW on 8 April
- "Aging Platforms: Issues for Naval Architects" by Glenn Brown of BMT on 16 April
- "Stability Assessment of a Catamaran Using High-throughput Testing and Sea Trials" presented by Nigel Matthews of Oceans Rivers Lakes on 7 May
- "Haps and Mishaps" at the Launceston Ship Lift" by Alan Muir on 20 May
- "Damage Stability in Warship Design and Sustainment" by David Smith of KBR on 3 June
- "WHS – Where did it come from?" by Daniel Quick of Defence (Navy) at Norship on 10 June
- "The Great Windships" by Brian Stafford on 17 June
- "Naval Ship Technology" by Philip Dovey of Lloyds Register on 18 June
- "Adaptation under Constraints: A Naval Architecture Case Study in Tanker Conversion" by Hossein Enshaei from AMC on 15 July
- "Development of Modular Pneumatic Ship Launch Method" by Peter Gawan-Taylor of Bastion Defence (formerly Austal Philippines) on 22 July

Jonathan Binns

These presentations offer an amazing way to find out what Naval Architects are doing around Australia and increase your CPD. They were all publicised through your local secretaries, you can attend in person if you're in the state at the time and meet up with other professionals just like you! If you did miss these (like me) you can also catch up on a few of them through the RINA YouTube channel at https://www.youtube.com/@RoyalInstNavArch

We have held one Australian Council and two RINA HQ Council meetings since the last edition of the *ANA*. From the HQ Council we were aware of and played our part in the recruitment of the new CEO, Paul Jobson. Paul was appointed on 30 June and he attended the last HQ Council meeting on the evening (AEST, ACST AWST) of 16 July. Paul has a career in leadership and management of complex organisations such as professional bodies for over 20 years. From the RINA HQ LinkedIn page:

> *Paul will lead the Institution into its next chapter — championing our members, fostering collaboration across borders, and ensuring RINA continues to drive meaningful change in the global maritime industry. His appointment was formally announced at the RINA*

AGM and Annual Dinner on 22 May 2025 — a fitting occasion to mark the beginning of this new chapter for the Institution and our global community.

These guiding words have certainly made the themes of the HQ Council meetings, with the launch of the revamped *Naval Architect*, the consolidation of RINA publications, the focus on member needs, the reinvigoration of the conference scene and the introduction of new STEM initiatives. All within a realistic financially realisable framework.

With the Australian Council meetings, we have been concentrating on keeping the business of RINA Australian Division going (eg the Domestic Commercial Vessel Working Group, planning for IndoPac, helping out with STEM outreach), but also on our succession planning. We do need volunteers at all levels, we have developed an array of potential activities but involvement of members is essential to making them happen.

There are many local section events coming up, please get in touch with your local secretary for information, but the one national event we have is of course the IndoPac Exposition and series of symposia. From the point of view of naval shipbuilding, this event will continue to grow, which is an amazing statement in itself. I don't believe any year has seen this event shrink in any way in the last 25 years. And with good reason! The rubber is truly hitting the road from the 2017 Naval Shipbuilding Plan with ships being commissioned and there are many more to come. The commissioning of *HMAS Arafura* as the first of the OPVs, the continued production of the Guardian and Cape Class Patrol Boats and the continued expansion of Austal are all mentioned in this one ANA; a true reflection on the pace of production all happening within the last 3 months. I'm sure you've seen reports of the world's largest battery powered vessel coming out of Incat sheds!

In preparing this short intro I did have a look around at statistics on new vessels in Australia and found an interesting report by Robert Maher from AMSA on new commercial vessels from 2023-2024 (see https://www.amsa.gov.au/news-community/newsletters/survey-matters/new-build-trends-australias-domestic-fleet-2023-24). Although not all of the 1,445 vessels listed were built in Australia, all need to operate in Australia and need the maritime industry to keep serving Australia. The demand for maritime specific engineering is growing.

Finally, and most importantly, the Institution cannot operate without those who volunteer to fill important roles, so we are always on the lookout for more volunteers to assist with how the Australian Division and sections run. The critical positions of Secretary, Treasurer, IMC Organising and Program Committee chairs and a Chief Editor for *The ANA* (5 positions in total) will be needed to be filled over the coming months. We have position descriptions for these specific roles, but we should always stay open to ideas, so if you do think of ways to combine, divide or restructure these roles, do get in touch.

Signing off with, please do join your local committee, please do contribute to and indeed propose new activities of the local Sections and indeed those of the Division and the wider Institution, our members are what have made and continue to make us.

Jonathan Binns

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Editorial

The end of an era flagged in the editorial to our "April" issue has now arrived with the passing of our Chief Editor, John Jeremy as initially notified in a stop press item to the editorial in that issue.

John always emphasised that his editorship was a partnership with Phil Helmore and expressed the intent that both members of this team would retire together. No one could have predicted that this prediction would be realised not by retirement but John's passing following a thankfully short battle with pancreatic cancer so soon after Phil's loss after a more prolonged cancer struggle.

Featured in this issue is a vale column to John which illustrates his momentous contribution to not only this journal but also our profession and the Institution more broadly, not to mention Australian shipbuilding, maritime history, sailing and the influence he had through his contacts with senior serving and retired naval officers. As an extra nod to John, From the Archives also features *HMAS Success*, a vessel whose construction process and the subsequent closure of Cockatoo Island Dockyard dominated a large portion of his professional life.

As flagged in the April editorial, this journal is now in a similar situation to that faced in 1998 when John and Phil stepped in to save it from closure. Whilst Martin Grimm, Jack McLaren, Trevor Ruting and Jennifer Knox have stepped in with expressions of support from several others to secure John and Phil's *ANA* legacy for the time being, these arrangements are not sustainable beyond the short term. To assure the future of this journal, more volunteers will be needed who are prepared to regularly contribute relatively small amounts of their time and efforts. If it continues into 2026, the journal will not necessarily carry the familiar format and content but all contributions are welcome as to how it might look into the future.

But, noting that naval shipbuilding and sustainment forms a large part of the work of our Division members, what does the future look like in this area? There are several things in the news that indicate we are in for some significant changes.

Firstly, pressure is emanating from the Trump Administration for its strategic partner countries to increase defence spending to about 5% of GDP and cover the cost of those countries' defence rather than rely on the United States. This has resulted in a response from the Australian Government that it would decide on Australia's strategic needs and spend accordingly. These pressures are of particular significance when it is considered that they coincide with the United States' review of the AUKUS deal which some commentators suggest might result in the imposition of conditions such as greatly increased

defence spending that would be unacceptable to Australia. At the same time, some influential people such as Peter Varghese, former DFAT head, have stated that Australia's commitment to AUKUS submarines is distorting consideration of the nation's defence and needs to be reconsidered.

Another indicator of the need for increased defence spending is the Auditor-General's performance audit report on the sustainment of the LHD ships *HMAS Canberra* and *HMAS Adelaide* that was issued on 27th June 2025. Among other things the report concluded that:

> "Risks arising from an accumulation of defects and maintenance backlogs over several years have materialised……. "
>
> "Defence did not implement fit-for-purpose planning and value for money procurement arrangements to support LHD sustainment….."
>
> "Value for money and the intended sustainment outcomes were not achieved through Defence's procurement processes……";
>
> "Sustainment of the LHDs was not managed effectively by Defence through its prime contractor arrangements……."; and
>
> "Sustainment outcomes have largely met Navy's requirements for the operational use of the platforms. The long-term availability and reliability of the LHDs is at risk primarily due to the accumulation of urgent defects, maintenance backlogs and shortfalls in personnel to undertake organic level maintenance. As a result, the LHDs have experienced critical failures, impacting on Navy operations."

That said, the task of sustainment in this case commenced in catch-up mode, with sustainment task being historically chronically underfunded, these ships accepted into service with thousands of outstanding deficiencies and equipped with somewhat unproven propulsion systems.

On face value it would seem that this problem might be resolved by directing more resources into the sustainment of these ships, but the quotes above indicate that the resources need to be directed towards more effective procurement of sustainment, contractual compliance and managing the value for money of that procurement.

Another aspect of Defence budgeting is that on 16th July the Asia-Pacific Defence Reporter published an article stating "Service Chiefs have been directed to cut 1-star and above positions by 30%. A reduction of similar magnitude is under consideration for APS staff." Such a move would, if carried out, result in on-going budget savings but may be indicative of an attempt to bring the employment profile of Defence closer into line with that of the defence structures of allied countries. The APDR report states that there seems to be no change to the structure and function of the Department. However the loss of knowledge and skills from such a "purge" would hardly fit in with expanding the defence force as is to be expected if there were to be an expansion of the defence budget. It needs also to be noted that the human resource making up the defence force is already deficient, as indicated by the current unavailability of sufficient crew to keep more Navy ships operational.

So what does this mean for naval architects and other maritime engineers?

- The future of the AUKUS submarine project being carried through to fruition depends on how Australia is able and willing to react;
- The Auditor-General's report indicates the need for substantial improvement in the establishment and monitoring of sustainment of the LHD, and possibly other Navy, ships;
- Any substantial increase in funding for Defence does not necessarily mean procurement of new vessels beyond those already announced;
- On the other hand there may be room within the existing Defence budget for improved taxpayer value-for-money without necessarily detracting from the size of the defence force, particularly the Navy;
- Purported top-heaviness of the management of the Defence Department may be close to being addressed;
- The crew shortage points towards the increased importance of robotics and technologies that reduce crewing needs;
- Any increased Government spending on Defence will need to be viewed in terms of cost-effectiveness of where that spending is directed and in achieving a balance between procurement of assets, sustainment and securing the skilled human resources needed for those assets to be operational.

Noting that the above summary has been drawn from press reports by someone without any inside information, it would appear that Defence is heading for interesting times!

However, irrespective of the Government's decisions on these matters it is our responsibility as professional engineers to apply our knowledge and skills to maximise the practical and effective implementation those decisions on behalf of our employers and clients.

Finally, it is likely that this issue will be the last *ANA* published under the current format. A facilitated workshop of *ANA* volunteers was held on 15th August, resulting is a recommendation to move towards making this magazine fully digital, through a transition process that is likely to take about a year. If the Division Council meeting next month agrees, the first steps in this transition may be apparent in the November issue. It is intended that, following the digital transition, the magazine will encourage readers to submit conversation-starting articles and papers and provide for feedback discussing that content. In the meantime members are encouraged to provide feedback as Letters to the Editor.

Rob Gehling

Coming Events

ACT Section

23 September '25 Technical presentation by David Smith from KBR on nuclear propulsion

14 October '25 AUKUS Submarines Update by Adjunct Professor Martin Renilson at UNSW Canberra

NSW Section

3 September '25 Technical Presentation by Alan Steber, General Manager Steber International on "Steber 43 Hybrid Diesel-Electric Workboat" at Royal Prince Edward Yacht Club

1 October '25 IMarEST technical presentation details TBA

4 December '25 SMIX Bash 2025

Tasmanian Section

19 August '25 Technical presentation by Peter Thurling "Update on the Australian Institute of Marine Science Research Vessel" in Hobart streamed to Launceston

16 September '25 Technical presentation by Eric Gubesch of AMC and Blue Economy CRC on "The Hydrodynamic Performance of a Novel Fish Pen" in Launceston streamed to Hobart

21 October '25 Technical presentation details TBA in Hobart streamed to Launceston

AMC (UTAS) Presentations Day, Reunion Dinner and Maritime Engineering Technical Forum Day: 30-31 October 2025

From Dr Rob Palmer, Manager - Sales & Development, AMC Search, Australian Maritime College

As we head towards the 45th anniversary of AMC and the 35th year since our first students graduated with a Bachelor of Maritime Engineering degree, I wanted to provide a quick update and to encourage you to register and attend the Annual Presentations and Technical Forum.

The Maritime Engineering Technical Forum on Friday will consist of a variety of sessions, including:

- *Opening Remarks by the AMC Principal, Mal Wise*
- *A Keynote Address*
- *Maritime Decarbonization – Electric Ferries*
- *Coastal & Offshore Technology*
- *Future of the Maritime Sector*
- *Strengthening Alumni & Industry Networks*
- *Open Forum: Alumni Reflections & Interactive Storytelling*
- *PhD Research Student Showcase (3-minute Theses)*

Dates:

- *Thursday, October 30, 2025 (day): Annual MEH Final-year Student Research Projects.*
- *Thursday, October 30, 2025 (evening): Reunion Dinner.*
- *Friday, October 31, 2025 (day): Maritime Engineering Technical Forum.*

Highlights:

- *Attend the Annual Presentations by final-year students on October 30 as an external assessor (optional).*
- *Enjoy networking and reconnecting at the Reunion Dinner, featuring guest speakers and a nostalgic slideshow of AMC memories. Partners are welcome and let us know if you have photos that we can share on the night!*
- *Engage in the Maritime Engineering Technical Forum on October 31, including keynotes, technical sessions, alumni achievements, and panel discussions.*

Attendance at the Annual Presentations and Technical Forum is free and RINA have confirmed that attendance at both events can count towards Continuing Professional Development (CPD). Details regarding the Reunion Dinner cost and payment will be provided later.

We are also seeking sponsors for these events. Kindly indicate your interest, and we will follow up to discuss sponsorship options.

Register your interest here to join us for these enriching and enjoyable events or contact Gregor Macfarlane for more detailed information.

Looking forward to seeing you at AMC in late October 2025

Indo Pacific International Maritime Conference, RAN Seapower Conference and Maritime Exposition, Sydney International Convention Centre, 4-6 November 2025

The IMC International Maritime Conference, organised by The Royal Institution of Naval Architects, The Institute of Marine Engineering, Science and Technology and Engineers Australia allows delegates to be involved in discussions concerning the latest developments in naval architecture, marine engineering and maritime technology; both in the areas of defence and commercial shipping.

The conference coincides with the prestigious Royal Australian Navy Sea Power Conference and the Indo Pacific International Maritime Exposition. Collectively, the conference and exposition will offer a rewarding program for all those with a professional interest in maritime affairs. The conference program will be designed to allow all delegates to visit the many industry displays in the exposition itself, and to conduct informal professional discussions with exhibitors and fellow delegates.

Registration for the International Maritime Conference includes free access to the Indo Pacific 2025 exposition. Early bird rates apply until Monday 8 September.

Keynote speakers include Opening Speaker Romilly Madew AO, Chief Executive Officer, Engineers Australia; Professor Scott Tao, Chief Platforms Division, Department of Defence, Australia; Alex Walsh, Chief Nuclear & Capability Officer, ASC; and Mal Wise, Principal, Australian Maritime College (AMC).

The detailed program for the IMC is at https://indopacificexpo.com.au/program/program-highlights/international-maritime-

conference/imc-program-test/ ; though note that it is subject to acceptance of final papers for presentation. There are separate presentation streams for:

- National Shipbuilding,
- Uncrewed Vehicles,
- Ship Design
- Ship Structures
- Commercial Vessels
- Fuels and Energy
- Remote Operated Vehicles
- Maritime Safety
- Maritime Environment
- Seakeeping
- UNSW (Canberra) Student Thesis Presentations
- Shipyards
- Hydrodynamic Research
- Sustainment
- Ship Equipment

For further information regarding the IMC 2025 International Maritime Conference check the website (https://indopacificexpo.com.au), or contact the Conference Secretariat at:IMC 2025 Secretariat, PO Box 339, North Geelong Vic 3215 or email <imc@amda.com.au>.

News From The Sections

News from the ACT Section

Warships – The importance of Damage Stability

The first ACT presentation for a little while was by David Smith on this subject, taking place on the 3rd of June at ADFA (UNSW Canberra) and online.

Following a brief introduction by ACT Section Chair, Warren Smith, David Smith introduced his presentation by asking the audience how many naval accidents/incidents they estimated have occurred since the millenium, or alternatively, an estimate of average annual frequency. There were a range of estimates. David then proceeded to reflected on a number of these Warship Events, starting with surface ships and followed by submarines. He briefly described each incident and its outcome. For surface ships ships alone, coverage included *HMS Grafton, HMS Nottingham, USS Cole, HMS Campbeltown, HMS Endurance, USS Port Royal, USS Guardian, USS Lake Champlain, USS Fitzgerald, USS John S McCain, HNoMS Helge Ingstad, HTMS Sukhothai, HMS Chiddingfold & HMS Bangor, HMNZS Manawanui*. The audience identified some further cases, including smaller patrol craft. For submarine events since the millenium, David had identified 35 cases dating back to the K-141 Kursk loss and indicated them in tabular form as the list was too extensive to address individually. He touched on a few prominent cases such as *USS San Francisco, HMCS Chicoutimi*, and *ARA San Juan*. While addressing these cases and afterwards, David emphasized the importance of this subject not only in warship design but also in sustainment. He noted that while the focus of requirements is often on the "fight" aspect of capability, there was a need for naval architects to in turn "fight" to ensure there is adequate damaged stability provided in the design, namely the "float" element of capability.

As well as David, the presentation attracted an in-person audience of 19 with more participating on-line. The presentation prompted a lively discussion between David and the audience.

The Presenter

David Smith is a naval architect by profession who has spent 27 years' working in the defence maritime domain. Whilst working for the UK Ministry of Defence, his early career was focused on naval architecture, both submarines and surface ships. David then chose to diversify and shift focus to nuclear propulsion, safety and regulation. David has been based in Australian since 2020 and worked in support of the Hunter-class frigate program and most recently the Australian Nuclear-Propelled Submarine Program.

Martin Grimm

David Smith presenting to the audience gathered at ADFA

(Photo Martin Grimm)

Ship Launching Utilising a Modular Pneumatic Launch Method.

The ACT Section's technical presentation on 22nd of July was both in-person and video-conferenced from ADFA (UNSW Canberra) at 6.30pm. The presenter was Peter Gawan-Taylor.

The presentation considered the critical milestone of any shipbuilding project: launching the vessel. This presentation focuses on the development of a novel modular pneumatic solution by the Austal team to assist in launching/docking ferries up to 120-130m at the Austal Philippines shipyard.

Following a brief introduction by incoming ACT Section Chair, Cameron Whitten, Peter first outlined acquisition of the Austal shipyard in Cebu the Philippines from FBM in 2014 and the evolution of the work of the yard from that time, along with investments made in new shipbuilding infrastructure. Ferry construction expanded from vessels of 40-50m length up to 115m. This necessitated construction of a significantly larger new building shed as well as a new means of launching vessels that were beyond the capacity of the existing slipway at the yard.

Peter then focused in the main aspect of his presentation, being the planning and execution of the launching system for the larger ships to be built at the yard. The company objectives for the system were first outlined, talking into account the likely utilization rate and acquisition and sustainment costs of the available options. A broad range of launching options was brainstormed before narrowing down to the preferred solutions.

Short of construction of a drydock, the relatively shallow depth constraint alongside at the Austal yard necessitated the use of either a semi-submersible barge or dry-dock in order to launch larger vessels in deeper water further offshore of the yard.

For the launch in 2020 of Hull 419 *FSTR*, a 109m catamaran ferry for Fjord Line, the first large vessel from the Cebu yard, a semi-submersible barge *Giant 5* was hired. However noting the long lead times for hiring the equipment from other companies, and the deadline pressures this arrangement imposes, an in-house launching system was preferable in the long term.

For the launch in 2021 of Hull 395 *Bañaderos Express*, a 118m trimaran ferry for Fred. Olsen Express, Peter described the acquisition of a suitable second-hand floating dock from Vietnam following a search for about a year. On that occasion Self-Propelled Modular Transporters (SPMT) were hired from Singapore to lift and transfer the catamaran from the building shed and onto the floating dock before again being lowered onto stands.

For the subsequent launch in 2022 of the largest ferry built by Austal, Hull 423 *Express 5*, a 115m catamaran for Molslinjen, the floating dock was once again employed but this time using an in-house developed pneumatic lift and rail-based transfer system. This system was developed by the Austal Philippines design team, and was christened as the Austal Nautical Transport System, or ANTS for short! Peter shared considerable insights into the selection or design and validation of the components of this system of lift bags, rails, tiebars, load distributing frames for the rail system, and combination of motorized and non-motorised modular rail transporters.

Adaption of lift bags for the purpose of ship launch necessitated considerable research and testing to understand the load supporting capacity versus displacement characteristics of the bags. This included static lift validation testing of representative bags. A modular rail transporter unit was also subject to both static and dynamic load testing before these were delivered to the Cebu yard.

Peter noted this project was one of the most interesting and challenging in his career, but also came with a lot of pressure. Some key tips he offered to the younger audience members included to "ask good questions and keep digging to get the answers required for critical issues". Sufficient, but not excessive margins should always be factored into design which in this case included margins for lifting capacity and rolling resistance of rail transporters as examples. Also, plan for contingencies for such critical milestones, for example redundancy of generator capacity during the launch process.

The presentation attracted an in-person audience of 16 with five or more participating on-line. Peter fielded a series of questions during the presentation and thereafter, with interest focusing on the delicate process of transferring the load from the hardstand to the floating barge or floating-dock.

The presentation was recorded and should become available on the RINA YouTube channel in due course. In the interim, Austal has a lovely video illustrating the launch of Hull 423, one of a pair which Peter showed on the night: https://www.youtube.com/watch?v=qtJYEGOr1Lo

The Presenter

Peter Gawan-Taylor is a naval architect with over 30 years of experience in the maritime industry, specialising in ship design and shipbuilding. His career encompasses work on

Peter Gawan-Taylor presenting to the audience gathered at ADFA

(Photo Martin Grimm)

both aluminium and steel ships across Australia, Dubai, Singapore, and, more recently, the Philippines. During the 1990s, Peter focused on vessel design within the fast ferry industry, which was an emerging and rapidly evolving sector of the maritime industry. Over time, his experience expanded to include steel ships, defence projects, marine warranty surveying and project management.

Peter also spent six years as Design Manager at Austal Philippines, before returning to Australia in late 2024. In addition to his technical expertise, Peter has been actively involved in training and mentoring young naval architects to assist them to develop into competent and innovative professional naval architects. He is currently working with Bastion Defence supporting the delivery of Border Force maritime capability.

Martin Grimm

ACT Section AGM

The ACT Section undertook its AGM from 6:30pm on 15 July as a video-conference; with resulting changes in the Section Committee identified in the "Committees Members and Representatives" section of this *ANA* on page 55. As well as presentation of the reports from the Chair and Treasurer, the current situation with production of *The ANA* and the need for feedback on what is sought within the journal were raised.

Martin Grimm

News from the SA & NT Section

Naval Technology Lessons from Commercial Shipping

On 18 June 25, IMarEST's South Australia Branch conducted a joint presentation with RINA SA/NT at 6pm at the ACST, University of Adelaide. The speaker was Philip Dovey, Senior Project Manager / Surveyor for New Construction and Existing Ships, Lloyds Register.

Navies are increasingly striving to be at the forefront of energy efficient design, by using best practice techniques learnt from civilian operations and implementing the latest in energy saving measures. This allows more power to command or increased reserve with the same amount of generation.

Modern ship designs, such as *RFA Tidespring* and her sister vessels for the UK Royal Fleet Auxiliary and *HMNZS Aotearoa* which was recently constructed for the Royal New Zealand Navy, include features such as:

- Wave piercing and hydrodynamically efficient axe bow and hull forms
- Anti-roll tank stabilisation systems
- Hybrid diesel electric propulsion plants across a fully redundant two compartment set up
- State of the art anti-icing systems for Antarctic operations and
- LED lighting.

Both *RFA Tidespring* and *HMNZS Aotearoa* were required to be compliant to Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL) directives due to the requirements for entering commercial fuelling terminals.

By leveraging these commercial regulations naval vessels can be designed to be mission and combat capable, whilst being energy efficient and minimizing impact to the environment.

Trev Ruting (Based on Meeting Notice)

News from the New South Wales Section

The RINA NSW Section Committee has met on May 27th and July 22nd; with both meetings primarily focused on preparations for the SMIX Bash 2026 on 4 December 25

Stability Assessment of a Catamaran Using High-throughput Testing and Sea Trials

The 7 May technical presentation on smaller catamaran stability assessments by Nigel Matthews (Managing Director, Oceans Rivers Lakes) was conducted at the Sydney Mechanics School of Arts, 280 Pitt St, Sydney as a hybrid meeting.

The presentation outlined a comprehensive set of sea trial experiments used a high-throughput test methodology to characterise the turning of a full-scale 8.5m custom-built powered catamaran test vessel. Five factors potentially influencing a catamaran's dynamic stability were considered, beam, deadweight, vertical centre of gravity, thrust, and engine position. The experiments sought to create a baseline of data and then test each factor's contribution to dynamic instability and identify (if any) interaction between the factors.

The data from the experiments present an insight into the multi-factor relationships that impact the instability of a powered planning catamaran. Despite the limitation to a single vessel length, the results give a predictive model and approach to improve catamaran design and safety.

The Presenter

Nigel Matthews, as the Managing Director of Seatamer Marine, has continued the 30 year Seatamer legacy, specialising in the design and construction of small, powered catamarans. In response to an accident in a powered catamaran in 2020 that the experts could not make sense of, Nigel started a journey of investigation to understand hydrodynamic performance of powered catamarans. Enrolled in marine engineering at UNSW and under the academic supervision of Professor Warren Smith, Dr Keith Joiner and supported by Professor Martin Renilson, Nigel's research on hydrodynamic stability was published at IMC in 2023 and in The Journal of Marine Science and Engineering in 2024

Ehsan Khaled

Walter Reeks - A Naval Architect, Yachtsman and Entrepreneur

RINA NSW Section and IMarEST ACT & NSW Branch held a joint hybrid meeting on 2 July to listen to this presentation at the Sydney Mechanics School of Arts by David Payne, Former Curator of the Australian National Maritime Museum.

Nigel Matthews was presented with a bottle of Wine as a thank you by Geoffrey Fawcett

(Photo Ehsan Khaled)

Walter Reeks (1861-1925) was probably the first person in Sydney and Australia to practice solely as a naval architect and marine engineer. He had an apprenticeship period in England before coming to Australia in 1885, where he settled in Sydney and immediately advertised his availability as a consultant in that area of the engineering profession. In his career, Reeks designed or consulted on over 300 vessels, and pioneered a number of types that are very much Australian. Many featured unorthodox details, yet all were successful in their roles. His portfolio includes, yachts, open boats, oil launches, steam launches, steam yachts, ferries, cargo vessels for the coast and waterways, pearling luggers, fishing trawlers and model sailing boats.

Reeks was an important member and then President of the NSW Engineering Association, a member, flag office and honorary measurer in a number of Sydney yacht clubs, and circulated widely in his community supporting their clubs and associations.

The Presenter

David Payne has wide experience in the maritime field. He is a self-taught yacht and boat designer with over 100 projects in his portfolio, and the former Curator of Historic Vessels at the Australian National Maritime Museum. He retired in 2020 after over 30 years as a consultant and then staff member of the museum. The biography of Walter Reeks is his second collaboration in maritime writing with co-author Nicole Mays and Navarine Books.

Ehsan Khaled

Salvage and Emergency Response

This technical presentation was conducted at Sydney Mechanics School of Arts, 280 Pitt St., Sydney as Hybrid Meeting by RINA NSW Section and IMarEST ACT & NSW Branch on Wednesday 6 Aug. The presentation covered the work undertaken by United Salvage Pty Ltd, following the collision between the cement carrier *Goliath* and the towage vessels *York Cove* and *Campbell Cove* on the Mersey River. The presentation discussed the initial containment and removal of hydrocarbons from both vessels, followed by an overview of the wreck removal operations and methods.

David Payne receiving customary bottle of wine from Adrian Broadbent

(Photo Ehsan Khaled)

The presenter was Drew Shannon, Managing Director/ Salvage Master of United Salvage.

Ehsan Khaled and Trev Ruting (based on meeting notice)

News from the Tasmanian Section

The Tasmanian Section of the Royal Institution of Naval Architects (RINA) is pleased to submit the following report outlining the activities undertaken during last 3 months and activities for the next 3 months.

Section Committee Meetings

The Section Committee committee met on 1 April, 6 May, 3 June, 1 July and 5 August (planned) to discuss upcoming events, membership engagement strategies, networking opportunities with local industry and academic institutions. These meetings continue to play a vital role in planning and governance of section activities.

Technical Presentations

The section hosted several technical presentations, featuring speakers from both industry and academia. These sessions covered range of topics and were attended by members, students and guests. The presentations were held alternatively between Launceston (L) and Hobart (H) and streamed to the other centre. Presentations in the last 3 months and the upcoming presentations for the next 3 months and the availability of video recordings are:

18 March ’25(L)	Dougal Harris of Incat Crowther on “High-Speed Aluminium Craft: Modern Design Approaches” (not recorded)
8 April ’25(L)	David Lyons of UNSW Canberra on “The Structural Design, Construction and Condition Monitoring of Sailing Craft Appendages” (https://www.youtube.com/watch?v=I-EnFsrPabA)

20 May ’25(L)	Alan Muir on “Haps & Mishap, Docking and Launching” at the Launceston shiplift (https://www.youtube.com/watch?v=VCxuxufg0EQ)
17 June ‘25(H)	Brian Stafford on “The Great Windships” (https://www.youtube.com/watch?v=rKOdwdwlLj4)
15 July ‘25(L)	Dr Hossein Enshaei on “Adaptation Under Constraints: A Naval Architecture Case Study in Tanker Conversion” (https://www.youtube.com/watch?v=JyuZlAUHpNs)

Further presentations are listed in the Coming Events section.

Annual General Meeting (AGM)

The Section AGM was held on 20th May 2025, during which the committee provided an overview of the year’s Chairman’s and Treasurer’s reports. The meeting also included the election/confirmation of committee members for the upcoming term. The nominated Tasmanian Section committee members for 2025/2026 are identified in the Committees Members and Representatives section on page 56.

Nipuna Rajapaksha

“The Great Windships: How Sailing Ships Made the Modern World”.

The Tasmanian Section of the Royal Institution of Naval Architects welcomed the public on 17 June to an evening technical presentation given by Brian Stafford, author of “The Great Windships” who gave his presentation the subtitle “How Sailing Ships Made the Modern World”.

The abstract identified that the great merchant sailing ships were the original apparatus of globalization. They brought the east and west together, carrying goods back and forth to the benefit of both, and turning the world’s oceans into marine highways. Along them would travel all manner of goods in unheard of volumes – gold, silver, gems, spices, coffee, tea and all manner of other foodstuffs – as well as ideas, attitudes, religion and disease. Beside their superior armament, the ships’ masters felt they were racially and religiously superior. Their vessels became instruments of colonial conquest, aiding the rise of the West over the much more populous East. They also enabled the opium and slave trades. For better and for worse, they made the modern world.

The Presenter

Brian Stafford is an economist by profession and alumnus of Sydney University from which he holds two degrees and a sailing blue. Although he did not see the sea until he was fourteen years old, it was love at first sight. Since first moving across water in a small dinghy he has owned four sailing boats and has had a lifetime interest in all things maritime; especially the history of merchant ships. Beside various voyages, he has circumnavigated Tasmania in his own boat and sailed on a square-rigger on a similar voyage. As well as the practicalities of sailing, as an economist and student of political systems, he is interested in understanding the commercial, social and political forces that drove the development of sailing ships. They are major themes of “The Great Windships”. (Above information and photo taken from www.thegreatwindships.com.au)

Nipuna Rajapaksha

Adaptation under Constraints: A Naval Architecture Case Study in Tanker Conversion

The Tasmanian Section of the Royal Institution of Naval Architects welcomed the public on 15 July 2025 to an evening technical presentation given by Dr Hossein Enshaei on the unique set of naval architectural challenges involved in the conversion of product tankers to chemical tankers presents, particularly when upgrading vessels to meet IMO Type II/III standards. The presentation reflected on the 2007 conversion of two 35,000 GT product tankers at COSCO Shipyard in Guangzhou, China, highlighting key design and engineering

Dr Hossein Enshaei while Presenting on Tanker Conversions

(Photo Nipuna Rajapaksha)

Dr Gregor Macfarlane Presenting a Bottle of Wine to Dr Hossein Enshaei as a Token of Appreciation at the End of Presentation

(Photo Nipuna Rajapaksha)

considerations. These included tank reconfiguration and structural reinforcement, cargo system segregation, tank coating selection, and compliance with the IBC Code. The presentation discussed the complexities of retrofitting within existing hull constraints, managing stability and longitudinal strength after internal modifications, and the coordination required across disciplines to achieve classification approval. Lessons learned are relevant to naval architects working on retrofit projects in evolving regulatory environments.

The Presenter

Dr Hossein Enshaei is a naval architect and maritime technologist with extensive experience across ship operations, design, and research. He began his maritime career as a professional seafarer, serving 13 years at sea and attaining the rank of Master Mariner before transitioning ashore to lead seafarer education and training. Following his

graduation in naval architecture in 2004, he joined the shipbuilding industry, where he

contributed to several technically demanding projects, including the conversion of product tankers to chemical tankers. He later pursued research at Newcastle University (UK), completing his PhD while working on national and international maritime engineering projects. Since 2014, he has been with the Australian Maritime College, where he leads multidisciplinary research focused on ship stability, power systems, and marine informatics. He established AMC's real-time power systems simulator facility to support the modelling and optimisation of shipboard energy systems and digital twins. His work continues to bridge the gap between seagoing experience, engineering innovation, and applied research.

Nipuna Rajapaksha

News from the WA Section

Barriers to the Accelerated Upscaling of Wind Technology by Greg Johnston from Advanced Wing Systems

The WA Section conducted an in-person Technical Meeting on Wednesday 16 July 2025 at the Flying Angel Club, 76 Queen Victoria St, Fremantle.

Greg Johnston is the CEO and Founder of Advanced Wing Systems and International Wind Ship Association (IWSA) Executive Committee member.

Greg gave a brief overview of the results of a recent survey undertaken by IWSA to gain deeper understanding of existing barriers to the accelerated upscaling of wind technology use, and to understand the perception of the wind propulsion technology segment and low- or zero-emissions fuels and technologies.

Greg also gave a brief overview of his own wind propulsion solution and of how this solution aims to address the issues of industry adoption.

RINA WA Section Committee for 2025-6

The WA Section Committee for 2025-26 is detailed in "Committees Members and Representatives" on page 56.

Jim Black

News from the Queensland Section

WHS – Where did it come from?

On the 10th of June 2025 a combined virtual and in-person technical meeting was held where Daniel Quick of Bastion Defence provided an engaging presentation on the background on Workplace Health & Safety (WHS) Legislation. Daniel initially provided a background explaining how WHS found its beginnings in the Industrial Revolution to increase workplace productivity, and how our current society has been influenced by landmark court decisions such as the "Paisley Snail" case from 1932 that introduced the concept of negligence.

This then rolled into an overview of hazard management and methods and principles used within the marine industry to assess hazards, and some pertinent examples where hazard management principles had not been diligently applied resulting in catastrophic failures. These examples included the *Alexander L. Kielland, Ocean Ranger and Piper Alpha.*

The attendees engaged in a thought provoking discussion; on how organisational culture influences hazard management and cultural changes needs to start with the Executive team and consistent terminology is important, especially for multidisciplinary teams (different disciplines use the same word with different meanings); and how standard compliance in the design phase may not necessarily result in a safe vessel.

Thanks to Norship for providing the conference room to allow Cairns members to attend their first in-person presentation in many years.

The presentation was not recorded.

The Presenter

Mr. Daniel Quick is a 35 yr experienced Process Safety / Technical Safety/ Safety Case professional and has worked in the oil & gas and mining & mineral processing industries and now in defence for the Royal Australian Navy. He started his career in the UK North Sea in 1978 and has worked for Shell the Middle East and Asia and Chevron in Australia. Daniel assisted in establishing NOPSEMA, the Australia Offshore Oil and Gas regulator, in 2005, and was an offshore OHS inspector, assuring offshore facility design and operational compliance to the Australian offshore legislation.

Trevor Leacy

Toward a Sustainable Blue Economy

Bureau Veritas Marine & Offshore (BV) has published a new book, "Toward a Sustainable Blue Economy", in which BV President Matthieu de Tugny highlights the need for the industry to reframe how the global fleet is financed, fuelled, and operated if its decarbonization goals are to be achieved.

In this sequel to BV's "Shaping a Better Maritime World", published in 2022, the new book charts the progress made over the last five years that has seen the industry embrace new technologies that hold the potential to greatly reduce shipping's carbon emissions. However, in spite of this progress, the industry's infrastructure, processes, and practices remain grounded in the availability and predictable pricing of fuel oil, which greatly inhibits its ability to transition away from fossil fuels.

Today's ocean economy is worth over $US2.2 trillion and supports over 600 million jobs worldwide in its own right. As part of Matthieu's vision for industry change, he highlights the need to depart from the risk-averse approach that underpins shipping's financial systems. Matthieu calls for a more dynamic focus on green financing that directly links capital to climate performance, whilst engaging in unprecedented levels of collaboration with industry partners and wider stakeholders, to challenge established operational models.

Classification societies sit at the heart of this effort and are uniquely positioned to facilitate change by utilizing deep knowledge and understanding of the challenges owners and operators face, whilst providing the necessary assurance, in the form of Approvals in Principle (AiPs) rules, and guidelines to unlock the financial investment that will support the commercial development of clean technologies.

de Tugny, President of Bureau Veritas Marine and Offshore, said: "*We need to combine big thinking with pragmatic execution. The maritime industry is having to contend with a period of unprecedented uncertainty as it works to reduce its carbon emissions, but achieving a sustainable blue economy extends beyond simply decarbonizing shipping. It will require a holistic approach to reinvent the systems, processes, and infrastructure that is heavily reliant on fossil fuels combined with often small, pragmatic actions to realize our ambitions.*
In a wide-ranging intervention that explores shipping's role as a custodian of the oceans at a time when the maritime landscape faces significant environmental challenges, *Toward a Sustainable Blue Economy* is both a roadmap and a rallying cry for the maritime industry to adapt, in order to unlock its sustainable future.

Bureau Veritas, 24 June 2025

Maritime Electrification: Maritime Battery Systems and Onshore Power Supply

In a new technology report bearing the above title, Bureau Veritas Marine & Offshore (BV} has called for greater clarity regarding standardized safety regulations that will advance the development of maritime electrification technologies. The report explores how electrification technologies – specifically Energy Storage Systems (ESS) and Onshore Power Supply (OPS) solutions – can act as a viable solution to support maritime decarbonization strategies.

While OPS benefits from existing international standards, battery systems remain under-regulated despite growing safety concerns. The risk of thermal runaway incidents within lithium-ion (li-ion) battery technology poses a serious challenge to crew members. Thermal runaway, a rapid, uncontrollable increase in battery temperature can lead to fires that are difficult to extinguish and poses a significant hazard to crew welfare. Despite the increasing deployment of ESS across the global fleet, current safety guidance remains fragmented and largely non-mandatory.

Classification societies are working to bridge the regulatory gap by establishing technical Rules – such as BV NR467 Rules for the Classification of Steel Ships which outlines technical and safety requirements for marine battery installations – to support the integration of these systems into maritime operations, as well as partnering with industry organizations such as the Maritime Battery Forum to develop voluntary safety guidance.

BV's technology report highlights the dual opportunity presented by marine batteries and shore power systems. Battery adoption is accelerating, with over 1,000 battery-powered ships in service globally. Meanwhile, OPS systems are already supported by EU regulation, with FuelEU Maritime establishing the mandatory use of OPS systems for container and passenger ships docked at EU ports from 2030, followed by all EU ports with OPS facilities from 2035.

The launch of the technology report follows the International Maritime Organization's (IMO) MEPC 83 outcomes, announced in April 2025, which sets ambitious emissions reduction targets through 2040. However, current projections indicate the measures may fall short of the 2030 goals, prompting renewed focus on all viable low-emission technologies. Electrification, though not directly addressed at MEPC 83, is increasingly recognized as a viable enabler of the industry's the net-zero transition.

While existing policies and regulations have provided a foundation for safety and standardization, the technology report acknowledges that there is still work to be done at an international regulatory level to instil confidence in ESS and OPS. Comprehensive, enforceable international standards are needed to ensure the safe deployment of lithium-ion technologies at scale and pace.

Matthieu de Tugny, President, Bureau Veritas Marine & Offshore, said: "Electrification technology is well established in the industry. However, in order to scale effectively and safely, ESS and OPS systems must be supported by robust, standardized and mandated safety regulations. Without clear international safety standards that regulate the integration of battery systems – particularly regarding fire prevention, crew training and emergency response – owners and operators may lack the assurance needed to integrate these systems into their decarbonization strategies. The industry must work collectively to bridge the current regulatory gap in order to

ensure electrification technology achieves its potential in driving shipping's decarbonized future."

Bureau Veritas, 14 May 2025

The Role of Nuclear in Shipping Decarbonization

Bureau Veritas Marine & Offshore (BV) has contributed to a newly released white paper examining the potential role of nuclear energy in supporting the maritime sector's decarbonization. This extensive study has been conducted by the New Energies Coalition, as part of one of its working groups led by BV, with the valuable contribution of CMA CGM, PSA International, and ONET.

The white paper explores how nuclear power, including emerging small modular reactor (SMR) technologies, could be deployed for marine propulsion, coastal near-shore power generation, and on-land energy production within port premises. It also provides comprehensive assessment of the state of technological readiness, environmental benefits, regulatory landscape, and economic viability — offering a strategic perspective on how this zero-emission energy source could contribute to global carbon neutrality goals.

While underscoring the promise of Generation III+ and IV SMRs, the study also highlights the importance of addressing critical challenges such as regulatory harmonization, fuel cycle management, crew training, cybersecurity, and insurance frameworks. It suggests that early pilot projects and international collaboration will be key to demonstrating feasibility, building public trust, and unlocking investment.

Estimating a plausible timeline pointing to potential commercial deployment of Gen IV nuclear-powered vessels by 2040–2045, with earlier deployments possible for port-based and near-shore installations, the study sets the stage for further research and dialogue across the industry.

Bureau Veritas, 22 April 2025

Joint Development Project for Hydrogen Storage Solutions

Rux Energy and Bureau Veritas Marine & Offshore (BV) have signed a Joint Development Project (JDP) Agreement ~~today~~, marking a significant step forward in validating and verifying major safety enhancements provided by Rux Energy's nanoporous materials for hydrogen storage. The project will also focus on meeting the certification requirements for large-scale hydrogen storage systems for bulk transport, distribution, road, rail and maritime & offshore use.

Titled "Certification of Cryogenic Pressure Vessels for Hydrogen Storage and Transport", the JDP brings together around 30 global experts across France, Australia, Singapore, and the UK, to address critical safety and hazard challenges related to hydrogen storage and transport, with the potential to reshape global practices in the sector.

The project is designed to facilitate the transition to green hydrogen, emphasizing safety improvements supported by Rux's proprietary nanoporous advanced physisorption materials. These materials enable cost-effective, efficient, and safer green hydrogen storage solutions for applications in ships, trucks, trains, and planes. This innovation is intended to significantly reduce hydrogen supply chain costs, improving storage efficiency at production sites, while cutting the costs of bulk transport and distribution. The project also focuses on supporting agile refuelling, bunkering, and shoreside power operations in intermodal and port hubs and to stimulate local supply chain development in Singapore, Australia, the United Kingdom and Europe.

The Joint Development Project represents significant investment, with new knowledge generated to be shared with the wider hydrogen and power-fuels community, in particular with Rux Energy's first adopter partners and clients in the marine and offshore industry, as well as in the bulk transport sector, both land and sea. This international collaboration demonstrates how targeted technology deployment can accelerate decarbonization efforts by driving more efficient, multi-lateral supply chain development, while advancing the use of green hydrogen in heavy transport, particularly in the global maritime industry, through the development and adaptation of climate-friendly, zero-emission technologies.
Bureau Veritas, 25 March 2025

Basic Design Assessment Statement for Advanced Hydrogen Fuel Cell Solution

Sydrogen, a leading innovator in hydrogen fuel cell technology, has received Basic Design Assessment (BDA) Statement from Bureau Veritas Marine & Offshore (BV) for their Maritime Fuel Cell – SydroPOWER series model MZ250N – as the focus model for the maritime industry. This significant milestone marks a pivotal step towards commercialising Sydrogen's advanced fuel cell solutions for the maritime industry.

Sydrogen's SydroPOWER series leverages proven automotive hydrogen fuel cell technology from its partner Shanghai Hydrogen Propulsion Technology (SHPT) to deliver high efficiency and environmental benefits. The system is designed to provide reliable power for a wide range of maritime applications, from commercial vessels to offshore platforms

Additionally, by providing an alternative to conventional fossil fuel-based power systems, Sydrogen's SydroPOWER series significantly reduces greenhouse gas emissions and other pollutants, aligning with global efforts to combat climate change and promote cleaner oceans.

This BDA Statement, which represents a more advanced stage of validation compared to an Approval in Principle, is a testament to the rigorous design and evaluation processes that the SydroPOWER MZ250N has undergone, demonstrating compliance with the high safety, performance, and reliability standards.

With the BDA Statement secured, Sydrogen is poised to accelerate the deployment of its SydroPOWER MZ250N Maritime Fuel Cell technology, paving the way for widespread adoption in the maritime industry.

Gian Yi-Hsen CEO Sydrogen, said: "The SydroPOWER series provides shipowners and operators with practical, efficient pathways to meet their environmental goals while maintaining operational excellence."

Bureau Veritas, 26 March 2025

Seahaven Evacuation System

Bureau Veritas Marine & Offshore (BV) has issued a formal Review Attestation for Survitec's Seahaven evacuation system, confirming its status as a novel life-saving appliance (LSA) under IMO Resolution A.520(13).

The Seahaven system is engineered to evacuate up to 1,060 persons in less than 22 minutes through a fully integrated arrangement of two survival crafts and four helical slides. For the purpose of the attestation, BV conducted an extensive technical review of Seahaven's design, documentation, performance testing, and supporting calculations to help ensure compliance with relevant regulations and requirements.

Seahaven's design allows for rapid boarding via vertical helical slides, which have been rigorously tested with passengers, including infants, children, and individuals with reduced mobility. Each survival craft has a capacity of 530 persons and is powered by twin SOLAS and MED-approved diesel outboard engines. The system demonstrated full compliance with evacuation and performance tests, including deployment in heavy weather conditions with sea states equivalent to Beaufort Force 6 and 3-meter wave heights.

The system's modular footprint allows for flexible installation on both newbuild and retrofit platforms, with a permitted installation height of up to 28 meters. The attestation confirmed the craft's endurance at 6 knots for 24 hours and the ability to tow a second fully loaded craft at 3 knots. Additional tests validated environmental resilience in both hot and cold extremes.

Survitec has developed extensive training plans, service documentation, and lifecycle support infrastructure to accompany Seahaven's deployment, aligning with SOLAS Regulation III/20 for maintenance and periodic inspection.

Bureau Veritas, 11 June 2025

AI-powered Augmented Surveyor 3D

Bureau Veritas Marine & Offshore (BV) has launched the Augmented Surveyor 3D (AGS 3D), an advanced tool powered by artificial intelligence (AI) and machine learning, designed to optimize anomaly detection and localization for ship and offshore structure inspections.

BV earlier completed a successful "proof-of-concept" pilot with TotalEnergies on an FPSO (Floating Production Storage and offloading) in West Africa. During the pilot, a drone-based inspection of two water ballast tanks was conducted. Using the AGS 3D to process all of the data, the survey generated a detailed 3D digital model with AI-enhanced corrosion analytics.

The AGS 3D solution promotes safety while improving efficiency by automating key tasks such as anomaly detection, corrosion mapping, and 3D modeling. Following the success of the pilot project, TotalEnergies will be looking to extend the solution to other assets.

Drone-based surveys generate vast amounts of data, including images, videos, and LiDAR scans, the processing of which can be time-consuming and resource-intensive. By integrating AI technology, AGS 3D automatically detects anomalies in images and videos captured by drones, mapping them onto a 3D digital model created from point cloud data collected by a LiDAR sensor on the drone. This approach streamlines inspections, reduces human exposure to confined spaces, and provides precise defect localization, offering actionable insights for maintenance teams.

Suitable for use across various marine & offshore sectors, including FPSOs, FSOs, in-service ships, and floating offshore wind, the AGS 3D tool enables 360-degree visualization, optimized maintenance planning, data-driven decision-making, as well as providing a collaborative workspace for inspection teams, serving as a valuable complement to classification surveys. Final deliverables, such as LiDAR-based drone inspections, AI-driven corrosion detection, automatic defect localization, and a unified 3D dataset are reviewed by AGS experts to ensure quality.

Bureau Veritas, 12 June 2025

Guide on safe and scalable adoption of ammonia and hydrogen fuels

As the shipping industry continues its transition to carbon-neutral fuels, ammonia and hydrogen are emerging as possible fuel options, however mandatory regulations governing their use are not yet in place. DNV's latest white paper, *Safe introduction of alternative fuels – Focus on ammonia and hydrogen as ship fuels*, provides insights and tools to navigate the evolving regulatory landscape and safely implement these fuels.

Both hydrogen and ammonia have properties that introduce new safety risks, triggering the need for increased focus on safety in ship design, construction, and operation. However, the lack of specific mandatory international regulations for ships running on these fuels is a barrier to their widespread adoption. With this white paper DNV aims to support implementation of these fuels by providing increased predictability through classification rules and early dialogue with Flag Administrations. The paper also outlines the relevant safety challenges and considers the industry's efforts to ensure safe adoption and operation of these fuels at sea.

Knut Ørbeck-Nilssen, CEO Maritime at DNV said: "In Maritime's journey towards decarbonization, there is no one-size-fits-all solution. Hydrogen and ammonia are emerging as possible solutions, and we are already seeing a growing newbuilding orderbook. To scale them up and get the benefits of the zero-carbon fuels, we will need, careful planning, technical expertise, upskilling of seafarers and deeper collaboration across the industry and beyond."

DNV has several initiatives to support the development and adoption of ammonia and hydrogen as marine fuels. These include the Nordic Roadmap for Future Fuels project, the Green Shipping Programme, and the MarHySafe joint development project.

Linda Hammer, Principal Engineer at DNV and lead author of the whitepaper, stated: "To safely operate ships using hydrogen or ammonia as fuel, ensuring that the crew understands the specific hazards of these fuels and the safety features built into the design is vital. This will require updates to the safety management system, building in detailed operating procedures, comprehensive training for up-skilling

personnel, and potentially making organizational changes. All of which are essential for developing a robust safety culture throughout the organization."

The first edition of DNV's classification rules for ammonia-fuelled ships was published in 2021, and the rules for hydrogen-fuelled ships were published in July 2024.

DNV 13 March 2025

AiP for new ammonia bunkering vessel design

Elisa Woodward (SeaTech Solutions (Australia)) and Nick Bentley (Oceania Marine Energy) presented with the AiP by Jonathan Abrahams of DNV

(image courtesy DNV).

During the Ammonia Energy APAC Conference 2025, DNV awarded an Approval in Principle (AiP) to SeaTech Solutions International (SeaTech) in collaboration with Oceania Marine Energy (Oceania) for the design of a new 10,000cbm ammonia bunkering vessel. This AiP builds on a Memorandum of Understanding (MoU) between DNV, SeaTech, and Oceania, signed in April this year.

The Pilbara Port of Dampier is emerging as a potential hub for low-carbon ammonia bunkering. Driven by a rising demand for low- and zero-carbon shipping fuels from the region's mining and export industries, the port has built considerable experience in dealing with ammonia cargoes and vessels and is developing a strategy to facilitate ammonia bunkering operations. This includes the successful completion of its first ship-to-ship pilot bunkering transfer in September 2024.

Measuring 130-metres, the ammonia bunkering vessel is specifically designed to deliver low-carbon ammonia to ammonia dual-fuelled bulk carriers at the Port of Dampier. It can supply up to 9,000cbm of fuel, sufficient to support two round-trips of iron ore shipment between Australia and North Asia. The vessel's optimized arrangement and advanced containment systems enable efficient ship-to-ship transfers while ensuring the safe handling of ammonia as both a cargo and marine fuel.

Nick Bentley, Managing Director at Oceania Marine Energy, said: "Oceania is proud to have worked in tandem with DNV and SeaTech to deliver a flagship, low-emissions marine fuel solution at the heart of Australia's heaviest resource export hub. The completion of this MOU and Approval in Principle (AiP) award by DNV for our 10,000m³ clean ammonia bunker vessel marks a major milestone in developing the supply and bunker operation foundations for the low-carbon shipping Pilbara–Asia green-corridor. This initiative reinforces Oceania's commitment to deliver 1 million tonnes of clean marine fuel by 2030 and positions Dampier in Western Australia as a future leader, enabling the shipping industry's transition to near net-zero marine fuel."

Prabjot Singh Chopra, Vice President of Technology at SeaTech Solutions said: "As part of the maritime industry's multi-fuel transition to low- and zero-carbon energy, ammonia stands out as a viable option for long-haul shipping—and enabling its safe and efficient delivery is critical. Our vessel design incorporates a high level of automation and smart control systems to ensure safe handling of ammonia, enhancing both crew safety and operational reliability during ship-to-ship transfers. This Approval in Principle marks a key milestone, not just for the vessel, but for the broader ecosystem that must be in place to support ammonia bunkering."

Antony M Dsouza, Senior Vice President & Regional Manager, South East Asia, Pacific & India, Maritime at DNV, added: "Scaling up production and bunkering infrastructure remains one of the biggest challenges in the maritime energy transition, and will be vital to the adoption of alternative fuels at scale. This AiP is another step in realizing operationally ready bunkering capabilities and strengthening industry confidence in the potential of ammonia as a carbon-free fuel for shipping."

Although ammonia is a viable alternative fuel, its toxic and corrosive nature demands stringent handling and safety protocols. Mitigating operational risks requires not only comprehensive crew training but also robust technical safeguards and systems. As reported in another article of this column, DNV's latest white paper outlines seven steps to assist in obtaining approval and deploying ammonia-fuelled ships, including the safety challenges, operating procedures, training, and organizational changes needed in today's complex regulatory environment.

DNV has a long history of working on initiatives to support the development and uptake of ammonia as a marine fuel, including a recent ammonia bunkering safety study for the Global Centre for Maritime Decarbonisation (GCMD), which was utilized in the ship-to-ship ammonia transfer pilot at the Port of Dampier.

An Approval in Principle (AiP) is an independent assessment of a concept within an agreed framework, confirming that the design is feasible, and no significant obstacles exist to prevent the concept from being realised.

DNV, 18 June 2025

From The Crows Nest

Order of Australia Honours

In the previous issue of *The ANA* we listed RINA members, past and present, who have been awarded Order of Australia honours. While the list attempted to identify all relevant recipients, it was inevitable that some naval architects would slip through the cracks, including:

> Philip (Phil) Hercus, AO. In the Australia Day honours list of 1995 Phil was made an Officer of the Order of Australia (AO) for service to the shipbuilding industry, particularly through the development and design of high-speed catamarans.
>
> Then Commodore* Trevor Ruting, AM, CSC. In the Queen's Birthday honours list of 2001 Trevor was made a Member of the Order of Australia (AM) for exceptional service to the Royal Australian Navy as Offshore Patrol Boat Project Director, as Director General Surface Warfare systems, and as Commodore Logistics - Navy.
>
> * Trevor was subsequently promoted to Rear Admiral.

At the same time, it is appropriate to acknowledge the following shipbuilders:

> Robert Clifford, AO. In the Australia Day honours list of 1995 Bob was made an Officer of the Order of Australia (AO) also in recognition of service to the shipbuilding industry, particularly through the development and design of high-speed catamarans.
>
> Donald Laverick, AM. In the Australia Day honours list of 1982, Don was made a Member of the Order of Australia (AM) for service to the shipbuilding industry.
>
> John Rothwell, AO. In the Australia Day honours list of 2004 John was made an Officer of the Order of Australia for service to the Australian shipbuilding industry through the development of trade links and for significant contributions to vocational education and training.

Readers are invited to advise the editors of any other naval architects (or shipbuilders) we may still have overlooked. Searches can be made at: https://honours.pmc.gov.au/honours/.

Martin Grimm

WSR *Bluebird K7*

Donald Campbell's *Bluebird K7* hydroplane was almost destroyed in 1967 when Campbell fatally crashed in the Lake District as he attempted to push his own water speed record past 300 mph (480 km/h). Having been recovered from the bottom of Coniston Water 34 years later, it was rebuilt by a team of engineers on Tyneside.

During February *Bluebird K7* make the journey from Coniston to St Athan where personnel from The Aircraft Heritage Trust will be installing an Orpheus engine within the boat that is one of two that have been sourced for *Bluebird's* owners, the Ruskin Museum.

Bluebird K7 sets off on journey from Coniston to St Athan

(Photo from Longbow website)

Thereafter, *Bluebird K7* made an appearance at Glenridding Pier at Ullswater in the Lake District on 23 July in order to commemorate 70 years since Campbell's first water speed record with *K7* which was achieved there on 23 July 1955 at an average speed of 202.32mph.

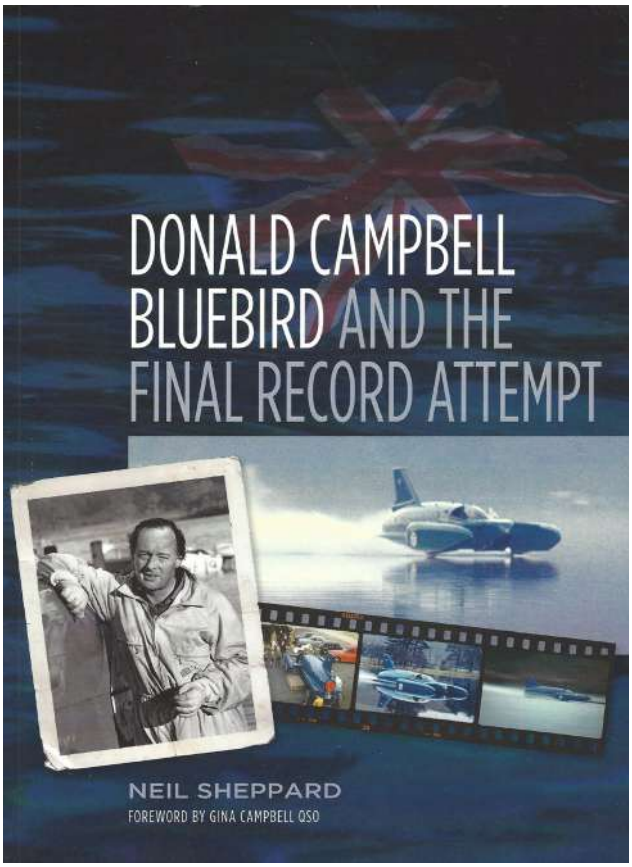
More than a thousand visitors came to Glenridding Pier to see the *Bluebird*. Tracy Hodgson, director of the Ruskin Museum, said: "Ullswater will always be a special place in the Campbell story, and we are honoured to be able to display *Bluebird K7* at Glenridding Pier close to where she was first launched 70 years ago".

Donald Campbell and *Bluebird K7* at Ullswater in 1955

(Leo Villa photo via David deLara collection)

For readers interested to understand more about *Bluebird K7*, a well-researched book titled "Donald Campbell *Bluebird* and the Final Record Attempt" has been authored by Neil Sheppard. This also includes a clearly written chapter with analysis of the loss of the *Bluebird* prepared by Dr Keith Mitchell. First published in 2011, the latest reprint is from 2024. It is available through the Ruskin Museum website (ruskinmuseum.com).

Longbow and Ruskin Museum websites



Cover of the book written by Neil Sheppard

(Ruskin Museum website)

WSR *Spirit of Australia 2*

On 8 October 1978, nearly 47 years ago, Ken Warby set his second (and still current) Unlimited World Water Speed Record of 317.6 mph (511.1 km/h) with *Spirit of Australia* on Blowering Dam in NSW. Ken's son, Dave Warby, and the Warby Motorsport team are attempting to break this record with the current *Spirit of Australia 2.*

Having previously trialled various changes and refinements to the rudder arrangement on *Spirit of Australia 2*, which they are now satisfied with, attention is turning to other handling refinements for the boat. Since there isn't a wealth of design guidance for developing unlimited water speed record craft, the team are somewhat forced to follow a trial-and-error approach. With a return of higher water levels in Blowering Dam, the team is planning to return for further trials on the weekend of 30-31 August 2025.

Martin Grimm

WSR *Longbow*

One of Britain's current contenders for the Water Speed Record, *Longbow*, commenced construction in April 2018. Progress on the project is regularly updated by David Aldred on the team website.

The *Longbow* venture has attracted increased media attention in the UK, with David Aldred fielding various interviews for TV and press earlier in the year. This has considerably raised the profile of the project beyond the team's website and social media posts.

Attending to further modifications of *Spirit of Australia 2* in the Warby 'home workshop'

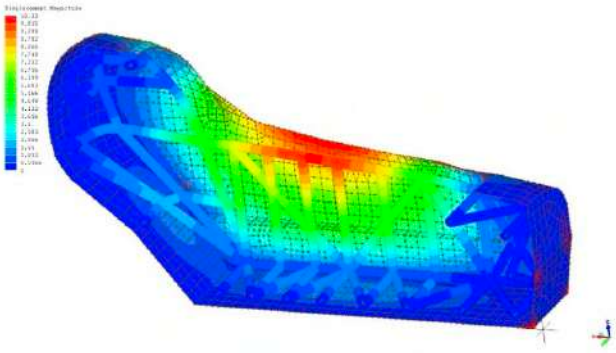
(Photo from David Warby, Warby Motorsport)

Compliance with Union Internationale Motonautique (UIM) rules for the driver cockpit has been a major focus of attention. A key element is demonstration that the integrity of the cockpit can be maintained in the event of pressure loads exerted at the speeds and water entry angles it may encounter. The structural analysis needs to include the cockpit shell, windshield, roll cage (if applicable) and attachment to the hull. As part of the certification process, laminate samples representing the design/build are also subject to bend testing at the loads that could be expected in a crash. With the support of The Testometric Company Ltd, test rigs are being set up to undertake four-point bend tests of samples of composite outer shell of *Longbow's* cockpit. Materials are being determined for the construction of these samples.

Longbow design engineer, Paul Martin, has spent a year of his spare time on the cockpit analysis as part of preparing a submission for demonstrating compliance with the UIM cockpit rule. The team has also been engaged in a video conference with representatives of the UIM to discuss the engineering analysis for the driver cockpit it as required under UIM circuit rulebook 601.01 and details of sample panel testing.

With necessary confidentiality non-disclosure agreement (NDA) in place, the cockpit engineering analysis and outer shell composite specification will now be provided to the UIM Safety Cockpit Committee for review.

To aid in the design process for the cockpit capsule the boat's



Examples of *Longbow* cockpit Finite Element Analysis by Paul Martin

(Graphics from *Longbow* website)

hull in this area has also been 3D laser scanned earlier in the year.

Sam Mather from Manchester Metrology scanning *Longbow's* hull using Creaform HandySCAN and associated software

(Photo from *Longbow* website)

Longbow in the construction workshop illustrating its twin jet engine configuration

(Photo from *Longbow* website)

While the UIM Unrestricted Outright World Water Speed Record rules don't appear to be available on their website, the *Longbow* updates list some of the requirements for such boats, or their interpretation, which include:

- The boat must be piloted by a driver.
- Directional control of the craft must result from reaction with the water.
- For safety the boat's running attitude may be controlled by electronic sensors or actuators.
- UIM Circuit Rulebook – 600.04 would allow submerged hydrofoils to be controlled by electronic means.
- There is no UIM rule that would forbid a driver seeing outside of the cockpit by live video camera(s) within the cockpit where their vision to the front and / or sides would otherwise be obscured by the craft's hull / cockpit / windshield design.

For further details, see https://www.jet-hydroplane.uk/.

Longbow News, January-June 2025

SP80 Exceeds 100km/h in progress towards 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 a 500 m distance.

SP80 is the vessel being designed and built by engineering students from the Swiss engineering school École Polytechnique Fédérale de Lausanne (EPFL). They are aiming for a speed of 80 knot (148 km/h) or higher, hence the SP80 project title. Aside from the kite that provides the propulsive force, the craft is fitted with a superventilating foil optimised for the intended record speeds.

As of May this year, the *SP80* kiteboat has reached a top speed of 58.261 knots, or 108 km/h. This makes *SP80* the second fastest sailboat ever recorded, behind *Vestas Sailrocket 2* with its 68.33-knot top speed. While peak speeds are not used for official world record certification, this performance confirms the boat's potential: Aside from *Vestas Sailrocket 2*, the *SP80* is now faster than the most advanced sailboats in the world, from the AC75s of the America's Cup (speed to 55.6 knots) to the F50s on the SailGP circuit (speeds to 55 knots). The previous highest speed of *SP80* during testing had been 52 knots. The high attained speeds are no accident: the team has since logged multiple runs between 55 and 58 knots, sometimes in less-than-ideal wind conditions.

Mayeul van den Broek, the *SP80* boat pilot noted: "This is a major milestone for the entire team. Very few sailboats in history have broken the 100 km/h barrier, and we're now tangibly closing in on our ultimate goal. What's especially encouraging is being able to repeat those speeds multiple times throughout the week. It confirms not only the boat's reliability, but also its capacity to go even faster. From here, the work continues: analysing the data on land, and refining our handling on the water as soon as the wind allows".

The short-term objective for *SP80* is clear: hold these speeds over 500 meters, as only the average speed over this distance is eligible for official world record certification.

Benoit Gaudiot, *SP80* kite pilot noted: "We know the boat's potential - now it's up to us to become more precise in our handling. We're discovering how the boat behaves beyond 100 km/h and learning to control it. This week, we came close several times to averaging 50 knots over 500 meters. It's naturally a bit frustrating to end the week at 48.6, but we know it's only a matter of time. Every run helps us improve, and our coordination with Mayeul is sharpening with each outing".

Footage from onboard *SP80* for the high-speed run can be found on the team website or directly at this YouTube link: https://www.youtube.com/watch?v=1CHWwAvk1fY

For more details, visit the *SP80* website at https://sp80.ch/.

SP80 News May 2025

Sail GP

The Australia SailGP Team is led by Tom Slingsby. They have been 3-time champions, winning the first 3 seasons since the competition was formed in 2019. The Australian team is now co-owned by Hugh Jackman and Ryan Reynolds and have been renamed the BONDS Flying Roos acknowledging

SP80 underway

(Photo from SP80 website)

SP80 underway

(Photo from Richard Mille Facebook page)

their major sponsor. This has also resulted in a new livery for the boat.

The 2025 season events and results to that point were reported in the last issue of *The ANA*. In the interim, the leaderboard has New Zealand in first place with 54 points, Australia in second with 52 points, and Spain in third with 51 points.

SailGP has released details of its 2026 season. Beginning in January 2026 the season will debut in Perth (January 17-18) before returning to Auckland (February 14-15), and Sydney (February 28-March 1). This will be the first season to include Perth as a venue. KPMG Australia will be the Official Regional Partner, with an expanded commitment across all three events in the Asia-Pacific region.

Those events will be followed by a tour of South and North America. The Rolex SailGP Championship will make its debut in Brazil for the Enel Rio Sail Grand Prix (April 11-12) followed by the return of the Apex Group Bermuda Sail Grand Prix (May 9-10), SailGP's fourth visit to New York for the Mubadala New York Sail Grand Prix (May 30-31), alongside and Canada Sail Grand Prix at Halifax (June 20-21).

The European series will include the return of the Emirates Great Britain Sail Grand Prix at Portsmouth (in July), the ROCKWOOL France Sail Grand Prix at Saint-Tropez (September 12-13), as well as an additional European event to be confirmed. The Rolex SailGP Championship will close with back-to-back events in the UAE in November, starting with the Emirates Dubai Sail Grand Prix presented by DP World (November 21-22) and finishing once again with the Mubadala Abu Dhabi Sail Grand Prix 2026 season Grand Final presented by Abu Dhabi Sports Council (November 28-29).

Teams currently competing in SailGP, by country are: Australia (since 2019), Canada (since 2022), Denmark (since 2021), France (since 2019), United Kingdom (since 2019), New Zealand (since 2021), Spain (since 2021), Switzerland (since 2022), United States (since 2019), Germany (since 2023), Brazil (since 2024) and Italy (since 2024).

For all the latest details, visit the Sail GP website at https://sailgp.com.

Martin Grimm

New Vessels and Designs

Milestone in Construction of 66 metre Sailing Cargo Trimaran

In our August 2024 issue we reported on the awarding of the contract for this vessel.

We can now advise that Austal Philippines has achieved a major project milestone, with the successful hull turnover of this vessel, named *L'Avion des Mers* ("The Sea Plane"), at Austal Philippines' Balamban, Cebu shipyard on 30th June 2025. Video of the turnover can be viewed at https://www.linkedin.com/posts/austal-_teamwork-ets-austal-activity-7349286649383579648-LQek/.

Austal LinkedIn

Austal USA Delivers USNS *Point Loma* (EPF 15) to U.S. Navy

On Tuesday 24th June 2024, Austal USA and U.S. Navy representatives signed official delivery documentation of USNS *Point Loma* as the last milestone before entry into the Military Sealift Command fleet.

Point Loma is a southern California seaside community with a long-standing naval presence credited as the first landing point for European explorers in 1542. USNS *Point Loma* is the second Expeditionary Fast Transport (EPF) Flight II vessel Austal USA has delivered to the Navy, providing an enhanced trauma and surgical medical capability to the fleet. The EPF's catamaran design provides inherent stability to enable underway medical procedures in an onboard operating suite. Enhanced capabilities to support V-22 flight operations and launch and recover 11-metre Rigid Hull Inflatable Boats (RHIB) complement the ship's medical facilities.

Austal USA Vice President, Surface Ship Programs Harley Combs said "This ship represents the efforts of some of the defence maritime industry's most talented shipbuilders. They are excited to see her join her sister ships in greatly enhancing the Military Sealift Command fleet."

The final EPF under contract, USNS *Lansing* (*Spearhead*-class EPF 16), is in the advanced stages of production.

Austal, 30 June 2025

Austal USA Launches its First Steel Ship

The 14th June marked the launch of the first steel ship for Austal USA, the future USNS *Billy Frank Jr* (T-ATS 11), for the US Navy.

Further details of the launch are in the video (https://www.youtube.com/watch?v=gcChoSm491A) which shows load-out from the building shed onto a flat-top barge prior to launching from a floating dock. This launch signified a new chapter for Austal USA and reinforces Mobile, Alabama's role as a major contributor to the USA shipbuilding industry.

Austal via Linkedin, 14 June 2025

Austal USA built *Billy Frank Jr* Roll-out

(Photo courtesy Austal USA)

Austal USA Delivers Final *Independence*-variant Future USS *Pierre* (LCS 38)

Austal USA has recently delivered the future USS *Pierre* (LCS 38) to the U.S. Navy, the second ship delivered by Austal USA to the Navy in less than a month. LCS 38 is the 19th and last Independence-variant Littoral Combat Ship (LCS) delivered by the company. The ships' pre-commissioning unit then began preparations for fleet introduction.

This is the second U.S. Navy vessel to be named after Pierre, the capital city of South Dakota.

Delivery documents were signed on board following the successful completion of acceptance trials held the week of 9th June 2025. In preparation for delivery, on 23rd June the acceptance trials were completed testing the ship's major systems and equipment to demonstrate their successful operation and mission readiness.

"The delivery of the future USS *Pierre* will be one of our most memorable milestones as it marks the conclusion of Austal USA's Independence-variant Littoral Combat Ship program," stated Austal USA President Michelle Kruger. "Our shipbuilding team has poured years of dedication, innovation, and manufacturing excellence into this ship and the results are evident. Though USS *Pierre* is the last LCS Austal USA will deliver, we remain committed to supporting the U.S. Navy with innovative maritime solutions and the highest standards of quality."

Austal USA's Littoral Combat Ships (LCS) are fast, agile, platforms designed for near-shore operations, supporting forward presence, maritime security, sea control, and deterrence. The Austal USA-built LCS variant is playing a key role in advancing the Navy's unmanned programs, with USS *Oakland* (LCS 24) having recently served as a mothership for unmanned surface vessels and large flight decks support unmanned drones during an 18-month deployment to the U.S. 7th Fleet.

Austal USA has nine U.S. Navy vessels and two U.S. Coast Guard cutters under construction as modules for both the Virginia- and Columbia-class submarine programs and aircraft elevators for the Ford-class aircraft carrier fleet.

Austal via Linkedin, 23 June & 11 July 2025

Next -Generation Sustainable Ferry from Incat Tasmania

Construction of Incat's newest 78-metre hybrid electric ferry is well progressed, with the vessel on track for operation in the first half of 2026 – perfectly timed for operators looking to enter service ahead of the Northern Hemisphere summer season.

Incat Tasmania 78m Hybrid Catamaran

(Image courtesy Incat Tasmania)

Designed with low-emission operations in mind, this light-weight craft represents the next evolution in Incat's electric ferry range, incorporating lessons learned from the world's largest battery-electric ship, Hull 096, also nearing completion at the Tasmanian shipyard.

With flexible propulsion options – fully electric, hybrid, or generator-assisted – the vessel offers unmatched versatility for operators navigating the transition to cleaner energy.

Key specifications:

Energy Storage System	up to 12 MWh
Charging capacity	up to 10 MW
Top speed	27 knots
Passengers	600
Vehicle deck clearance	4.6 m (for freight and truck transport)
Vehicle stowage	Flexible configurations with optional mezzanine decks
Bow thrusters	2 x 230 kW
Manoeuvring	Bridgewing control stations, port and starboard for berthing

Sized to replace the first generation of high-speed craft now approaching 35 years in service, this vessel is a future-focused solution for operators needing sustainable, fast, and efficient transport.

"Incat has engineered this ferry to meet the demands of modern

Construction is well underway on the 78m-hybrid catamaran

(Photo courtesy Incat Tasmania)

Image of Proposed San Francisco Bay Electric Ferries

(Image courtesy Incat Crowther)

operators – high performance, lower operating costs, and the ability to meet or exceed tightening environmental regulations," said Incat CEO Stephen Casey. "It's one of the most commercially compelling vessels on the market today."

The 78-metre ferry is part of Incat's broader strategy to deliver multiple smaller electric ships annually, as the company scales production to lead the global shift toward sustainable aluminium shipbuilding.

Incat Tasmania, 31 March 2025

Electric Ferries for San Francisco Bay by Incat Crowther

Incat Crowther and US shipbuilder Nichols Brothers Boat Builders (NBBB) have been selected by San Francisco's Water Emergency Transportation Authority (WETA) to design and deliver two new electric catamaran ferries for San Francisco Bay Ferry.

The commission adds to Incat Crowther's growing portfolio of bespoke, low and zero-emission ferry designs for public transport operators around the world. The new ferries will be capable of transporting 400 passengers and 60 bicycles at speeds of up to 25 knots and will be amongst the most technologically advanced all-electric ferries operating anywhere in the world.

Providing an efficient and reliable service on busy San Francisco Bay area commuter routes, the new vessels will connect Oakland, Alameda, Seaplane Lagoon and Harbor Bay to San Francisco and are optimised to service additional routes in the future. The vessels will help San Francisco Bay Ferry to significantly reduce emissions and advance sustainable transportation in the region.

The 43-metre vessels will feature a modular propulsion system compromising four independent azimuth propulsion units from Hydromaster. The electrical integration will be provided by Wartsila, including a scalable energy storage system from Echandia, MCS charging at a total of 5MW, a DC grid, and advanced DC conversion technology.

In a bid to maximise operational efficiency, the vessels will be charged via specifically designed electric charging floats. The charging floats will ensure the vessels can be recharged during passenger loading and unloading. In an added design feature, the floats will serve as the embarkation and disembarkation pathway between the shore-side gangway and the vessels.

In addition to being technologically advanced, the new vessels are progressively styled with a light, open aesthetic and large windows to enhance the passenger experience. The vessels' spacious main deck has seating for 150 passengers, including six wheelchair accessible spaces, a large kiosk with bar-style seating, three bathrooms and an easy-to-access storage area on the aft deck for bicycles. A large internal staircase and an additional staircase on the aft deck leads commuters to the upper deck, which seats 204 passengers in a spacious, air-conditioned cabin and a further 48 passengers in a covered outdoor deck.

Commenting on the project, Incat Crowther's Technical Manager Dan Mace said: "Incat Crowther is looking forward to partnering with WETA as it enters a new era of low and zero emission public transport. We're looking forward to deploying our experience, as well as our deep understanding of the region's unique operating conditions on this project to design reliable, emissions-free, low-wash ferries for WETA."

The new vessels will be made in the USA at Nichols Brothers Boat Builders' Washington shipyard. The two companies have a strong track record, having previously delivered 29 commercial passenger vessels together.

Construction Material	Marine grade aluminium
Length Overall	43.3 m
Length Waterline	42.6 m
Beam	10.6 m
Draft Max	1.905 m
Depth	3.59 m
Passengers	400
Crew	4
Bicycles	60
Fresh Water	1500 litres
Sullage	1500 litres
Service Speed	25 knots
Propulsion	4 x Hydromaster Series E
Batteries	1603 kWh
Flag	United States of America
Class	(USCG) 46 CFR, Subchapter K, Protected Waters Routes

Stewart Marler

Incat Crowther To Design Renewable Diesel Ferry For Los Angeles

Incat Crowther has been commissioned by Los Angeles operator Catalina Express to design a new low-emission, renewable diesel-powered catamaran passenger ferry. The

new ferry will form part of the Port of Los Angeles' $US31 million Los Angeles Marine Emission Reduction (LA MER) project, funded by the California Air Resources Board (CARB). Catalina Express was awarded a $15m grant to match its own $15m contribution to the project. LA MER aims to test and evaluate emission-reduction technologies as part of the Port of Los Angeles' goal of becoming a zero-emission port.

The new 48-metre passenger ferry will service the popular one-hour tourist route between Los Angeles' Long Beach Port and Santa Catalina Island. Capable of transporting up to 516 passengers across three decks at speeds of up to 37 knots, the new vessel will be powered by renewable diesel fuel (R-99) comprised of plant-based stocks. The vessel will be propelled by four EPA Tier 4-compliant MTU 4000 series engines, each designed to be equipped with a diesel particulate filter (DPF) once certified by the EPA, USCG, and CARB to meet CARB commercial harbour craft regulations.

The new vessel will replace three smaller Tier 2 and Tier 3 ferries with a combined six diesel engines, helping to reduce emissions while maintaining the same passenger capacity within the Catalina Express fleet.

In addition to offering a lower-emission transport option, the new vessel will also provide a world-class customer experience. Passenger comfort has been enhanced via a resiliently mounted superstructure to reduce vibrations and noise. The new vessel will offer spacious seating and amenities including two kiosks, a large protected luggage hold, space for 16 bicycles, café-style table seating, indoor and outdoor seating options and accessible toilets. The vessel has also been designed with active ride control comprising a pair of Naiad Active T-foils and interceptors to help reduce vessel motions.

The vessel's main deck will seat 198 passengers, including space for four wheelchairs, in an air-conditioned cabin that features five bathrooms and a large kiosk. An internal staircase leads to the mid-deck which offers VIP seating for 142 passengers as well as another kiosk and two bathrooms. The mid-deck also provides aft outdoor seating for a further 39 passengers, two bathrooms and the vessel's wheelhouse. External staircases from the mid-deck lead to a large, protected roof deck for 137 passengers.

Construction on the new vessel, which will take place at Marine Group Boat Works in San Diego, California, is planned to start in July 2025 with sea trials expected to occur in 2027.

"Catalina Express is grateful to CARB for this grant and the partnership with the Port of Los Angeles. Their support has allowed us to move forward on the construction of this new vessel to further the mission of environmental advancement and continuing to provide a valuable and affordable ferry service to Catalina Island for Island residents, visitors and local communities," said Greg Bombard, President and CEO of Catalina Express.

Incat Crowther North America Managing Director Grant Pecoraro said, "Incat Crowther is pleased to have been selected to design another groundbreaking and technologically advanced vessel for Catalina Express. We're looking forward to partnering with the team at Catalina Express to deliver an efficient, safe and world-class renewable diesel passenger vessel that will set the standard for other operators around the world looking to decarbonise."

Image of Proposed Los Angeles Ferry

(Image courtesy Incat Crowther)

Construction Material	Marine grade aluminium
Length Overall	48.8 m
Length Waterline	45.7 m
Beam	11.9 m
Draft Max	1.65 m
Depth	4.533 m
Passengers	516
Crew	10
Bicycles	16
Fuel (Day Tanks)	20780 litres
Fresh Water	1892 litres
Sullage	2670 litres
Service Speed	34.0 knots
Maximum Speed	37.0 knots
Main Engines	4 x MTU 12V4000 M65L
Installed Power	4 x 1920 kW [2575hp] @ 1800rpm
Gearboxes	4 x REINTJES VLJ930/1
Propulsion	4 x Hamilton HTX65 waterjets
Flag	United States of America
Class	USCG Subchapter K Protected Water Routes

Stewart Marler

Custom Crew Transfer Vessels for Japanese Wind Industry Designed by Incat Crowther

Experienced Japanese operator Tokyo Kisen Co Ltd has taken delivery of the first of two new bespoke crew transfer vessels (CTVs) to service Japan's growing offshore wind energy sector. Constructed by Cheoy Lee shipyard in China, the first vessel successfully completed sea trials in late 2024.

The two Class NK 26-metre catamaran CTVs have been developed with Tokyo Kisen to comply with local regulations. The design of the vessels has been future-proofed, with each vessel to begin its operational life carrying 12 technicians, yet with the flexibility to increase to 24 as Japan's regulatory framework evolves.

The main deck of each vessel features a large mess area, two bathrooms and an internal storage and change area. Technicians are carried in safety and comfort thanks to a resiliently mounted

superstructure. The vessels' upper deck features an elevated wheelhouse, as well as a private mess and pantry. The lower decks contain two twin cabins, a workshop space and a utility room. The vessels' operational capabilities are also enhanced by the inclusion of Incat Crowther's resilient-bow technology which reduces impact forces when the vessels are at wind turbine boat landings.

A large forward deck provides a dedicated space for transporting cargo to offshore wind farms with the vessels capable of carrying a deadweight of 35 tonnes. The vessels are capable of speeds of up to 28 knots and are powered by two Yanmar marine diesel engines with a twin Controllable Pitch Propeller (CPP) propulsion system provided by Servogear.

Commenting on the new vessels, Incat Crowther's Managing Director, Europe, Ed Dudson said: "With 48 Incat Crowther-designed CTVs over 25 metres in length either in service or currently under construction, this project will continue to build on Incat Crowther's successful track record of designing bespoke CTVs for the global offshore wind industry."

"The design of these CTVs has been a real collaboration with Tokyo Kisen in order ensure the vessels meet the unique needs in servicing the Japanese wind energy sector." said Mr Dudson.

Length Overall	26.4 m
Beam	9.0 m
Draft Hull	1.5 m
Depth	3.85 m
Special Personnel	12-24
Crew	4
Fuel	25 400 litres
Fresh Water	2 500 litres
Sullage	2 000 litres
Service Speed	25.0 knots
Maximum Speed	28.0 knots
Main Engines	Yanmar 12AYM-WET
Installed Power	2 x 1220 kW @ 1900 rpm
Propulsion	2 x Servogear CPP
Flag	Japan
Class	Class NK

Stewart Marler

Completed Japanese Wind Farm vessel

(Image courtesy Incat Crowther)

Fast Support Intervention Vessels by Incat Crowther

Zamil 80, the first of three new 60-metre Fast Support Intervention Vessels (FSIVs) Incat Crowther has designed for offshore marine services provider Zamil Offshore, has successfully passed sea trials and will soon enter service. The

Zamil 80

(Image courtesy Incat Crowther)

new vessel exceeded expectations, achieving a service speed of 28 knots with a 200-tonne payload – comfortably above zhe contracted service speed of 25 knots.

The three new ABS-Classed, low-draft monohull FSIVs are being constructed by Singaporean shipbuilder Lita Ocean and will assist Zamil Offshore with the efficient and safe transport of cargo, heavy maintenance equipment and personnel for Saudi Aramco's operations in the Arabian Sea. Construction on the remaining two contracted vessels is expected to be completed in 2025.

The new vessels are powered by four MTU 16V4000 diesel engines coupled to ZF gearboxes driving Hamilton HT810 waterjets. Manoeuvrability of the DP2-certified vessels is enhanced by three Hydromaster tunnel bow thrusters, allowing safe docking and superior station-keeping for transfer of cargo and personnel. Two of the main engines are coupled to FFS firefighting pumps with paired 1200 m^3/hr water monitors and shipboard water spray protection offering FiFi-1 capability. Three Scania 300 kW diesel generators provide ship service power.

The vessels' main deck offers an expansive 250 m^2 aft cargo deck rated at 2.5 t/ m^2 and a climate-controlled forward cabin featuring business-class seating for 60 service personnel, as well as three bathrooms, an office, snack bar and a well-equipped medical bay. Each vessel's 18 crew are housed on the hull deck which features a large pantry, mess, three bathrooms and laundry. The health of the crew is also prioritised with an isolation room located behind a sealed door.

The vessels comply with the latest requirements from Saudi Aramco, including ABS SMART and IDM-A notations.

Commenting on the successful sea trials, Incat Crowther's Managing Director, North America, Grant Pecoraro said: "We are pleased that the vessel's performance exceeded expectations during sea trials. The successful delivery of the first vessel in the fleet of three is a major milestone for the project, and we look forward to finalising construction and testing on the final two vessels later this year."

The delivery of *Zamil 80* builds on Incat Crowther's track record of successful large fast monohull crew boat projects, with the global digital shipbuilder delivering a portfolio of over twenty 58m-68m monohull crew boats for operators around the world.

Construction Material	Marine Grade Aluminium
Length Overall	59.8 m
Length Waterline	56.1 m

Beam	9.0 m
Draft Hull	2.15 m
Depth	4.45 m
Passengers	60
Crew	18
Deck Area	250 sq.m
Deck Cargo	150 t
Fuel	135 000 litres
Fresh Water	32 000 litres
Grey Water	1 800 litres
Black Water	1 800 litres
Deadweight	200 t
Service Speed	28.0 knots
Maximum Speed	36.0 knots
Main Engines	4 x MTU 16V 4000 M63L
Installed Power	4 x 2240 kW @ 1800 RPM
Gearboxes	4 x ZF7650 NR2
Propulsion	4 x Hamilton HT810 waterjets
Generators	3 x Scania D109
Bow Thrusters	3 x Hydromaster 150 KW thrusters

Stewart Marler

Elysian: 24-metre Catamaran Motor Yacht by Incat Crowther

Construction on a new, bespoke 24-metre catamaran is now complete with *Elysian* set to enter service for its private owners. The *Elysian* project has seen Incat Crowther collaborate closely with the owner throughout all aspects of the project including design, the shipyard tendering process, and by providing technical support during construction. The new vessel was constructed by Mason Marine Industries in Bundaberg, Queensland, Australia.

The motor yacht, capable of travelling at speeds of up to 29 knots, meets the operator's exacting requirements and features a range of innovations. The vessel offers a full-beam saloon with 360-degree views and generous outdoor living and entertainment spaces. Designed to operate in tropical climates, *Elysian* has a dedicated multi-zone air conditioning system.

Offering a high level of capability, *Elysian* features a multifunctional lifting swimming platform that allows easy access to the water and serves as a fishing platform. The vessel also features a large upper deck with room for two sizable tenders.

Accommodation includes a master cabin on the main deck as well as four cabins in the hulls and a captain's cabin on the wheelhouse deck. *Elysian's* upper deck offers a spacious wheelhouse lounge that can accommodate up to five people and three helm chairs. Access to the foredeck is provided via a Portuguese bridge layout.

Elysian features an open-plan living area, a custom galley and a dining space that flows onto an aft deck with seating for eight. The aft area is equipped with a full-service BBQ station.

Elysian shows her sleek lines

(Image courtesy Incat Crowther)

Powered by twin 1150hp Scania DI-16 main engines, *Elysian* features an innovative propulsion system designed for maximum efficiency and enhanced manoeuvrability. The integrated control system links the gearboxes, engines and bow thrusters to support station-keeping, smooth docking and precise low-speed handling. The robust aluminium hulls are coupled with a composite superstructure to provide a stable platform that does not require gyro or roll stabilizers.

Incat Crowther's Technical Manager Dan Mace said: "This project was a true collaborative partnership between our team of digital shipbuilders and *Elysian's* owners throughout design, fit out, construction and delivery."

Harley Mason, of Mason Marine Industries said: "*Elysian* is a highly capable vessel that will deliver the premium leisure experience that the client expects. Where greater complexity was required to meet the client's vision, the build methodologies provided by Incat Crowther were clear and well considered. The support from Incat Crowther throughout the project was responsive and attuned to our needs as shipbuilders, helping to deliver a vessel of outstanding quality."

Length Overall	24.0 m
Length Waterline	23.3 m
Beam	7.7 m
Draft (prop)	1.76 m
Depth	3.0 m
Construction:	
(Hull)	Marine grade aluminium
(Superstructure)	Composite
Fuel Oil	15,400 litres
Fresh Water	1200 litres
Sullage	1200 litres
Complement	12
Tenders	1 x 5.6 m
	1 x 3.6 m
Speed (Cruise)	21 knots
Speed (Max)	29 knots
Main Engines	2 x SCANIA DI16 076M
Power	2 x 846 kW @ 2300 rpm
Propulsion	2 x propellers
Generators	2 x Gensets
Flag	Australia
Class / Survey	Pleasure Vessel

Stewart Marler

WEIGHT REDUCTION IN EXISTING SHIP DESIGNS

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SUMMARY

This paper describes a simple but systematic approach to identifying potential weight savings in existing ship designs. The proposition is that by applying these strategies for interrogating the ship designer's weight report the areas of the design with the best potential for weight saving can be identified. This is suggested as a better approach than ad hoc methods such as getting a panel of experts to brainstorm what design changes might provide a weight saving.

NOMENCLATURE

VCG	Vertical Centre of Gravity
LCG	Longitudinal Centre of Gravity
TCG	Transverse Centre of Gravity
$\succ$	More important than
$\prec$	Less important than
SWBS	USN Ship Work Breakdown Structure (NAVSEA 900-LP-03909010)

1. INTRODUCTION

With tightening budget constraints faced by navies, modern combatants have service lives that are measured in decades. However, they must defend their countries' maritime borders and offshore assets in a political climate that can change weekly. With an ever-evolving political climate come new potential adversaries, bringing with them new unanticipated levels of technology. As a new combatant's lead time is measured in years and its cost a major investment with limited funds, the only affordable and timely response often is to upgrade existing vessels. However, with a finite displaced volume, there is only so much capability that can be added without the need to take something else off. The challenge for designers, therefore, becomes ascertaining what to take off and from where.

2. THE TYPICAL METHOD FOR REDUCING WEIGHT

A typical response to this dilemma is to form a committee of subject matter experts to brainstorm what might be removed or replaced with something lighter, so as to make room for whatever weapon or sensor is now urgently required. While this approach will typically find some way of accommodating the required capability, it does not promise the best solution nor is it likely to keep up with an ongoing changing threat landscape that will require the process to be regularly repeated. It also has the potential of achieving the desired reduction in mass through a lot of small changes in the design while overlooking heavy, outdated equipment or details that are near due for replacement. This would achieve the same saving, or more, with less cost and effort.

Another shortcoming of this approach is that subject matter experts are usually not cheap and a group of them is even more expensive. A single naval architect studying the problem in-depth may well be cheaper. While committees are excellent for reviewing the soundness of a proposed design change and provide the opportunity to consider its impact from multiple perspectives, generating the required objective evidence to justify the final decision is not easily done by them.

The committee approach also has a bias towards single step solutions to the issue of weight. For instance, Part A can be replaced with the newer version of Part A that is lighter, or Component B could be made out of aluminium instead of steel. These sort of options seem easier for a group of people to identify than say: System C is a larger portion of lightship mass than the equivalent system on other combatants so let's see if the other combatants have a better and lighter design for System C.

3. RESOURCES AVAILABLE FOR THE WEIGHT REDUCTION EXERCISE.

It would be naive to assume that the engineer or naval architect that has been entrusted with reducing the weight of the vessel already has a comprehensive knowledge of the vessel, its configuration and systems. Yet to be effective, all parts of the ship and its systems should be candidates for reducing weight, not just those systems within the vessel the particular engineer is familiar with. Likewise, going through the drawings of unfamiliar systems will be time consuming and will not easily reveal which components are overweight, even for someone who is experienced in the systems being examined. There are however resources available that if used systematically, can identify what parts of a ship's design justify a detailed examination because they have a higher probability of providing wanted weight savings.

These resources are: the designer's weight report for the ship under consideration; the ship/work breakdown structure for the vessel under consideration; and the designers' weight reports for other classes of vessels that are of similar purpose to the vessel under consideration.

3.1 DESIGNER'S WEIGHT REPORT FOR THE SHIP UNDER CONSIDERATION

The designer's weight report for a vessel is one of those documents that always exists for a vessel but is not often used or referred to once the vessel is in service. Consequently, it can be rather hard to locate. Once located it is a daunting document because it is a tally of all of the equipment and structure of the vessel complete with their mass, centres of gravity and the calculation for the vessel's and subsystems' mass and centroids. As such, this document has the literary appeal of a telephone book.

3.2 THE SHIP/WORK BREAKDOWN STRUCTURE FOR THE VESSEL UNDER CONSIDERATION

As the weight report is such a large document it is typically broken up with subtotals that match whatever work breakdown structure was adopted during the original construction of the vessel. If you are lucky, the work breakdown structure used will be NAVSEA 0900-LP-039-9010 the USN Ship Work Breakdown Structure (SWBS). The advantage is that it has

been used on multiple ship builds, both here and abroad, and as such allows for the ready comparison of the weight reports of different vessels.

If the vessel is of UK design the weight report may be broken up using Ministry of Defence Standard 02-163 Classification for Weight Groups for Surface Ships. This system has a superficial similarity with NAVSEA 0900-LP-039-9010 but deviates in detail and philosophy. It has not been as universally applied across projects as NAVSEA 0900-LP-039-9010 and so provides less opportunity for comparing the weight breakdown across classes of ships. It is also less universally applied within projects. This is because many of the non-weight report functions of a ship work breakdown structure are performed by the Fleet Area Code in the UK way of doing things.

The Fleet Area Code (FAC) is defined in Ministry of Defence Standard 02-041 Requirements for Configuration Management of Surface Ships, Annex C. The FACs break up the ship into different categories and subcategories to those used in Defence Standard 02-163 and the relationship between the two is not defined in any official standard found by this author.

If the situation is truly unfortunate, the designer will have been allowed to use their own ship work breakdown structure during the ship acquisition, in which case a specific set of strategies will need to be applied to the weight report to identify weight reduction opportunities.

3.3 WEIGHT REPORTS FOR OTHER CLASSES OF VESSELS THAT ARE OF SIMILAR PURPOSE

Having access to the weight reports of other vessels is a powerful tool if they are available. Typically, getting hold of these documents requires special permission and prolonged negotiation with their custodians. The purpose of these other weight reports for light weighting is that it allows the investigator to quickly identify what portion of their ship is heavier or lighter than the equivalent systems in other ships. For this comparison to be meaningful the other weight reports need to be of ships of similar purpose. Comparing the weight report of a landing craft with that of a tanker would be meaningless but comparing two combatants, even with very different displacements and built decades apart gives useable data.

4. STRATEGIES AVAILABLE FOR FINDING WHERE TO LOOK FOR WEIGHT SAVINGS

Each of the following strategies are designed to guide the investigator as where best to look for weight saving opportunities. They do not find the actual design change that will reduce the vessel's mass but they do direct the investigator as to where to concentrate their effort. The actual strategy(ies) used is dependent on what resources are available.

4.1 PARAMETRIC COMPARISION

This strategy consists of comparing the weight breakdown between vessels of similar purpose. The numbers that are compared are the percentage portion of lightship mass of each system. In practice, this involves overlaying graphs of the portion of lightship weight by weight group number. For example, if the vessel of interest had a higher percentage value for HVAC (512 in NAVSEA) than the three or four other designs it was being compared with, then HVAC would be a system that justified further investigation.

The first step of this deeper investigation is to inquire if the intended purpose of the vessel justifies the extra weight of the identified system. Going back to the HVAC example, if the vessel of interest is intended for service in the tropics while the comparison vessels are only intended for temperate zones, then the heavier HVAC system may well be justified.

If the identified system passes this first gate then a parametric comparison within the system is justified. Going back to the HVAC example, this would involve overlaying graphs of the relative contribution to the system's mass of components such as ducting, fans, heaters, supports etc. This level of investigation is when the results start to appear. Whatever part of the system is proportionally heavier than the other vessels needs to have its design compared with the reference vessels. In short, it is at this point of the investigation that relevant system specialists are consulted and drawings for the system are examined to identify specific items that can be made lighter.

4.2 MULTI CRITERIA SCORING

This strategy is simply an application of the weighted sum model from multiple-criteria decision analysis and has value in the following circumstances:

- Weight reports of other vessels are not available
- Weight is not the only parameter being considered
- The other weight reports available do not use the same SWBS system as the ship being investigated

The typical criteria that are considered are of course weight, but also moving the vessel's centre of gravity, the ease with which a change could be effected, and the likelihood that a deep investigation of the system will in fact identify a weight saving. Another criteria might be the likelihood of an identified weight saving actually being approved by the customer or project authority. An example of this is the combat system where experience suggests that those who want the extra capability fitted to the vessel do not want to lose any other capability to get it.

Looking in turn at the four potential criteria mentioned above.

4.2 (a) Weight

Even if there are no reference vessels to compare the weight of a system to see if it is proportionately heavy, the vessel's own weight report can still be useful in judging if an investigation into a system will be worthwhile. The logic is that achieving, say a 1% weight saving, will involve a comparable level of effort regardless of that system's weight. However, a 1% weight saving on a heavy item or system should provide a better result for that effort than the 1% weight saving for a lighter item or system. If weight is the only criteria then the weight report can be used to sort the SWBS numbers in weight order, i.e. the heaviest SWBSs first and the lighter SWBSs last. The weight investigator can then focus their attention on those Weight Codes at the top of the list, discarding any they judge are not amenable to design changes and doing a deeper investigation on those that remain. That deeper investigation again involves using the weight report and doing a weight breakdown of the items within the heavier weight codes. If

there are any categories of items that contribute most of the mass for one of these heavier SWBSs then the potential weight saving has been found.

4.2 (b) Centre of Gravity

The change in vessels' centre of gravity that is usually sought is a lowering of the vessel's vertical centre of gravity (VCG). This makes sense as most new sensors need to be installed as high as possible to maximise their range and most weapons systems have to be attached to a weather deck in order for them to work. In both cases the desired increase in capability is raising the vessel's centre of gravity as well as reducing its freeboard. However, sometimes it is also necessary to correct the vessel's heel and/or trim with the intended weight reductions.

4.2 (c) Ease of Change

The ease with which the vessel's mass might be reduced will definitely be a criteria for both the customer and the project manager, even if it is not explicitly given as a requirement to the naval architect doing the study. It will often be assumed that unplugging and unbolting a piece of equipment and replacing it with a newer model that weighs less will be an easier change than, for example, redesigning a steel deckhouse in aluminium. There are multiple strategies available for reducing the weight of a system but not all of these strategies are available for every system.

A weight saving in the ship's structure (all the NAVSEA 100s Group) will require reanalysis of the structure under consideration - HARD. A weight saving in outfit items (the NAVSAE 600s Group) will often involve a change in the design of attachment details - EASIER. A weight saving in machinery (mostly the NAVSEA 500s Group) will involve straight substitution - EASIEST but may also require testing to confirm the new item meets requirements such as shock and vibration - EASY. A weight saving in the ship's propulsion system (NAVSEA Group 200) may well require a major redesign of the vessel – NOT GOING TO HAPPEN.

1.2 **(d) Likelihood**

The type of investigation described in this paper is a high level investigation, intended to be used to identify where effort should be focused during the next more detailed phase of looking for weight savings. As such, there is no absolute certainty that the areas identified will actually have achievable weight savings in them. There are, however, areas of greater and less likelihood of success and a judgement call can be made as to what this likelihood is.

This judgement call can be guided by a few principles. If the system has more than one strategy available for pursuing weight savings then the likelihood goes up, that is, there are more chances that at least one of the strategies will work. A piping system with lots of valves for instance may provide the opportunity of saving weight by substitution, for instance by swapping out the existing valves with ones manufactured from a stronger lighter material. The same system may also offer the opportunity of achieving the weight saving by shock testing lighter valves of the same material as the existing ones to see if the lighter version can pass the shock criteria that prompted the selection of the heavier valves. Each extra strategy that is available increases the likelihood that at least one will work.

The second principle for making an accurate judgement of likelihood is that if it can be divided into a series of smaller judgements, that are combined mathematically, then the combined judgement is not only easier to make but also more likely to be accurate. The strategies for reducing the weight of a system are limited.

Basically the options are:

- Reanalyse the system in more detail,
- Make its components out of lighter materials,
- Use a different manufacturing technique that leaves less redundant material in the parts,
- Do more physical testing of the system's components to ensure only the lightest components that still pass the test are used, or
- Substitute different components that meet the required fit, form and function but are lighter.

Each system has a subset of these strategies that are applicable and their own likelihood of success for each strategy.

1.3 **RELATIVE IMPORTANCE OF EACH CRITERIA**

Not all of the selected criteria are of equal importance to the stakeholders. Mathematically we can deal with this using a weighting factor that reflects each criteria's importance relative to the other criteria. The more important the criteria the bigger the number. The rule here is that if the weightings for all of the criteria are totalled together then they should add up to 10. If each criteria is marked out of 10 then this ensures that the combined score for a system that takes all criteria into consideration is out of 100 and this makes the combined score easy to interpret. So looking at criteria argued in Section 4.2 to be relevant, what is their order of importance?

4.3 (a) Weight

If a group of systems as represented by a SWBS number does not have a significant weight, then any plausible percentage reduction in its mass is not going to give much of a weight saving. Any consequent improvements in the vessel's centre of gravity will not matter and it will not matter how likely the weight saving is, nor will matter how easily the weight saving was achieved. On the basis of this logic the weight of the SWBS number is the **most important** of the criteria.

4.3 (b) Centre of Gravity

A weight reduction that increases the vessel's centre of gravity and hence reduces its stability is not likely to be appreciated. Nor will a weight reduction that introduces a heel to the vessel or an undesirable trim. If any found weight reduction opportunity is regarded as undesirable it will not matter how likely that weight change is to be achieved nor will the ease of achieving it. It will simply not be approved. On this basis, the location of the centre of gravity of the SWBS number is regarded as a **very important** criteria for considering its potential for holding desirable weight reduction opportunities.

4.3 (c) **Ease of Change**

The ease with which the vessel's mass might be reduced will definitely be desirable and a consideration once a potential weight saving has been found, but it is not a high motivation for picking where to look in detail to find it in the first place. On this basis the ease of achieving a weight reduction is the

least important criteria for selecting where to look in the ship's weight report for a potential weight saving.

4.3 (d) **Likelihood**

A higher likelihood that a desirable weight saving can be found in a particular SWBS number will increase the motivation to look for them there. Here the question of how to judge the likelihood comes to mind and that is described in Section 4.2 (d) and 4.5 (d). Finding a big weight saving and having it move the vessel's centre of gravity in the right direction is still more important than the effort that went into finding the weight saving or getting it to work. So on this basis we will classify likelihood as an **important** criteria but not as important as weight or centre of gravity.

4.4 WEIGHTING CRITERIA

Having ordered the criteria on the basis of their relative importance, the next step is to quantify - put numbers to measure - their relative importance to us. As there are four criteria and their weightings need to add up to 10, then we could simply arbitrary apply the weightings 1, 2, 3, 4.

Table 1. Weighting of criteria.

The author has found these weightings to be adequate but for those who want more rigour, there is an objective way to quantify the weightings. Setting up a table where the criteria are compared in pairs, the instances where a criteria is the preferred in a pair can be tallied. (Note this method has been adopted from a method described in Reference [5].)

Table 2. Calculation of weightings.

Note:

a. The total of how many times the criteria is the preferred of a pair, in the table not just its column.

b. So that the subsequent calculations do not eliminate the least preferred criteria as a consideration but maintains its relative importance 1 is added to all the totals.

c. Note that if the weightings in the row above didn't add to 10 they would need to be scaled to do so and this row would therefore have different values.

Note that here the symbols $\prec$ and $\succ$ are not to be confused with $<$ and $>$. The greater than $>$ and less than $<$ symbols are a comparison of quantities whereas the curvy symbols ($\succ$ preferred more than and $\prec$ preferred less than) that admittedly look similar, are a record of preference or importance between two entities. The notation comes from the mathematics of preferences that was developed in economics.

The third last row is a total of how many times each criteria is the preferred of a pair. This leaves the least important criteria preferred zero times. So that the subsequent mathematics does not leave it with a zero weighting, and no longer a criteria, we add one to each of the counts on the second last line. The relative importance of each of the criteria has now been quantified and if they did not already add up to 10 they would need to be scaled so that they do.

4.5 SCORING AGAINST CRITERIA

The next challenge is scoring each SWBS number against each criteria. There are a lot of SWBS numbers and although no vessel uses all of them there are typically around 200 of them relevant and used for any particular design. The need is to go through the weight report quickly but accurately to identify which portions of the weight report (SWBS numbers) to concentrate the man-hours left over to find the weight savings needed. This means that the scoring of each SWBS number

Table 1. Weighting of criteria.

Criteria	Importance	Weighting
The total weight that can be saved	Most important	4
Location of the weight saving	Very important	3
The likelihood of achieving the weight saving	Important	2
The ease of achieving the weight saving	Least Important	1
	Total	10

Table 2. Calculation of weightings.

	Weight	Centre of Gravity (CoG)	Ease	Likelihood
Weight				
Centre of Gravity (CoG)	Weight $\succ$ CoG			
Ease	Weight $\succ$ Ease	CoG $\succ$ Ease		
Likelihood	Weight $\succ$ Likelihood	CoG $\succ$ Likelihood	Ease $\prec$ Likelihood	
Total Preferred[a]	3	2	0	1
Add 1[b]	4	3	1	2
Scale to add to 10[c]	4	3	1	2

against each criteria cannot be a long deliberation.

A scoring system that has worked in the past with the example criteria is given in the following sections. Again, as the final combined score is out of 100 each individual criteria score needs to be out of 10.

4.5 (a) Weight

A logarithmic scale has been found to be fairly quick to apply. The idea is for those SWBS numbers that represent more of the vessels mass to get a higher score than those portions of the ship that are less significant with regards to mass. The example given in Table 3 can be scaled up or down to match the total displacement of the vessel.

Table 3. Weight scoring scale.

Mass Range	Descriptor	Score
100t to 999t	Significant	10
10t to 99t	Adequate	5
1t to 9t	Minimal	2
1kg to 999kg	Miniscule	1

4.5 (b) Centre of Gravity

The example scoring system given in Table 4 shows just how simplified the scoring system can be. Comparing the subtotal centre of gravity of a SWBS number in the weight report with that of lightship is a quick and simple thing to do.

Table 4. Centre of gravity location scoring system.

This example marking scale cannot be applied as blindly as the one for weight. Depending where the new capability is being added that requires the reduction in mass across the rest of the ship the impact on LCG and TCG may need to earn a higher or lower mark.

4.5 (c) Ease of Change

As stated in Section 4.2 (c) there are multiple ways of creating a weight reduction for a system but not all of them will work for every system. This example scoring assumes that there are only five ways to reduce the weight of a system or component and each has its own level of difficulty to see the weight reduction implemented. The example marking scale in Table 5 reflects a judgement of how difficult each strategy would be to implement for a completed vessel in service.

For example, if some additional analysis is required during the design, or preliminary design stage of the vessel's lifecycle then the extra effort is neither here nor there. But for a completed design that is already in service, reanalysing a system and the implementation of what could be far reaching changes is a very daunting situation. As this is interpreted as a hard strategy to implement then it gets a low score in the marking scale. At the other end of the scale a straight unbolting and replacement of an item with another of the same fit, form and function that is lighter is considered the easiest and therefore the highest scoring option

Table 5. Ease of change scoring system.

Strategy for light weighting	Descriptor	Score
Analysis	Difficult	1
Alternate materials	Challenging	2
Alternate manufacturing Technique	Tricky	3
Testing	Involved	6
Different components	Easy	10

Note straight replacement is not always possible. Changing a structural detail for instance would not be regarded as a substitution but would need to be proceeded by some analysis and redesign. Where a system has more than one strategy available, the one with the highest mark provides the score given for that SWBS number.

1.5 **(d) Likelihood**

The challenge with scoring this criteria is that likelihood is a probability which means it has a value between 0 and 1 but what is required is a marking scale that can give a top score of 10. In addition, a guestimate of the probability is itself likely to be more guess than estimate. The marking scale in Table 6 can give three marks; 2, 1, and 0. Obviously this will not provide a top mark of 10.

Table 6. Likelihood scoring system.

Probability of Removing Weight	Descriptor	Score for each occurrence
60% to 100%	Likely	2
40% to 59%	Possible	1
0% to 39%	Unlikely	0
-	Unknown	0

The marking scale of Table 6 is combined with the judgement of light weighting strategies that might be available for that group of systems. This is best explained by example.

Each separate strategy that provides a likely or possible means of achieving a weight saving adds to the probability that at least one of the strategies will have success. If every possible

Table 4. Centre of gravity location scoring system.

Effect of Removing Weight	Descriptor	Score
Lowers VCG, moves LCG towards amidships and TCG towards centreline	Highly desirable	10
Lowers VCG	Desirable	5
Moves LCG towards amidships and/or TCG towards centreline	Desired	2
None of above	Ambivalent	1

Table 7. Example of available light weighting strategies and likelihood score.

NAVSEA nnn – Dummy Weight Code					
Strategy for light weighting	**Likely**	**Possible**	**Unlikely**	**Unknown**	**Total**
Analysis	ü				
Alternate materials			ü		
Alt manufacturing Technique		ü			
Different components			ü		
Testing			ü		
Total ticks[a] (a)	1	1	3	0	
Occurrence Score[b] (b)	2	1	0	0	
Score[c] (a) x (b)	2	1	0	0	**3**[d]

Note:

a. Total number of ticks for that columns likelihood

b. The score earned for each tick for that likelihood obtained from Table 6.

c. Obtained by multiplying the number of ticks by the occurrence score for that likelihood.

d. The sum of the values in the four cells to the left.

strategy was judged as likely, then the maximum score of 10 would have been achieved.

1.6 A WORKED EXAMPLE

To put this multi criteria scoring system together let's use NAVSEA 0900-LP-039-9010 SWBS 111 Shell Plating. We will assume that our example vessel has a light ship displacement of 5,000 t, and that it is a combatant so its structure will be around 48.5% of lightship 2,425 t, and estimate that shell plating is around 11% of structure 267 t.

Table 8. Weight score.

Mass Range	Descriptor	Score
100t to 999t	**Significant**	**10**
10t to 99t	Adequate	5
1t to 9t	Minimal	2
1kg to 999kg	Miniscule	1

Our fictitious ship has centre of mass for the shell plating below the vessel's centre of gravity and due to a very large flight deck aft and a boxy superstructure forward the vessel's LCG is forward of amidships but the shell plating centre of gravity is close to midship. With the shell plating symmetrical port and starboard, reducing its mass is not going to move the ship's centre of gravity in any desired direction.

Table 9. Centre of gravity location score.

As the shell plating is part of the vessel's hull girder and change in its design will impact the ship's structural calculations necessitating redoing the required analysis. Let's assume that the original design had the shell plating made from Lloyd's Grade A steel leaving the option of changing the shell to a stronger grade of steel, so alternate materials is an option, but how practical it is depends on how much plate will be cut out and replaced. Let's assume that there is a localised thick plate due to a stress concentration. The only alternate manufacturing technique that comes to mind for shell plating is a change in the welding technology used to put it together. Any change in mass due to a different type of welding is considered near zero. The next assumption is that the shell plating was made thicker because there was a requirement to patrol the Southern Ocean so extra plate thickness was added due to concern over the steels performance in low temperature shock. This last concern might be addressed by physically testing the selected steel to confirm it's ductile to brittle transition temperature and doing some low temperature explosion bulge testing. Shell plating for ships is produced to defined standards regardless of manufacturer so replacing it with one from a different supplier will make no difference if the same grade of steel is being ordered

Table 10. Ease of change score.

Table 9. Centre of gravity location score.

Effect of Removing Weight	Descriptor	Score
Lowers VCG, moves LCG towards amidships and TCG towards centreline	Highly desirable	10
Lowers VCG	Desirable	5
Moves LCG towards amidships and/or TCG towards centreline	Desired	2
None of above	**Ambivalent**	**1**

Strategy for light weighting	Descriptor	Score
Analysis	**Difficult**	**1**
Alternate materials	**Challenging**	**2**
Alternate manufacturing Technique	Tricky	3
Testing	**Involved**	**6**
Different components	Easy	10

Of the three strategies relevant to NAVSEA 111; analysis, alternate materials, and testing, the one that attracts the highest score is testing so that provides the score for this criteria.

In Table 11 the judgement call on the likelihood of each of the light weighting strategies is recorded and the score for likelihood is calculated.

Table 11. Likelihood of available light weighting strategies.

Calculating the combined score for this imaginary example ship's shell plating consist of multiplying the scores for each criteria against the relevant weighting and then summing the results.

Table 12. Total light weighting score.

SWBS 111 Shell plating			
Criteria	**Score**	**Weighting[1]**	**Weighted score**
Weight	10	4	40
Location of CoG	1	3	3
Ease of change	6	1	6
Likelihood	5	2	10
Combined score			**59**
Notes: 1. Weightings are taken from Table 2 in Section 4.4			

This gives the shell plating (SWBS 111) of our imaginary ship a score of 59/100 for its potential and desirability as a place to look for light weighting opportunities. Chances are there will be several systems that score better than the shell plating and they will be investigated in preference to this system. However, even if the system had scored higher, the replacement of an existing ship's shell plating will never be cost effective. Obviously some common sense needs to be applied when interpreting the results of this method.

5. REVIEWING THE WHOLE OF THE VESSEL FOR WEIGHT SAVING OPPORTUNITIES

The point of this paper is to provide a tool to systematically find those weight saving opportunities that a panel of subject matter experts will overlook. The panel of experts will be limited by time available for meetings, the mix of personalities, and the range of experience available to the panel. Their biggest disadvantage though is that apart from time availability and the magnitude of the weight savings that need to be found, there is no defined start and finish to their deliberations.

The weight report on the other hand, although big, does have a first and last page. If we apply the above approach to every weight group number in whatever ship work breakdown structure was adopted for the weight report then there can be no dispute that some part of the ship was overlooked should the total of the weight savings eventually found not meet the mass reduction desired. To that end, it is recommended that the investigators final report needs to address even those weight group numbers not applicable to the vessel with a 'N/A' rather than leave them out of the report. For those weight groups that are applicable, they should be listed by their score in descending order as the priority list of most likely to least likely to provide a desirable weight saving. This will provide the project's management with a clear map of where to allocate their resources for a detailed investigation of the vessel's design.

6. FINAL STEP

Once the top NAVSEA numbers for weight reduction have been found then something as simple as a pie chart will quickly reveal where the weight saving is. Many NAVSEA numbers have a large amount of weight dominated by one type of item. To illustrate this below is a pie chart of the weight breakup typical of SWBS 512 HVAC.

Table 11. Likelihood of available light weighting strategies.

NAVSEA 111 – Shell plating					
Strategy for light weighting	**Likely**	**Possible**	**Unlikely**	**Unknown**	**Total**
Analysis		ü			
Alternate materials	ü				
Alt manufacturing Technique			ü		
Different components			ü		
Testing	ü				
Total ticks (a)	2	1	2	0	
Occurrence score (b)	2	1	0	0	
Score (a) x (b)	4	1	0	0	**5**

On the basis of this chart it would seem that the extra effort and expense of designing lighter ventilation ducting that meets the customer's and regulator's requirement may be more worthwhile than looking for lighter sensors. Within many SWBS number groups there are one or two items that contribute the majority of the mass and on most occasions these are the light weighting opportunities.

Figure 1: Typical weight breakdown within a NAVSEA SWBS number.

CONCLUSIONS

Most of this paper is devoted to having an objective method to justify where to direct effort when needing to find weight reductions in a ship. The second method of multi criteria scoring has many steps but is doable. The first method of parametric comparison of the ship's weight report with those of other vessels of similar purpose is simpler and more direct but is only possible if these other weight reports are available for comparison. In any case, the need to reduce the mass of existing vessels in order to facilitate new capability not anticipated when the vessel was designed and built will continue. The methods described in this paper have a particular advantage over ad hoc approaches when significant weight savings have to be found more than once over the life of the vessel.

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9. AUTHORS BIOGRAPHY

David Whittaker holds the current position of Principal Naval Architect at the Research and Technology division of BAE Systems Australia – Maritime. The Author is responsible for investigations to increase futuregrowth margins of existing surface combatant designs. The Author's previous experience includes the RAN Air Warfare Destroyer Project where he reviewed design artefacts including the weight report for safety concerns and accuracy.

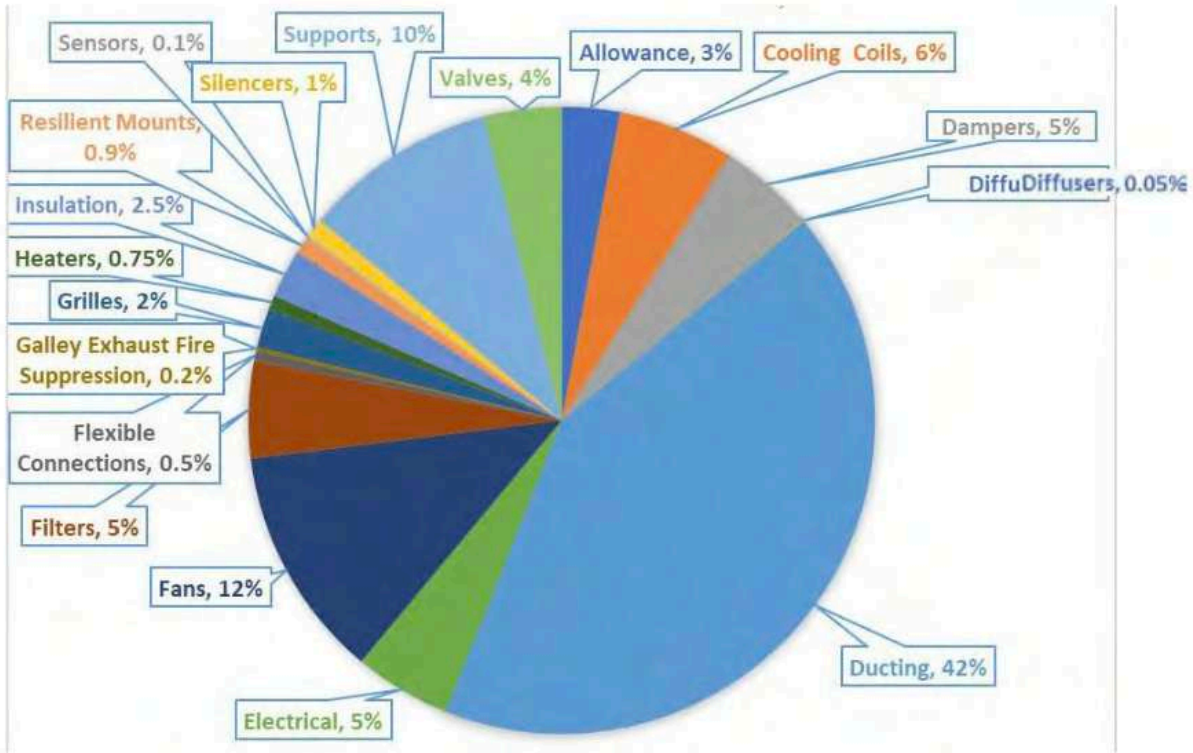


Figure 1: Typical weight breakdown within a NAVSEA SWBS number.

Vale - John Jeremy AM

The April issue of this journal included a Stop Press item advising of John's passing on 18th April 2025 following a relatively short battle with pancreatic cancer which had been diagnosed about three months earlier. John's memorial service was conducted at Ryde on 5th May, attended by family, friends and colleagues from the many interlinked strands of his life, of which naval architecture was central.

John is best known to RINA Australian Division members as Chief Editor of this journal from 1998 until the start of this year and also as Chair of the Organising Committee for the Indo-Pacific International Maritime Conference (IMC) since 2002. But these were simply two of the jobs he took on in retirement – there is so much more to his story but this column concentrates on his professional career.

John was born on 4th July 1942, the youngest son of Dr Richmond and Joan Jeremy of Vaucluse. Over a decade younger than his two brothers, he was educated at Cranbrook School from Prep through to Senior years. He was a good student and did especially well in maths and science. Indeed, one of his teachers thought he had a promising future as a mathematician, but John had other ideas. In his own words:

> *From an early age I was interested in ships – particularly warships. It was not so much an interest as an obsession. I was cutting photographs of ships out of papers and magazines and sticking them in books from about the age of seven, and my first copy of Janes Fighting Ships in 1954 was read from cover to cover, often in bed late at night."*

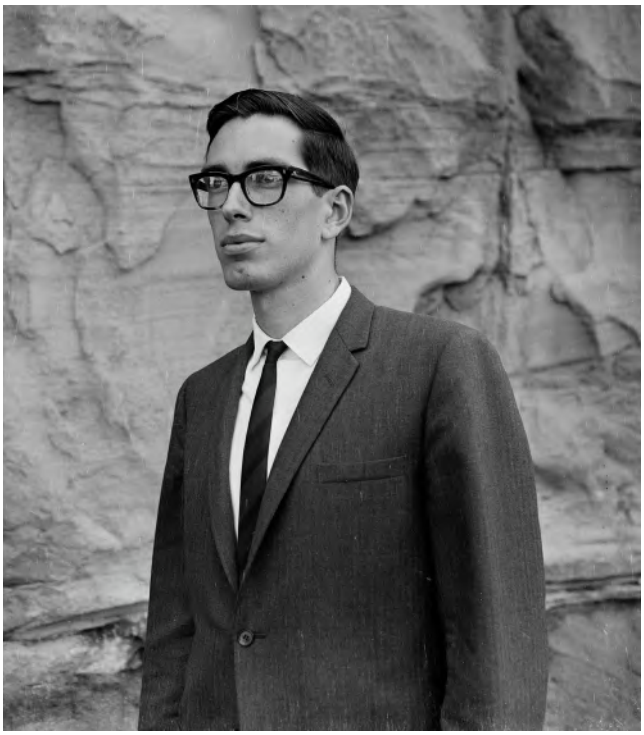
In early 1956 the family met Lieutenant Commander Roberts RAN who was at that time Executive Officer of HMAS *Arunta*, a Tribal class destroyer, built on Cockatoo Island. Responding to an invitation from Commander Roberts, on 22nd May 1956 John arrived at Garden Island for a day of post-refit sea trials he would never forget. The experience left him with an enduring affection for *Arunta* and a firm conviction that the Navy was where he belonged.

However, he had to complete school and did so in 1959 having been a member of the debating team, Form Captain and House Prefect, with reports indicating he was liked, considerate of others and showing promising leadership skills. School sports through were never his forte - he said he was hopeless at ball games because he could never see the ball properly.

After leaving school John chose not to follow his father Richmond and brother David into medicine, but applied to join the Navy. His application was, however, unsuccessful because of his eyesight. Soon afterwards John found himself on a path closer to that of his eldest brother Richmond, who was an engineer.

On 4th January 1960 John started work as an apprentice draughtsman at Cockatoo Dockyard, being paid in his words to "play with real ships", while at the same time studying Naval Architecture part-time at the University of New South Wales. He graduated B.E. (Naval Architecture) Hons. Cl.2, Div.1 in 1967.

And so began John's long and distinguished career at Cockatoo Dockyard (Cockatoo Dockyard Pty Limited (variously owned)) during which he progressed through the positions:



An Apprentice Ship Draughtsman at Cockatoo Island
(John Jeremy collection)

1960 – 1965	Apprentice Ship Draughtsman
1966	Ship Draughtsman
1966 – 1972	Head Planning Officer
1972 – 1975	Technical Services Manager
1975	General Manager – Technical
1976 – 1981	Technical Director
1981	Deputy Managing Director
1981 – 1986	Managing Director
1986 – 1991	Chief Executive

In 1967, he was the first non-UK applicant to win an award from the Vickers Post-Graduate Study Fund, which allowed him to spend several months working in dockyards across the UK.

John took great pride in the careful design and planning skills that are essential to build a ship, noting that HMAS *Vampire*, under construction when he first started at the Island, is still afloat at Darling Harbour today.

A long-running project overseen by John at Cockatoo was the mid-life re-fit of the RAN's Oberon class submarines.

A further project that followed John for much of his career was the building by Cockatoo Dockyard of the fleet replenishment ship HMAS *Success*, the largest ship in the Royal Australian Navy and the last of a line of some 290 ships built at Cockatoo. *Success* was originally intended to be the first of two sister ships, but increased costs and delays associated with building in Australia a first-of-class ship of foreign design resulted in the cancellation of the second ship.

On Bridge of *HMAS Stalwart* during contractor's sea trials 4 December 1967

(John Jeremy collection)

With Jack Coleman and Clem Morris on board *HMAS Torrens* on hand-over day 18 Jan 1971

(John Jeremy collection)

However, in 1991, the Commonwealth decided not to renew the lease on Cockatoo Island and shut down the Dockyard. John undertook this task as Chief Executive of ANI Engineering Services Pty Ltd through to 1997. This position involved preparation and presentation of evidence in a major arbitration between Cockatoo Dockyard Pty Limited and the Commonwealth of Australia over the closure of Cockatoo Dockyard, resulting in a substantial financial award to the company.

John said that, as was customary up to the 1960s, he was presented with an application form to join The Royal Institution of Naval Architects (RINA) on his first day at the Dockyard. In keeping with his progression at the Dockyard he soon became a Fellow of RINA and was the inaugural President of the Australian Division when it was formed (from a Branch) in 1979 and remained in that position until 1985. He was a member of the Australian Division

Shipyard management team on departure from Cockatoo Island of *HMAS Ovens* after refit, October 28 1975. Left to right: Bruce Zeigler (Submarine Contracts Manager) CMDR Kevin Krummel (Principal Naval Overseer, Cockatoo Island), John Jeremy (General Manager - Technical), Laurie Harrison (Technical Manager). *HMAS Duchess* in the background.

(John Jeremy collection)

With Charles Yandell (Codock Production Director) on bridge of Success during sea trials December 1985

(John Jeremy collection)

Signing acceptance certificate for *Success* on 15 April 1986 with RADM B. L. West RAN (Chief of Naval Materiel)

(John Jeremy collection)

Council from 1971 to 2003 and again from 2005 to 2011. He also served as a member of the Institution's London-based Council from 2006 to 2012.

In 1998, John volunteered to partner with Phil Helmore as

Editor-in-Chief and Technical Editor respectively to save the fledgling *Australian Naval Architect* from extinction. They continued in these roles, developing the magazine from a newsletter into the journal that it is today, until their health intervened at the start of this year. John's death followed just 6 weeks after Phil's – both are irreplaceable.

John's other longstanding RINA-related role was as the "independent" Chair of the Organising Committee for the Pacific and Indo-Pacific series of International Maritime Conferences from 2002 until 2025. As independent chair he led the committee consisting of Engineers Australia, the Insitute of Marine Engineers, Scientist and Technologists and RINA. In this role he was responsible for the organizational, financial and technical conduct of eleven highly successful biennial conferences. Through John's leadership, the conference is internationally recognized and draws contributors from all over the world. A particular challenge was to maintain the momentum during the COVID years where the agenda and environment was constantly challenging for John – but he persisted and delivered.

In early 2008 the locations of HMAS *Sydney* and the HSK *Kormoran* were discovered and extensive video and photographic evidence was taken. The Hon. Terence Cole was tasked with understanding the circumstances surrounding *Sydney's* loss and subsequent loss of life. Both RINA and DSTO were asked to contribute, one group leading the analysis and the other reviewing. Following extensive discussions between John and Stuart Cannon, (the Australian Division President at the time) it was decided that a more thorough analysis could be achieved if a joint report was produced using RINA's historical knowledge and up-to-date analysis techniques employed by DSTG. The result is one of the most extensive studies carried out on an Australian warship. John and the team presented the report at the Cole Inquiry in 2009. Almost all of the report was accepted without question. DSTO awarded the team, including John, an achievement award and the Chief of Defence Force, Air Chief Marshall "Angus" Houston issued a Chief of Defence Force Commendation for the work – the highest commendation award.

John was also a Chartered Professional Engineer, Fellow of the Institution of Engineers and Member of the US-based Society of Naval Architects and Marine Engineers.

In keeping with his positions at the head of a major shipbuilder, John was active in the Australian Shipbuilders Association of which he was Deputy Chairman through 1984-1987. He also had a prominent presence in the Metal Trades Industry Association over the period 1983-1997 including serving as Vice President, Deputy President and finally National President during 1988 to 1994. MTIA subsequently became part of the Australian Industry Group.

John also held the following positions in other bodies to which he freely contributed his time:

- Australian Journal of Multi-disciplinary Engineering, Engineers Australia - Editorial Board Member 2018 –2020
- Australian Welding Research Association - Member of Council 1979 – 1983
- Standards Australia - Member of Council 1993 – 1997
- Committee for Economic Development of Australia - Associate Trustee 1985–1987
- National Trust of Australia (NSW) - Honorary Naval Architect 1987 – 2025
- Navy League of Australia - Vice President 2012 – 2013, Senior Vice President 2013 – 2023
- Australian Register of Historic Vessels - Member of Council 2008 – 2025
- Australia Day Regatta Inc - Chairman 2005 – 2015
- Australian Naval Institute - Member
- Naval Historical Society of Australia - Life Member, Vice President 2011 – 2025
- Submarine Institute of Australia - Member
- World Ship Society - Member of the Archive Digitising Committee (UK)
- Australian Society for History of Engineering and Technology - Member
- US Naval Institute - Member
- Sydney Maritime Museum Limited (Heritage Fleet) - Advisory Committee Member 2002 – 2024
- Australian National Maritime Museum - Honorary Life Member
- Australian Register of Historic Vessels - Member of the Council
- Museum of Applied Arts and Sciences NSW - Honorary Associate/Life Member

Following the closure of Cockatoo Dockyard John ceased full-time work despite twice being approached about CEO roles in other states. He declined these because he could not bring himself to leave Sydney, partly because of his commitment to look after his parents, and partly because of his involvement with so many Sydney-based organisations including the sailing community. Instead he embarked on his second career as a consultant, author, editor, historian, consultant, presenter and photographer.

Mathew Jeremy, a nephew, said:

> *He would tell me what was in his diary for the week and it was invariably crowded with committees, functions, editing and sailing to name just a few. He once joked that this was not bad for someone who had not had a job for more than 20 years, to which I replied that he was the busiest unemployed person I had ever met.*

John's work as archivist, historian and author was also very important. Over the years he gathered a unique collection of maritime documents, images and memorabilia largely about Cockatoo Island and the Dockyard. In the 1990's, John started cataloguing the collection and using it as source material for his books about the Dockyard. Telling the story of Cockatoo was a labour of love for John, resulting initially in his authoring the book *Cockatoo Island: Sydney's Historic Dockyard* (1998 and 2005, UNSW Press, Sydney). This work also resulted in his later books *The Island Shipyard — Shipbuilding at Cockatoo Island 1870*

to 1987 (2013, Sydney Harbour Federation Trust, Sydney) and *Keeping the Ships at Sea —Ship Repair at Cockatoo Island 1857 to 1991* (2013, Sydney Harbour Federation Trust, Sydney).

In addition, John wrote numerous reports including :

- *Cockatoo Island Sydney: A Thematic Presentation* (2003), for the Sydney Harbour Federation Trust (with James Semple Kerr)
- *To Build a Ship: The Construction of HMAS* Success *at Cockatoo Island* (2004), for the Sydney Harbour Federation Trust
- *Safe to Dive: Submarines at Cockatoo Island 1914 to 1991* (2005), for the Sydney Harbour Federation Trust
- *The Island Shipyard — Shipbuilding at Cockatoo Island 1870 to 1987* (2006), for the Sydney Harbour Federation Trust (published 2013)
- *Keeping the Ships at Sea —Ship Repair at Cockatoo Island 1857 to 1991* (2010), for the Sydney Harbour Federation Trust (published 2013)
- *Report on Technical Aspects of the Sinking of HMAS* Sydney *and HSK* Kormoran, (2009), with Buckland M. et al, Defence Science and Technology Organisation and the Royal Institution of Naval Architects, DSTO-GD-0559
- *The British Light Cruiser of the 1930s*, a chapter in *The Search for HMAS* Sydney*: An Australian Story*, Graham E., King R., Trotter R. and Kirschner K. [Eds.], (2014 UNSW Press, Sydney) (with Roger Neill)
- *The Australian Defence Industry Perspective* Chapter 9 in *Part II Technology and the Defence of Australia* in *New Technology: Implications for Regional and Australian Security*, (1991 Ball, D. and Wilson H. (Eds.), Strategic and Defence Studies Centre, ANU Research School of Pacific Studies, Canberra)

He also wrote about 37 technical papers, largely in relation to Australian naval shipbuilding and repair, particularly of submarines, but also describing and discussing features of various ships and ship types.

The third of the reports listed above and a number of his papers reflected John's experience with submarines, particularly in managing the refitting of Australia's *Oberon* class submarines.

The esteem with which John was held across the naval shipbuilding industry is illustrated by the statement in the book *The Collins Class Submarine Story: Steel, Spies and Spin* by Peter Yule and Derek Woolner (Cambridge University Press, 2008, p.77) in relation to investigations by the German company HDW for setting -up the Collins class build:

> *Of all the people they talked with only John Jeremy of Cockatoo Dockyard 'knew what he was talking about but Cockatoo was no place to build a submarine'.*

John's encyclopaedic memory and comprehensive archives of not only Cockatoo Dockyard but also tasks undertaken over his career including various historical searches ensured that he was well equipped to write and speak authoritatively on the broad range of subjects touched upon above. He was known to usher visitors into his study saying "this is where it all happens" when there was little room for a workspace among the rows of filing cabinets. Over a number of years he worked diligently on the digital preservation of his archives for the benefit of all who follow. Following his pancreatic cancer diagnosis John focused on passing the responsibility for the archive to his nephews Mathew and Robert.

John's "broadcaster's voice" ensured that no-one missed whatever message he wanted to present and his breadth and depth of knowledge, resources and contacts meant that there were many bodies wanting to hear from him.

On duty as Chairman of the 2015 Australia Day Regatta (note strap of ever-present camera)

(John Jeremy collection)

Photography was an obsession for John across his work and personal life. He had been a keen photographer since childhood when the subject matter was largely family and warships and often both. When asked recently how many photographs he had in his collection he answered "On file about forty-seven thousand that I have indexed by frame - but there is a whole, whole lot more – going back to my time as 10-year-old with a box Brownie". There was little of significance on Sydney Harbour that was not captured by John's lens.

Not only did John know ships but he also knew and cultivated valuable contacts with Navy personnel, and he was always helpful in resolving the many difficult issues that arise during complex building and repair tasks. It is noteworthy that, unusually for a civilian, John was elected to senior office in a number of naval bodies. As symbols of the esteem with which John was held within Navy, his memorial service was conducted by Rev Brad Galvin, Chaplain RAN, and included the ceremonial presentation of a commemorative flag on behalf of the Chief of Navy.

In the 2015 Australia Day Honours List John Jeremy was awarded Membership of the Order of Australia (AM) for his significant service to the preservation and celebration of naval and maritime history. It is a significant omission from the official record that this citation covers only a small portion of his achievements and takes no account of his achievements in naval architecture, shipbuilding and sailing: the remainder of this column details more of this last aspect.

Speaking as Vice President of the Naval Historical Society during the Australian White Ensign replacement ceremony at St John's church, Birchgrove, NSW, 19 June 2022

(Image courtesy Dept of Defence)

With NSW Governor, Gen David Hurley, at Order of Australia investiture 8 June 2015, RADM Jonathan Mead in background

(courtesy Governor-General's office)

John's 40 acre bushland property "Summer Springs" near Tarago in the southern highlands of NSW served as an occasional escape from his busy life which he shared with some close friends such as *Tingari* crew members (see below). There would invariably be a story associated with each of his trips there such as having to move-on the snakes that might have made a home in the buildings between his visits, or retrieving bogged cars on the access track from civilisation.

As with many naval architects, John was an enthusiastic sailor from his early years. He wrote that he had his first sail on the classic yacht *Waitangi* in a fresh nor-easterly breeze on Pittwater in the early 1950s. "The longing to have a ship of my own developed early, but sailing or boating were not a family pastime, and my early boating experiences were occasional." However, sailing opportunities grew later in the 1950s and into the 1960s. While sailing regularly under various skippers, in 1961John became the proud owner of a 16 foot half cabin motor launch which he named *Tarrina* and used for exploring the harbour and photographing ships.

In 1971 John joined the Sydney Amateur Sailing Club (SASC) and a year later, being without a regular sail, bought a yacht of his own, a Hood 20 which he named *Tiarri*. After sailing her successfully for about 5 years with a crew that included his nephews Mathew and Robert, he upgraded to a Cavalier 26 which he named *Tantani*, to be followed in 1981 by an East Coast 31 *Tingari* which he enjoyed, raced with great success and maintained for the rest of his life with the same meticulousness that he applied to everything with which he was involved.

Accepting an invitation, John joined the SASC Board of Directors in 1978 and remained on that Board for 42 years, which in the words of Bruce Dover, a former Commodore of SASC is "a club record by a very, very long shot". Through 1982 to 1985 he became one of the Club's 13 Commodores over this period. Since 2000 John has also edited the Club's newsletter which benefited from illustration with many of his photographs.

From the late 1970's right until the end, John – and his faithful sidekick, Charles Maclurcan teamed up to form the heart of SASC race management. Their attention to detail and the very high standards they set saw them selected to provide start boat services to both the Sydney 2000 Olympics and Paralympics – a highlight of John's life. John also looked forward each year to managing one of the start lines for the Sydney-Hobart race and the Australia Day Regatta of which he was chairman from 2005 to 2015.

Presenting CO HMAS *Sydney* CMDR Karl Brinkmann with regatta flagship plaque as Australia Day Regatta Chairman with Peter Hemery in background,

(John Jeremy collection)

Speaking on behalf of the SASC, Bruce Dover probably expressed the feelings of all who interacted with him across his many areas of interest:

> *All of us who leaned on him for advice and wise counsel, learned a great deal from him. A crucial sounding board on any range of subjects, his advice was always delivered quietly, collaboratively, and with good humour. Indeed, John's unfailing cheeriness was one of his greatest assets and made*

him such a positive influence to be around.

His passion for the sea and all kind of vessels that sailed upon it – enriched beyond measure, the lives of those of us he touched.

The sharp intellect, deep reservoir of knowledge, his quiet wisdom, generous nature and unbounded cheerfulness have left an indelible mark on all who had the privilege to know him.

Mathew Jeremy's closing remarks at John's service also resonate with us:

John's illness was sudden in onset and swift in its progress. We had always thought John to be indestructible, and his loss has been a heavy blow.

But when I think of him, the memories are happy ones. I see the big smile, the hearty greeting, and the twinkle in his eye.

Recently, John told me he had long believed in one's responsibility to serve others. I believe he fulfilled that responsibility admirably.

John's passing is a great loss to not only our profession and the Institution but also to the nation.

Finally I must express my appreciation for John's friendship, experience and guidance, all freely given throughout my involvement in the Division Council over the past two decades through to being able to personally associate with the illness that led to his passing.

Rob Gehling

(Note 1. The above draws extensively on the eulogies presented by John's nephew, Mathew Jeremy, Walter Burroughs of the Naval Historical Society of Australia and Bruce Dover of Sydney Amateur Sailing Club at John's memorial service on 5th May 2025.
Note 2. Thanks are extended to the Jeremy family including John but most particularly Mathew Jeremy, without whose cooperation this tribute could not have been compiled.)

THE AUSTRALIAN NAVAL ARCHITECT
IS YOUR MAGAZINE

As the journal of the Australian Division of RINA this magazine is intended to inform our members and the maritime engineering community of developments in our profession and our industry.

While every attempt is made by the editorial team to reflect that is happening in the science and technology there will be many individuals with detailed knowledge and skills what would be of interest to others.

This magazine, in whatever form it takes as we head into the future, is your opportunity to share with readers not only your knowledge and experience but also your opinions of naval architecture-related issues. Provided you are prepared to put your name to them, you can do this by offering your knowledge and opinions in the form of papers, articles and feedback (currently Letters to the Editor, but the team is hoping to move on-line in the near future). All contributions are welcome and we look forward to some interesting discussions.

It's your magazine, so it's up to you to make it what you want!

Another way to influence our profession is by joining the editorial team - volunteers always welcome.

Rob Gehling

Acting Chief Editor / Secretary RINA Australian Division

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Defence grants to support Australia's nuclear-powered submarine program

The Australian Government has awarded 40 grants totalling over $17.3 million to support Australian businesses delivering priority defence capabilities, immediately creating more local jobs and strengthening Australia's defence industry.

The new investment was awarded under the Defence Industry Development Grants (DIDG) Program, which includes grant funding announced as part of a larger $262 million investment to support industrial uplift and develop Australia's nuclear-powered submarine supply chain.

The Australian Submarine Agency is funding six grants to support innovation across Australia and modernise critical manufacturing areas in support of the AUKUS nuclear-powered submarine (NPS) program.

Submarine Sutainment work in WA.

(Image courtesy ASA)

Minister for Defence Industry, Pat Conroy, said Australia's acquisition of nuclear-powered submarines under the AUKUS partnership marks a transformative step for the nation's defence capability.

> *We are backing Australian businesses and backing Australian workers to deliver the capabilities our Defence Force needs – now and into the future.*
>
> *From the west coast to the east coast, the Government is building a stronger and more resilient defence industry by investing in Australian innovation, skills and manufacturing.*

Among the recipients supporting the AUKUS program are HIFraser in NSW being allocated $1 million in funding to procure capital equipment to manufacture valves to supply defence maritime systems. Veem in WA has also been allocated $2 million to acquire machining to produce critical NPS components and to purchase a 3D sand printer to print moulds for the casting of critical components for NPS, Ghost Shark and other naval vessels. Other grant recipients in support of the AUKUS NPS program include Rosebank Engineering, Thornton Tomasetti and Mack Valves Pty Ltd.

The remaining 34 defence grants will boost Australian defence manufacturing and develop the nations' technical skills. The investment builds on the 58 grants announced in May under the $170 million DIDG program.

More information is available via the Defence Industry Development Grants program website.

Australian Submarine Agency, 25 July 2025

Navy commissions HMAS Arafura

On 28th June, Deputy Prime Minister and Minister for Defence the Hon Richard Marles, the Minister for Defence Industry the Hon Pay Conroy and the Minister for Defence Personnel the Hon Matt Keogh jointly announced the commissioning of HMAS *Arafura* into the Royal Australian Navy fleet.

Commissioning HMAS *Arafura*

(Defence Imagery)

HMAS *Arafura*, acceptance of which was described in the April *The ANA*, is the first Arafura-class offshore patrol vessel (OPV) of the Navy's surface fleet.

The second OPV, NUSHIP *Eyre*, has been built and (having successfully completed sea trials as reported by APDR – ed.) is awaiting acceptance by Navy. The remainder of the four ships are under construction at the Henderson Shipyard in Western Australia.

Deputy Prime Minister Marles said "The commissioning of HMAS *Arafura* marks an important milestone in the implementation of the Government's Surface Fleet Review."

Chief of Navy, VADM Mark Hammond, AO, RAN said "The Arafura class offshore patrol vessels will perform a number of roles, including regional engagement, patrol duties, and employment of uncrewed systems in a variety of missions."

Ministerial Release, 28 June 2025

Dual ship commissioning

The Royal Australian Navy has welcomed two more Evolved Cape Class Patrol Boats into commissioned service in a ceremony at their homeport of HMAS *Coonawarra* in Darwin.

The ceremony gave *Cape Schanck* and *Cape Solander* the designation of His Majesty's Australian Ships (HMAS), officially recognising their status as commissioned warships in the Royal Australian Navy.

Commander Surface Force, Commodore Terence Morrison,

HMAS *Cape Schanck* and HMAS *Cape Solander* Commissioned at Darwin

(Defence Imagery)

DSM, said the commissioning of the Evolved Cape Class Patrol Boats celebrated the work already conducted by the crew and provided Navy with increased operational capability and greater mission flexibility. "The Evolved Cape Class Patrol boats, named for capes around Australia's coastline, have quickly become the backbone of Navy's commitment to Operation Resolute. Navy is proud to commission these vessels" Commodore Morrison said.

The ships and will continue to be used for the full spectrum of patrol boat operations, including border, resources and fisheries protection, customs and drug law enforcement operations, and international engagement.

Department of Defence, 8 May 2025

Australia United Kingdom Nuclear-Powered Submarine Partnership and Collaboration Treaty

On 26 July 2025 in Geelong, Australia, the Honourable Richard Marles MP, Deputy Prime Minister and Minister for Defence, Australia and the Right Honourable John Healey MP, Secretary of State for Defence, United Kingdom (UK) signed the bilateral Nuclear-Powered Submarine Partnership and Collaboration Treaty (the Geelong Treaty) at the UK-Australia Defence Ministers' Meeting in Geelong, Victoria. The Geelong Treaty is a historic agreement, the commitment for the next 50 years of UK-Australian bilateral defence cooperation under AUKUS Pillar I.

The Geelong Treaty will enable comprehensive cooperation on the design, build, operation, sustainment, and disposal of our SSN-AUKUS submarines. It will support the development of the personnel, workforce, infrastructure and regulatory systems required for Australia's SSN-AUKUS programme, as well as support port visits and the rotational presence of a UK Astute-class submarine at HMAS *Stirling* under Submarine Rotational Force – West.

The Treaty builds on the strong foundation of trilateral cooperation between Australia, the UK and the United States, advancing the shared objectives of the AUKUS partnership. It will enable the development of SSN-AUKUS and resilient trilateral supply chains.

Importantly, the Geelong Treaty is consistent with Australia's and the UK's respective international nuclear non-proliferation obligations, including under the Treaty on the Non-Proliferation of Nuclear Weapons, the South Pacific Nuclear Free Zone Treaty and its Protocols, and Australia's safeguards agreements with the International Atomic Energy Agency, and the trilateral AUKUS Naval Nuclear Propulsion Agreement (ANNPA).

Together with the ANNPA, the Treaty will enable Australia and the UK to deliver a undersea capability through the SSN-AUKUS programme, and in doing so, support stability and security in the EuroAtlantic and the Indo-Pacific for decades to come, create thousands of jobs, build our respective submarine industrial bases and supply chains, and provide new opportunities for industry partners.

Ministerial Release, 26 July 2025

Incat Tasmania Launches World's Largest Battery-Electric Ship

Hundreds gathered at the Incat shipyard in Hobart to witness Incat Hull 096 – the world's largest battery-electric ship – officially launched on 2 May 2025.

Constructed for South American ferry operator Buquebus, Hull 096 is perhaps the most significant vessel ever built by Incat and represents a giant leap forward in sustainable shipping. When it enters service between Buenos Aires and Uruguay, it will operate entirely on battery-electric power, carrying up to 2,100 passengers and 225 vehicles across the River Plate.

China Zorilla emerges from the building hall

(Image courtesy Incat Tasmania)

"This is a historic day – not just for Incat, but for the future of maritime transport," said Incat Chairman Robert Clifford. "We've been building world-leading vessels here in Tasmania for more than four decades, and Hull 096 is the most

ambitious, most complex, and most important project we've ever delivered. This ship changes the game."

The ship is the ninth Incat-built vessel for Buquebus, continuing a proud and long-standing partnership between the two companies.

"For me, it's a true source of pride to see Buquebus' vision come to life," said Buquebus President Juan Carlos López Mena. "When we were evaluating this new vessel, Robert Clifford told me, 'The next ship I deliver to you will be 100% electric.' I replied, 'Then the next one must be the one we're commissioning today.' And with great courage, he said, 'Together, we're going to make history.' That's how we began reconfiguring the *China Zorrilla* – originally planned to run on LNG – into a fully electric vessel. It's a true milestone achieved between private companies, driven by our commitment to sustainability and our ongoing pursuit of service excellence."

China Zorilla safely alongside

(Image courtesy Incat Tasmania)

Tasmanian Premier Jeremy Rockliff congratulated Mr Clifford and the team at Incat for the extraordinary craftsmanship and innovation that went into building the largest battery-electric ship in the world.

"Through hard work, determination, and ingenuity, Incat has built a globally significant battery-electric ship from their yard in Tasmania," Premier Rockliff said. "Incat epitomises what it means to be Tasmanian as they quietly pursue the extraordinary, strengthen Tasmania's brand on the global stage, and continue to support Tasmanian jobs and our economy."

The ship is equipped with over 250 tonnes of batteries and an Energy Storage System (ESS) boasting more than 40 megawatt-hours of installed capacity. The ESS, which is four times larger than any previous maritime installation in the world, is connected to eight electric driven waterjets and is supplied by Wärtsilä. This combination of technology sets a new global benchmark for the shipping industry. "We are proud to have collaborated with Incat and Buquebus in launching the world's largest battery-electric ship," says Roger Holm, President of Wärtsilä Marine and Executive Vice President at Wärtsilä Corporation. "Ferries play a vital role in meeting the growing demand for environmentally sustainable transport options, with ship electrification a key solution for enabling the sector to transition towards net-zero emissions."

"We're not just building a ship – we're building the future," said Incat CEO Stephen Casey. "Hull 096 proves that large-scale, low-emission transport solutions are not only possible, they are ready now. This is a proud day for Tasmania and for Australian manufacturing."

Work will now continue completing the vessel's interior, which includes a 2,300 square metre duty-free retail deck. Final fit-out, battery installation, and energy system integration will take place ahead of sea trials later this year on the River Derwent.

Incat claims that, at 130 metres in length, Hull 096 is not only the largest electric ship in the world, but also the largest electric vehicle of its kind ever built – and one of the most significant single export items in Australia's manufacturing history.

"This ship puts Tasmania and Australia firmly on the world stage," Clifford added. "We're incredibly proud of what our team has achieved – and this is only the beginning."

Incat Tasmania, 2 May 2025

Incat Tasmania Secures Contract to Build Electric Ferries for Denmark

Incat Tasmania has announced it has been selected to design and build two new state-of-the-art battery-electric ferries for leading Danish ferry operator Molslinjen. The vessels, each 129 metres long and powered by an approximately 45 MWh battery systems, will operate on the busy Kattegat route between Jutland and Zealand, forming part of the world's largest electrification project at sea.

This significant international order follows Incat's launching of Hull 096, the world's largest battery-electric ship, and commencement of Hull 100, a 78-metre next-generation hybrid ferry.

"These new vessels for Molslinjen mark a turning point not just for Incat but for the global maritime industry," said Incat Chairman Robert Clifford. "They are part of a new class of high-speed, low-emission ships that are redefining what's possible at sea. We're honoured to again partner with Molslinjen, and proud to help them deliver real environmental change on one of Europe's busiest ferry routes."

The construction of these vessels commence as Incat prepares to expand its production facilities at Prince of Wales Bay in Tasmania. The expansion will allow the shipbuilder to double its capacity and workforce over the next three years and significantly increase the number of large ships it can deliver annually.

Craig Clifford and Robert Clifford share congratulations

(Image courtesy Incat Tasmania)

"This project aligns perfectly with our strategic vision," Clifford added. "As global demand for sustainable ferries accelerates, our expanded facilities will ensure we're ready to lead the way in both innovation and volume."

The project also represents a strengthening of ties between Australia and Denmark. Incat Tasmania Managing Director Craig Clifford, who also serves as the Honorary Consul for Denmark in Tasmania, said the partnership reflects a shared commitment to the green transition.

Early-stage construction of the vessels will begin in the coming months, with delivery of the first vessel scheduled in late 2027. Once operational, the ferries will each carry up to 1,483 passengers and 500 cars, operating at speeds over 40 knots, and eliminating thousands of tonnes of CO□ emissions annually.

Incat Tasmania, 22 July 2025

Funding Announced for Austal USA Facilities Upgrade

Austal Limited has completed the final funding piece of its $1.2 billion capital expansion program in the United States, securing $488 million in credit facilities from a group of Tier 1 financial institutions, including Australian and international banks and Export Finance Australia. Austal continues to invest in its shipbuilding and submarine capabilities with two major expansion projects currently underway in the USA, the Final Assembly 2 project and the submarine Module Manufacturing Facility 3 project.

Planned Expansion of Austal Mobile Alabama Facilities

(Image courtesy Austal)

The new debt facilities will be used alongside Austal's $220 million capital raise in April 2025 and US$450 million in MMF3 funding from General Dynamics Electric Boat to fund the capital expansion program and provide working capital.

Austal Limited Chief Executive Officer Paddy Gregg said: "The successful refinancing of the Company's debt facilities positions Austal for the tremendous growth opportunities ahead and reflects Austal's growth and track record of performance." "Austal possesses an exceptional pipeline of long-term defence work in the US, which will be complemented by the Strategic Ship Building Agreement in Australia."

Austal, 27 June 2025

(Note 1: The Austal Mobile expansion includes addition of a shiplift facility that obviates the need to loadout onto a flattop barge prior to transfer to a floating dock for launching as illustrated in the Austal video of *Billy Frank Jr* loadout mentioned in the New Designs and Vessels article on this ship– ed.)

(Note 2: Australian Government Ministers Conroy and Farrell issued a statement supporting the Austal Mobile shipyard expansion on the same day as the Austal announcement - ed.)

Major job losses underway at Henderson

BAE Systems Australia is cutting over 150 jobs at the Henderson precinct as defence work slows down despite the site's crucial future role in AUKUS.

The Henderson precinct is intended to be the epicentre of 'continuous naval shipbuilding in WA', according to the government, as well as the future location of depot-level maintenance and contingency docking for Australian nuclear-powered submarines.

"Contingency and depot-level maintenance alone will create around 3,000 jobs in Western Australia. This is in addition to the thousands of jobs that will be supported through construction of the Defence Precinct, delivery of continuous naval shipbuilding in the West," the Federal Government said in October 2024.

That effort appears to be unsuccessful so far: BAE Systems plans to cut 153 roles, primarily in WA but also with some from the company's office on Bourke Street in Melbourne.

The shipbuilder attributes the losses to the end of the Transition Capability Assurance Program (TransCAP) for the Anzac-class frigates, which was scrapped by the government following a review of the RAN's surface fleet by US Navy Vice Admiral (Ret'd) William Hilarides. The government argued that the new general purpose frigate acquisition would 'negate the need' for the TransCAP.

"Following the Commonwealth's decision in 2024 to cancel the TransCAP program we have been working hard to secure ongoing work for the Henderson shipyard, to continue our operations and minimise impact of the cancelled program on our people," a BAE Systems spokesperson said to *ADM*.

"Between July and November 2025, we will see a reduction of approximately 121 trade and 32 non-trade roles, primarily in Henderson, with some impacts in Bourke Street."

"We are helping our people find roles in other defence organisations in the Henderson precinct. We are also supporting both our trades and office-based people to explore opportunities to move interstate, for example to Adelaide, where our Osborne Naval Shipyard is located," the spokesperson said. "We are immensely grateful for the work and devotion of our people in support of the Royal Australian Navy's capability."

The cuts at BAE Systems follow existing job losses from Luerssen Australia's Henderson workforce due to the reduction of the Offshore Patrol Vessel contract from 12 ships to six, and Luerssen Australia's subsequent acquisition by Civmec for $20 million. *ADM* understands some of those jobs were cut with just a few days' notice.

Meanwhile, *ADM* understands the Commonwealth is yet to sign its announced Strategic Partnering Agreement with Austal, which is mandated to build eight Landing Craft Heavy and 18 Landing Craft Mediums at Henderson. The latter program

faces possible delays of up to two years as final blueprints remained unapproved, according to a June report from the ABC.

Henderson is also the currently mandated site for the future Australian build of the general-purpose frigates, for which TKMS and Mitsubishi Heavy Industries were down-selected ahead of Hanwha and Navantia. Initial ships of the class are intended to be built offshore with the government aim of achieving the fastest timeframe for entry into service.

Hanwha nonetheless continues its pursuit of Austal, passing a US regulatory milestone on 10 June to increase its equity position from 9.9 per cent to 19.9 per cent, though Austal disputed Hanwha's claim in a media release published on the same day: "Based on informal discussions to date, Austal understands that the approval granted by CFIUS [Committee on Foreign Investment in the US] is different to that claimed by Hanwha," the release states.

Ewen Levick, ADM, 16 July 2025

International Maritime Organization – Outcomes of Key Committee Meetings

The Marine Environment Protection Committee (MEPC) held its 83rd session in London on 7-11 April 2025, with the main area of interest to naval architects being implementation of the IMO Net-Zero Framework covering the reduction of greenhouse gas emissions and energy efficiency of ships. Comments by the International Chamber of Shipping are covered below in a separate sub-item of this section.

IMO's Maritime Safety Committee (MSC) met at IMO Headquarters in London on 18-27 June 2025. Greg Pusey, head of the Australian delegation, has provided the following summary of its outcomes which is shown in its entirety to give an indication of the breadth of safety issues being considered internationally:

Adoption and approval of amendments

Notably MSC 110 adopted the following amendments:

- *SOLAS Regulation V/23 on pilot transfer arrangements and the associated draft MSC resolution on performance standards. These amendments significantly improve pilot and personnel safety when embarking and disembarking. The amendments will enter into force on 1 January 2028.*
- *High Speed Craft Codes to harmonize the life jacket carriage requirements with the corresponding requirements in SOLAS Chapter III with respect to the number of infant life jackets and accessories to adult life jackets to accommodate large persons. The amendments will enter into force on 1 January 2028.*
- *A revision of Resolution A.1050(27) "Revised Recommendations for Entering Enclosed Spaces Aboard Ships"*
- *IMSBC Code, incorporating two new cargo schedules proposed by Australia.*

MSC 110 also approved:

- *Three separate guidelines supporting the new emergency towing requirements for non-tankers, and*
- *Generic Interim guidelines on training for seafarers on ships using alternative fuels and new technologies.*

Where appropriate, these amendments will be incorporated into Australia's domestic legislation, typically through Marine Orders.

Maritime Autonomous Surface Ships (MASS)

MSC 110 progressed the non-mandatory Code of Safety for Maritime Autonomous Surface Ships (MASS Code).

The MASS code seeks to provide a regulatory framework for the safe, secure, and environmentally sound operation of MASS.

- *18 chapters have now been finalised and the non-mandatory Code is approaching completion.*
- *The MASS Code will be further developed in an intersessional working group in Spring 2025, focusing on human element aspects.*
- *The non-mandatory code is expected to be adopted at MSC 111 (May 2026), followed by an experience-building phase.*
- *A mandatory code is expected to be developed and enter into force, but no earlier than 1 January 2032.*
- *MSC 110 agreed that MASS must be capable of assisting persons in distress. Accordingly, vessels will be required to have a plan for conducting SAR operations, even when unmanned.*

Safe delivery of IMO's strategy on reduction of GHG emissions

MSC 110 finalised recommendations to address regulatory barriers and gaps related to alternative fuels and new technologies.

The Committee tasked relevant sub-committees with addressing these recommendation, allowing them to develop their own work plans within their existing programmes.

MSC 110 suggested prioritising:

- *consideration of firefighting systems for alcohol fires in the FSS Code;*
- *development of Interim Guidelines for the Safety of Ships Using Battery Energy Storage Systems and;*
- *addressing recommendations relating to onboard carbon capture and storage.*

MSC 110 also agreed to initiate a revision of SOLAS Chapter VIII and the Nuclear Code for

Merchant Ships.

This agenda item will remain on the agenda of MSC 111 and MSC 112 to allow for further submissions.

New work outputs

Following the conclusion of work undertaken to address the workload of MSC and its sub-committees, a moratorium on the consideration of non-urgent new work outputs was lifted for MSC 110.

Based on a proposal co-sponsored by Australia, MSC 110 agreed to review the Casualty Investigation Code and the associated implementation guidelines.

MSC 110 also agreed to undertake following notable outputs:

- *A comprehensive revision of the guidelines on the implementation of the ISM Code by Administrations and companies, and;*
- *A scoping exercise and enhancement of the effectiveness of provisions on fatigue and seafarers' hours of work and rest.*
- *To review and, if necessary, amend SOLAS regulations to clarify the requirements on escape arrangements from the lower part of machinery spaces*
- *The development of guidelines addressing risks of falls from height*
- *To review the FSS Code to clarify the applicable standards for fire-fighters' outfits and to provide consistency on fixed fire-extinguishing systems in vehicle and ro-ro spaces*
- *To review of requirements for testing the compliance of pyrotechnics*
- *To review SOLAS II-2 to mitigate fire risks caused by leakages from low-pressure fuel pipes, and allow the use of thermal imaging cameras when inspecting engine room insulation.*

We are happy to provide further detail on any of the above issues - please either email me (greg.pusey@amsa.gov.au) or imostandards@amsa.gov.au.

Rob Gehling

ICS gives backing to IMO Net-Zero Framework

In April, the International Maritime Organization's (IMO) member states took a historic step by agreeing to the Net-Zero Framework (NZF) – the world's first global emissions price for an entire industry. This was a landmark step towards decarbonising international shipping and one that the International Chamber of Shipping (ICS) has been advocating for and fully supports.

While being fully supportive, shipowners still have real concerns about how complicated the new rules could become, especially smaller to medium sized companies, who may struggle with compliance costs. So far, the focus has been on the penalties for emissions ('the sticks'), but clear incentives ('the carrots') for cleaner fuels will be just as important. It is these incentives that will motivate fuel producers to deliver the new fuels and infrastructure that will enable shipping to meet the targets.

Governments must also quickly set clear standards for these cleaner fuels. This will reassure fuel producers that investing in green fuel infrastructure makes sense.

In October, the IMO is expected to adopt these measures and give details about how these incentives will work. Shipowners and energy producers need certainty on this so they can confidently make investments in cleaner technologies.

Thomas A. Kazakos, ICS Secretary General commented:

> *The IMO needs to formally adopt the Net Zero Framework in October to send a clear signal to industry and provide the incentive needed to produce these cleaner fuels. Industry needs clarity, simplicity, and detail on the rewards.*
>
> *We also call on those with unilateral and regional schemes, such as EU ETS, to agree to having one clear and transparent system under the IMO. This is critical if we are to meet the time frames set out.*

ICS has put forward submissions to the IMO to help clarify these issues, including a request to replace the word 'may' with 'shall' to ensure a clearer signal is sent to the market.

Additionally, ICS has responded to the EU Commissions consultation encouraging them to replace the EU ETS with the IMO NZF as soon as it is adopted. Clear and simple rules are essential for shipping to successfully and quickly transition to net zero.

International Chamber of Shipping, 17 July 2025

Summit held to support Collins Class Sustainment

A Project of Concern Summit was held in Canberra to support the sustainment of Australia's Collins class submarines. Minister for Finance, Senator Katy Gallagher, and Minister for Defence Industry, Pat Conroy, convened the Summit, which was attended by government and industry representatives.

The Government has committed up to $5 billion over the next decade to extend the life of the Collins class and ensure there is no capability gap until Australia transitions to its future conventionally armed, nuclear-powered submarines. With Collins class submarines required to operate beyond their original design life, an appropriate sustainment plan is also required to ensure they remain among the most capable, conventionally powered submarines in the world.

Defence and the contractor, ASC Pty Ltd, have continued to work on the sustainment plan since Collins class was listed as a Product of Concern in 2024. This includes undertaking activities to build the submarine sustainment workforce and enhance productivity. Collins class submarine sustainment has previously been a Product of Concern spanning successive governments, from November 2008 until October 2017.

Since coming to office, the Government has strengthened and revitalised Defence's Projects and Products of Concern

framework. This is helping to fix challenging projects by providing enhanced Ministerial oversight and bringing Defence and industry together in the national interest. This is the ninth overall summit held by the Government under the Projects of Concern process.

The Minister for Defence Industry, the Hon Pat Conroy, said "ASC is committed to working with Defence to improve Collins class submarine sustainment performance and to effectively deliver safe and high-quality sustainment of Collins class submarines."

Ministerial Release, 30 July 2025

Maldives to receive Guardian-class Patrol Boat

On 2nd June, the Deputy Prime Minister and Minister for Defence, Richard Marles and Maldives Minister of Defence, Mohamed Ghassan Maumoon, jointly announced that Australia will gift an Australian-built Guardian-class patrol boat to Maldives.

This initiative upholds a shared commitment to security, stability, and prosperity in the Indian Ocean region and will provide Maldives a more persistent presence in its vast exclusive economic zone to deter, detect and disrupt illegal maritime activities.

In addition to the new vessel, Australia will also gift a multi-beam echo sounder to Maldives, supporting Maldives' capability to map its ocean floor, helping to ensure maritime safety and unlock economic development.

The Guardian-class Patrol Boat is under construction and due for completion in 2026. .

Minister of Defence of the Maldives, Mohamed Ghassan Maumoon said "It is with deep appreciation and sincere gratitude that we acknowledge the generous gift of hydrographic equipment and a Guardian-class Patrol Boat from the Government of Australia."

Ministerial Release 2 June 2025

USA Review into AUKUS Defence Pact during 2025

The United States will complete a review into the AUKUS defence pact between the USA, UK and Australia during the northern hemisphere autumn. The review into the 2021 deal struck during the US Biden administration is being led by Under Secretary of Defense for Policy Elbridge Colby.

Colby's office said in a post on social media that the review will be an "empirical and clear-eyed assessment" of the deal and "Its purpose will be to provide the president and his senior leadership team with a fact-based, rigorous assessment of the initiative."

AUKUS is Australia's largest-ever defence project, with the Australian Federal Government committing to spend AU$368 billion (US$240 billion) over three decades to the programme, which includes billions of dollars of investment in the US submarine production base.

Colby, the Pentagon's top policy adviser, said last year that submarines were a scarce, critical commodity, and US industry could not produce enough to meet American demand. Meanwhile, the Australian Federal Government, which during July paid AU$800 million to the USA in the second instalment under AUKUS, has maintained it is confident the pact will proceed.

Summarised from report by Alasdair Pal and Michael Perry of Reuters, July 2025

Anzac-Class Frigate Undocked After Major Capability Upgrade

The Anzac-class frigate HMAS *Parramatta* has been undocked at the BAE Systems Henderson shipyard in Western Australia. According to the Royal Australian Navy, the move marks a key milestone in the final stages of the Anzac midlife capability assurance program (AMCAP).

Commenced in 2018, the AMCAP is a critical upgrade program to extend the operational life of the Royal Australian Navy's Anzac-class frigates. The enhancements to the class include the installation of a new long-range air search radar, improved communication systems, and upgrades to support the naval strike missile and ESSM Block-2 surface to air missile.

LCDR David Ward, the ship's Acting Commanding Officer, said the undocking of the 118-metre long, 3,800-tonne frigate was a complicated process requiring precise planning and coordination. The undocking comes after three years of production work on the vessel. The ship will now complete the remainder of the upgrade while afloat before conducting sea trials and certification in early 2026. After the trials, the ship will return to full operational service.

Summarised from Department of Defence, July 2025

HMAS *Parramatta* transferred to shiplift during undocking at the BAE Systems shipyard in Henderson, WA

(Defence Imagery)

ANAO Review of the Sustainment of Canberra Class LHDs

The Australian National Audit Office published a review of the Department of Defence's Sustainment of Canberra Class Amphibious Assault Ships (LHD) on 27 June 2025. The audit objective was to examine the effectiveness of Defence's sustainment arrangements for the pair of RAN Canberra class amphibious ships. The review has been relatively critical and in turn attracted media interest and various opinion pieces.

Since entry of the LHDs into service in 2014, Defence has contracted its core LHD sustainment delivery activities to industry. Arrangements for the sustainment of the LHDs

have changed over time across three contractual phases or models: transition to sustainment; asset class prime contractor; and the Maritime Sustainment Model. LHD sustainment has the fourth highest expenditure across all sustainment products in the Defence maritime domain, with funding of $180 million in 2024–25.

In summary, the ANAO found:

- Defence's arrangements for the sustainment of Navy's LHDs have only been partly effective.
- Defence did not plan effectively for the transition from acquisition to sustainment. Value for money was not clearly demonstrated and probity was not well managed across the three procurement activities.
- Defence has not managed its LHD sustainment contracts effectively. The LHDs have operated with ongoing deficiencies and have experienced critical failures during operations.
- Monitoring and reporting in respect to LHD sustainment outcomes, the extent to which Navy's requirements have been met, and the implementation of the Maritime Sustainment Model arrangements has only been partly effective.

There were nine ANAO recommendations to the Department of Defence aimed at improving: the transition from acquisition to sustainment; effective management of sustainment; and contract management, including potential fraud concerns. Defence agreed to those recommendations.

The full report is available on the ANAO website at https://www.anao.gov.au/work/performance-audit/department-of-defence-sustainment-of-canberra-class-amphibious-assault-ships-landing-helicopter-dock

Summarised from ANAO website & report

Mogami-class selected for the Navy's new general purpose frigates

The Government announced acceleration of the delivery of a larger and more lethal surface combatant fleet with the selection of the upgraded Japanese Mogami-class frigate as the preferred platform for the Royal Australian Navy's future fleet of general purpose frigates.

Following a rigorous and competitive tender process, Mitsubishi Heavy Industries' (MHI's) Mogami-class frigate was assessed as best able to quickly meet the capability requirements and strategic needs of the Australian Defence Force (ADF). The selected frigate boasts a range of up to 10,000 nautical miles, a 32 Cell Vertical Launch System, and is fitted with surface-to-air missiles and anti-ship missiles.

The Government acknowledged the competitive, high-quality proposal submitted by Thyssenkrupp Marine Systems, and thank them for their commitment and professionalism throughout this procurement process.

Defence will now proceed with the next stage of the procurement process with MHI, with the aim to enter early into binding, commercial contracts with MHI and the government of Japan in 2026.

Mogami-class frigate

(Defence Imagery)

The Government's response to the Independent Analysis of Navy's Surface Combatant Fleet outlined that the first three general purpose frigates would be built offshore. This accelerated program will see the first three frigates built in Japan – with the first scheduled to be delivered to Australia in 2029 and operational in 2030.

Consolidation of the Henderson precinct in Western Australia will enable the remainder of the build to be constructed locally, in line with the Government's commitment to continuous naval shipbuilding.

Australia's new general purpose frigates will replace the Anzac-class frigates and will be equipped for undersea warfare and air defence and will be an essential part of the Government's plan to more than double the size of Navy's surface combatant fleet.

Deputy Prime Minister, Richard Marles said "The upgraded Mogami-class frigate will help secure our maritime trade routes and our northern approaches as part of a larger and more lethal naval surface combatant fleet. We thank both Mitsubishi Heavy Industries and Thyssenkrupp Marine Systems, as well as the governments of Japan and Germany for their focus and cooperation throughout this procurement process."

Ministerial Release, 5 August 2025

(Note. Japan invested heavily into its bid, including by guaranteeing priority to Australia for its upgraded Mogami warships over its own navy. Coinciding with this effort, the Mogami-class JS Yahagi docked in Darwin in June as part of a Japanese maritime defence force tour of the Indo-Pacific. Significant factors in the selection of the Japanese frigate over the German design may have been its larger number of missile launch cells and lower crewing. – ed)

Austal Strategic Shipbuilding Agreement

Coincident with the GPF announcement, the Government, announced on 5 August 2025 in a media release by the Deputy Prime Minister and Minster for Defence industry that it is securing a continuous pipeline of shipbuilding work in Western Australia through the execution of the Strategic Shipbuilding Agreement with Australia's newly established strategic shipbuilder, Austal Defence Shipbuilding Australia Pty Ltd.

The Strategic Shipbuilding Agreement will provide the framework for a steady pipeline of projects to be delivered by Austal, granted it continues to perform and meet a range of conditions. This arrangement will enable the stability and long-

term planning required to accelerate the delivery of sovereign defence capabilities in Western Australia that meet the needs of the Australian Defence Force over the coming decades.

As the Strategic Shipbuilder, Austal will work closely with local industry and supply chains to develop the skills and resources required for this task.

The Strategic Shipbuilding Agreement builds on the alreadyestablished pilot program between Defence and Austal, and will see the delivery of dozens of vessels, including:

- 18 landing craft medium for the Australian Army, and subject to further approvals and negotiations, the build of eight landing craft heavy.
- Two new evolved Cape class patrol boats for the Royal Australian Navy.

The Strategic Shipbuilding Agreement will also play a vital role in the establishment of a Commonwealth Defence Precinct at Henderson – underpinning tens of billions of dollars of investment in Defence capabilities in the West over the next two decades and supporting in the order of 10,000 highskilled jobs.

As one of two major shipbuilding hubs in Australia, Henderson is an asset of national importance and pivotal to the build and sustainment of vessels for the Australian Defence Force.

"The Government is delivering on our promise to grow Australia's shipbuilding and sustainment industry – supporting continuous naval shipbuilding and jobs in Western Australia" said Deputy Prime Minister, Richard Marles. "This is part of our broader investment into the Western Australian economy over the coming decades including at HMAS *Stirling* and throughout the state's north."

Further to the above-mentioned Ministerial release, Austal Limited announced on the same day:

> *To protect its interest in continuous shipbuilding and to preserve its right to ensure Austal Defence Australia continues to deliver Commonwealth programs, the Commonwealth will be issued a single 'Sovereign Share' in Austal Defence Australia and will enter into a Shareholders Deed with Austal to regulate the affairs of Austal Defence Australia. Under these arrangements, Austal (as the holder of all ordinary shares) will have day-to-day management control of Austal Defence Australia, and will derive all the economic rewards and bear the economic risks of owning it. The Commonwealth will have information and veto rights (and in limited circumstances, an ability to give directions to Austal Defence Australia), which rights will be directed towards protecting the Commonwealth's position in relation to the Strategic Objectives.*

The full release by Austal Limited can be viewed at https://www.austal.com/news/australian-government-approves-landmark-strategic-shipbuilding-agreement-austal

Ministerial and Austal Limited releases, 5 August 2025

IMO Secretary-General visits Australia and the Pacific

Australia welcomed the Secretary-General of the International Maritime Organization (IMO), Mr Arsenio Dominguez, as part of his tour of the Pacific region. Mr Dominguez's visit marks a significant opportunity to highlight Australia's maritime sector and deepen regional collaboration on the future of global shipping. His Pacific tour commenced in Australia and will continue through Fiji, New Zealand and the Cook Islands.

While in Australia, Mr Dominguez met with the Hon Catherine King MP, Minister for Infrastructure, Transport, Regional Development and Local Government, and the Hon Chris Bowen MP, Minister for Climate Change and Energy together with senior Australian Government and AMSA officials to discuss Australia's ongoing commitment to advancing maritime safety, environmental sustainability, and workforce development. The discussions included collaborative efforts to support Pacific nations in building resilient maritime industries..

Senior figures from Australia's ports and maritime industry had the opportunity to engage with Mr Dominguez in a series of discussions ranging from the sector's future, including decarbonisation and digital innovation, to improving seafarer training, retention, and increasing gender diversity across all levels of the industry.

Mr Dominguez praised the diversity and depth of Australia's maritime sector, highlighting its commitment to innovation, sustainability and inclusivity. "Australia is a vital partner in the global maritime community and a strong advocate for maritime safety and sustainable practices," Mr Dominguez said.

Mr Dominguez jointly opens the IMO Regional Presence Office on 7 August 2025 with Honorable Ro Filipe Tuisawau, Fiji Minister for Public Works, Meteorological Services & Transport

(Photo courtesy IMO)

Mr Dominguez also held discussions with representatives from Pacific Island countries, reaffirming the IMO's support for Pacific-led priorities and the establishment of the IMO Regional Presence Office (RPO) in Fiji.

Rob Gehling (based on Ministerial release)

Austal USA Commences Construction of Second US Coast Guard Cutter

Austal USA has received a contract option award from the United States Coast Guard (USCG) for the construction of the second Stage 2 *Heritage*-class Offshore Patrol Cutter (OPC) and the acquisition of long lead-time material to support construction of a third Stage 2 OPC. The US$273

Casting at VEEM

(Image courtesy VEEM)

million option is part of a contract that includes options for up to 11 OPC's, with a potential value of US$3.3 billion.

Construction of the second OPC, *Icarus* (WSMM 920), has commenced at the company's Mobile, Alabama, shipbuilding facility.

Austal Limited CEO Paddy Gregg said the OPC program is gathering momentum, with the option exercising the second OPC highlighting a unique build strategy that has included the optimisation of the hull design for the first vessel, *Pickering* (WSMM 919). "The Austal USA team have optimised the hull structure design of the first steel-hull OPC, *Pickering*, which will deliver a more efficient build process, a reduction in vessel weight and ultimately a longer vessel life expectancy," Mr Gregg said.

"Austal USA has also developed a new 3-D model of the OPC, that is enabling each vessel module manufactured in Mobile, Alabama to be completed to an industry-leading level of completion. The team are effectively setting new benchmarks for manufacturing productivity and efficiency with the OPC program."

The 110 metre OPC's will provide the majority of the U.S. Coast Guard's offshore presence, conducting a variety of missions including law enforcement, drug and migrant interdiction, and search and rescue. With a range of 10,200 nautical miles at 14 knots and a 60-day endurance period, each OPC will be capable of deploying independently or as part of task groups, serving as a mobile command and control platform for surge operations such as hurricane response, mass migration incidents and other events. The cutters will also support Arctic objectives by helping regulate and protect emerging commerce and energy exploration in Alaska.

Including *Icarus*, Austal USA has seven ships currently under construction. A new final assembly building (FA2) that will be used to support the production of the OPC's, is now under construction. When complete, the building will provide approximately 18,000 square metres of new covered manufacturing space. The building will consist of three bays, two of which are specifically designed to construct the OPC.

Austal announcement 6 August 2025

ASC Awards VEEM Collins Contract

ASC announced on 12th August that it had awarded Australian maritime manufacturer VEEM a six-year, $65 million contract to continue manufacturing and supplying critical components for Australia's Collins Class submarines.

VEEM has been supplying ball valves and actuators, manufacturing and supplying bodies and connectors for ball valves, and manufacturing a range of other non-ferrous castings for ASC – including strainer housings, mufflers, and main ballast tank valves – since 1992.

Based in Western Australia, VEEM is the licenced manufacturer and service agent of defence 55 and 44 series valves for Flowserve Flow Control (UK) Ltd, the original equipment manufacturer of the ball valves.

ASC Managing Director and Chief Executive Officer Stuart Whiley welcomed the announcement saying "The six Collins Class submarines are among the most complex and sophisticated defence platforms in operation today, and demand precision and reliability."VEEM has been a key partner to ASC since 1992, supporting our mission to deliver a safe, high-performance and potent capability to the Royal Australian Navy.

"More broadly, ASC is proud to work with Australian businesses, supporting jobs and building a sovereign industrial capability that is critical to the ongoing and future defence of our nation. We look forward to strengthening our partnership with VEEM over the years ahead."

VEEM Managing Director Mark Miocevich said "It is this type of successful collaboration that will underpin the success of the upcoming AUKUS program."

ASC media release

UNSW Canberra Course News

As I write, semester 1 has just concluded and the students are perhaps enjoying a short break from campus. It is hoped though that the fourth years will still be chipping away at their final year thesis projects and ship designs and that the third years might be doing a little pre-reading preparing for ship hydrodynamics, structures and design courses in semester 2. Class sizes remain small and dominated by Navy training officers. The students receive highly-individualised attention as a result, encouraging deeper learning. However, we are anticipating the graduation of our first civilian student in Sasha Apelt in December. We have also welcomed another civilian in first year, David Liu.

All four program-embedded field trips are being conducted in 2025. Three have already been completed during Semester 1 and the biennial Indo Pacific Maritime Exhibition and Conference will be attended in November 2025. Five undergraduate students will present papers at the International Maritime Conference.

The 2025 trips to date have been:

- A training Cruise with 5 x 4th year students which was conducted on MTAV *Sycamore* 02-06 March 2025,
- A Tasmania Trip visiting Launceston (AMC/UTas)) and Hobart (Incat Tasmania, Sentinel Boats, Australian Antarctic Division) with 5 x 4th year students was conducted 06-11 April2025, and
- A Sydney Trip with 12 students from ZEIT3750 *Naval Architecture Practice, Hydrostatics and Stability* (5 x 3rd Year NA and 7 x 4th Year engineering students taking the course as an elective), which included visits to Garden Island (dockyard and pump room) hosted by Thales, Lloyds Register, One2Three Naval Architects and Incat Crowther was conducted 29 April to 01 May 2025.

From the post activity report for our time on MTAV *Sycamore*:

> *This was another excellent opportunity for the Naval Architecture students to see and touch the equipment on a ship and appreciate the complexities of successful ship systems integration. They had the opportunity to manoeuvre and feel the response of the ship and the forces applied on the hull (Figures 1 - 4). Tracing systems to understand how they worked takes their understanding much further than the classroom and reinforced the theory of refrigeration cycles and heat transfer. Observing the performance of the equipment and taking measurements allows them to appreciate what the numbers mean, and skills them with being able to critically analyse machine performance. Highlighting the structure and reinforcement around points of load helps them realise how the hull and superstructure needs to be considered against the actions of wind and waves, propulsion thrust, equipment support and maintenance access, and crane and davit load points. They were able to meet with all departments and understand many of the requirements a ship has from the different users, many of which are not obvious and are often overlooked in other ship designs.*
>
> *All of these opportunities were made possible with Navy permission to the vessel, and of Teekay crew being very generous with their time to ensure we got valuable lessons of what makes a great ship – one that successfully integrates the equipment and operators onto a robust and effective platform.*

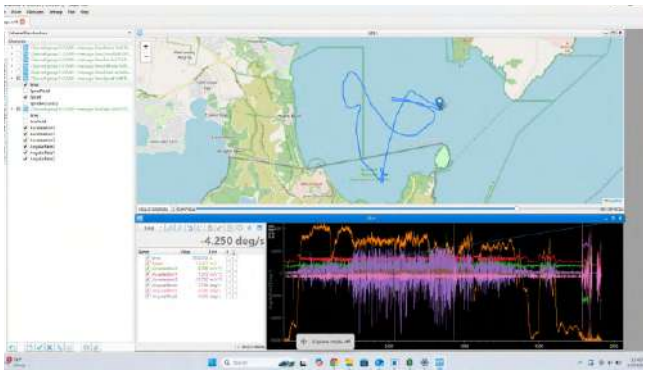
Students conducting ship manoeuvring tests and capturing data

(Courtesy UNSW Canberra)

15 kt tuning circle at 35 deg rudder. (data captured in student task books)

(Courtesy UNSW Canberra)

Returning to the issue of civilian students, it is likely time for stakeholders in industry and government to come together. As stated in previous reports on our activities, the supply of naval architects is not in equilibrium with assessments of national demand considering sovereignty, continuous naval shipbuilding and AUKUS. We have previously invited all who may be interested to consult with us to support workforce planning and naval architectural growth needs. This has become particularly important given a recent decision by the UNSW that it will no longer admit civilian students to the undergraduate engineering programs at the



Plot of accelerometer and GPS on ships boat – max slamming of 33 m/s2 recorded.
This data will be used in several research projects investigating hull slamming in boats.

(Courtesy UNSW Canberra)

Staff and students experiencing small boat handling and hull slamming.

(Courtesy UNSW Canberra)

ADFA Campus. From 2026, only ADF Trainee Officers will be admitted to our engineering programs. This closes the door on new civilians studying with us, at least in the short term. The community petitioning for an exemption for naval architects is warranted. Students who had engaged with us and who were planning to join us in 2026 and beyond have been told to make other plans, at least in the short term. This decision from the Deputy Vice Chancellor's office affects all of our engineering disciplines, but naval architecture most dramatically. I would like to think that the impact on naval architecture was an unintended consequence of a larger decision and a negotiated outcome favouring naval architecture can be found. Some positive steps made in a process to stand up some scholarships for civilian students has also been halted. The first step in our response is to try and gather your views and hopefully your support in building a business case for civilian students in our program. Navy has advised intent for continuing their support for the program on the ADFA campus.

Associate Professor
Warren Smith
Naval Architecture Program Coordinator
School of Engineering and Technology
UNSW Canberra

AMC Advancing Sustainable Ocean Food Production Through Innovative Engineering

A research team at the Australian Maritime College (AMC) has successfully completed groundbreaking hydrodynamic testing of the innovative SeaFisher offshore aquaculture fish pen. This research is pioneering the future of developing open ocean aquaculture systems capable of withstanding the harsh marine environment.

The 1:50 scale experiments were completed in the Towing Tank at AMC, where the model was constructed from carbon fibre tubing, 3D printed joiners and carefully netted with a realistic nylon net. The rigid model was deployed with a simplified single point mooring system and subjected to comprehensive wave testing across a spectrum of conditions.

Tested conditions included severe seas where the full-scale significant wave height (Hs) was approximately 7.5 m, moderate conditions (Hs = 5.0 m), and operational seas (Hs = 2.5 m). Regular wave periods spanning 5 s to 20 s across the full spectrum were evaluated. The model was rigorously tested both at the surface and when submerged 30 m below the still water line (noting that the total water depth was 75 m), providing crucial insights into survivability strategies.

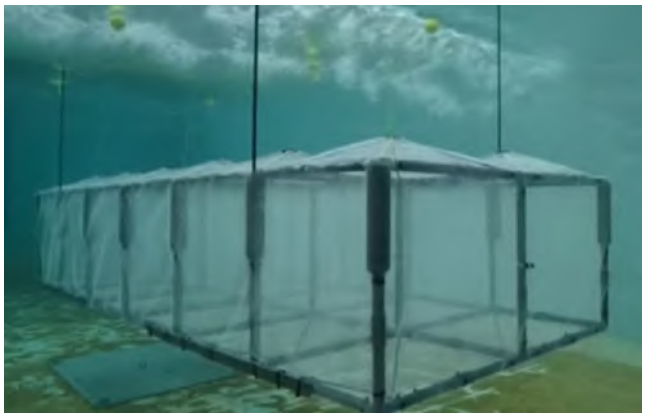
The comparative video footage posted to YouTube and available at https://blueeconomycrc.com.au/advancing-sustainable-ocean-food-production-engineering demonstrates the SeaFisher's response to a massive 15.95 m high wave (built on a JONSWAP irregular spectrum with target Hs of 7.58 m and Tp of 12.38 s). The results are striking: when surfaced, the wave breaks directly onto the structure causing potential damage, but when submerged, structural motions are dramatically suppressed, significantly increasing system survivability. Screen shots from both video clips are shown here.

SeaFisher surfaced with wave conditions: Hs = 7.58 m, Tp = 12.37 s at full-scale
(Image courtesy AMC)

The hydrodynamic testing results will directly inform critical design improvements and validate numerical models for continued development of robust offshore aquaculture systems. This research represents a major step forward in developing open ocean aquaculture technologies that can operate safely in challenging marine environments.

This exceptional work was led by our world-class experimental modelling team: Eric Gubesch, Nick Johnson, Damon Howe, Benhur Raju, and Jean-Roch Nader from the Australian Maritime College – experts in hydrodynamics of floating-moored structures, offshore renewable energy systems, and offshore aquaculture structures.

We were honoured to host distinguished attendees during



SeaFisher submerged with wave conditions: Hs = 7.58 m, Tp = 12.37 s at full-scale
(Image courtesy AMC)

testing, including Irene Penesis, Nick Elliott, Angela Williamson, Donna Wilson, Simon Willcox, Leslie Cowdery, Nikki Radford – all from the Blue Economy CRC, Hossein (Behrooz) Enshaei (AMC), Yunil Chu (University of Queensland), Ng Quo Hseng (Ivan) (TCOMS), Jord Wiegerink (BMT), and Adam Smark (Huon Aquaculture).

The Blue Economy Cooperative Research Centre (CRC) is established and supported under the Australian Government's CRC Program, grant number CRC-20180101. The CRC Program supports industry-led collaborations between industry,

Participants in SeaFisher program gather on the AMC Towing Tank carriage
(Photo courtesy AMC)

Dr Eric Gubesch describes testing for SeaFisher program from the AMC Towing Tank carriage
(Photo courtesy AMC)

researchers and the community. Further information about the CRC Program is available at www.business.gov.au.

Blue Economy Cooperative Research Centre (blueeconomycrc.com.au)

AMC Students visit HMAS *Adelaide* at Hobart

A group of 33 Naval Architecture and Maritime Engineering students and staff from the Australian Maritime College recently travelled to Hobart for a technical tour coordinated with the Royal Australian Navy. The visit provided students with unique insight into operational naval platforms and marine engineering systems, thanks to the generous support of HMAS *Adelaide* CO, CAPT Kane Mackey and his team.

The initiative reflects AMC's commitment to offering practical, real-world learning experiences and fostering strong industry connections.

Associate Professor Hossein (Behrooz) Enshaei
Director Centre for Maritime Engineering and Hydrodynamics
Australian Maritime College, University of Tasmania

Australian Maritime College students and staff with ship's company on the flight deck of HMAS *Adelaide* during the ship's recent visit to the city
(Photo courtesy AMC)

Continuing Professional Development for Naval Architects

The Covid pandemic adversely affected live attendance at technical meetings and conferences. Adoption of online meetings, often using the Zoom format, proved invaluable in providing a pathway for naval architects wishing to continue their technical development and to complete their Continuing Professional Development (CPD) requirements.

The Royal Institution of Naval Architects (RINA) has developed various useful tools to continue this development.

In March 2024 RINA published a set of guidance notes which gives coverage of accepted CPD activities and their relative importance in the overall satisfaction of requirements. The notes can be found using the link https://rina.org.uk/wp-content/uploads/2024/03/Guidance-On-Continuing-Professional-Development-March-2024.pdf

However, it should be noted that the stated requirement for CPD activities to be authenticated is not correct (although recommended).

It should further be noted that neither these Guidance Notes nor the below referenced Webinar adequately reference the Engineering Council's overriding CPD requirements.

The Engineering Council requires that members registered as CEng, IEng or EngTech routinely report their CPD achievement to the Institution.

The five areas of competence for the Engineering Council are:

A – Knowledge and understanding

B – Design and development of processes, systems, services, etc.

C – Responsibility, management or leadership

D – Communication and inter-personal skills

E – Professional commitment

On January 10, 2025, RINA hosted a Webinar titled RINA Webinar *Meeting your CPD Requirements* which covers the topics:

- The purpose and importance of CPD
- How to plan your CPD activities effectively
- A live demonstration of logging CPD activities
- Compliance requirements and best practices
- A Q&A segment addressing common concerns

The Webinar can be viewed using the link https://www.youtube.com/watch?v=o-vAa2SK4EU

As formal learning is considered a valuable component of CPD, RINA also accredits course providers for various online courses which are CPD endorsed and the subjects of which cover a wide range including:

- Contract Management for Ship Construction, Repair and Design
- Diploma in Marine Surveying
- Certificate in Maritime Safety Management / ISM code

https://rina.org.uk/education/continuing-professional-development/

The wide range of endorsed courses is being regularly expanded and the above-referenced web page updated accordingly.

According to RINA, CPD can be achieved via any of the following activity types:

- Formal education and training e.g. face-to-face education, distance learning, short courses and formal on-the-job training.
- Informal Learning e.g. reading of books, journals, manuals, etc and familiarisation with the operation of technological aids, computer programmes, equipment
- Conferences and Meetings e.g. workshops, symposia and technical meetings
- Presentations and Papers e.g. preparation and presentation of material for courses, conferences, workshops, seminars and symposia
- Institution Activities e.g. membership of Institution standing committees and groups, Professional Review interviews, acting as a mentor, course accreditation, refereeing of technical papers before publication, co-ordinating conferences
- Industry involvement (per academia) e.g. consultancy services and the supervision of industry sponsored research and design projects

The CPD record year is from 1 January to 31 December and RINA does conduct annual CPD audits of the members as required by the Engineering Council.

These audits are not designed to penalise; they are designed to encourage. There is no fixed hours requirement (such as that required by Engineers Australia and BPEQ as noted below) but rather, taking in to account the five CEng competence requirements and the above activity types:

- Set yourself a list of objectives to develop your career and professional development
- Plan how you intend to achieve these objectives (listing activities as per above)
- Record what you have achieved (and an indication of hours spent on these activities)
- Reflect on the effectiveness of these activities in achieving your objectives and evaluate their relative success in achieving these objectives
- Following on from the above, set your career and professional development objectives for the next twelve months and beyond

Every one of your careers and personal objectives are different and so will be your plan – it is yours to develop and progress to best suit you throughout your career.

Other professional memberships:

If you are also accredited by another professional organization there may be different and perhaps more structured requirements. For example, a Registered Professional Engineer Queensland (RPEQ) must complete the following very specific CPD requirements.

Continuing Professional Development for (CPD) Requirements for Post-BPEQ Registration

All registrants of the BPEQ scheme are required to complete a minimum of 50 hours of CPD activity per year (totally 150 hours over 3 years).

At least 75% of CPD hours must relate to technical matters relevant to the area of engineering in which the person seeks assessment and the remaining should relate to engineering practice (for example; first aid courses, occupational health and safety training and mentoring junior engineers does not relate to technical matters but may be relevant to an engineer's practice).

To continue to be eligible for registration, RPEQs must comply with the Board's Continuing Registration Requirements (CRR) Policy. BPEQ's CRR policy states that RPEQs must:

a. complete a minimum of 150 hours of structured continuing professional development (***CPD***) over a three-year period leading up to the renewal or restoration of their registration;

b. undertake a minimum 75% (112.5 hours) of the 150 hours as technical CPD;

c. undertake a maximum 25% (37.5 hours) of the 150 hours as non-technical CPD;

d. undertake as a minimum, 1 hour of non-technical CPD covering ethics; and

e. undertake as a minimum, 1 hour of non-technical CPD covering risk management.

CPD is designed to extend the RPEQ's knowledge and skills in their area/s of engineering.

The Board has seven categories in which CPD hours can be claimed:

Full details can be found using the link

https://rina.org.uk/membership/registered-professional-engineer-queensland/

Jennifer Knox, FRINA

RPEQ CPD TYPE	LIMITATIONS
Formal post-graduate study or tertiary course units not undertaken for award purposes	There is **no limit** to the maximum number of hours you can claim
Short courses, workshops, seminars and discussion groups, conferences, technical inspections and technical meetings	There is **no limit** to the maximum number of hours you can claim
Structured learning activities in the workplace that extend competence in the area/s of engineering	Maximum 75 hours
Private study which extend knowledge and skills	Maximum 18 hours
Service to the engineering profession	Maximum 50 hours
Preparation and presentation of papers for courses, conferences, seminars or publication	A **maximum of 45 hours** for papers published in journals and conference proceedings, or a **maximum of 75 hours** for papers subject to critical peer review
Practitioners employed in tertiary teaching or academic research	A minimum of 40 hours of industry involvement must be claimed

ACKNOWLEDGEMENT

The Australian Division of the Royal Institution of Naval Architects gratefully acknowledges the generous support of the AMDA Foundation Limited for the conduct of the International Maritime Conferences organised by RINA, the Institute of Marine Engineering, Science and Technology and Engineers Australia in conjunction with AMDA's Indo Pacific Maritime Expositions. Without such support the International Maritime Conferences and the publication of *The Australian Naval Architect* would not be possible.

Australian Division Council

The Council of the Australian Division of RINA met on the afternoon of Wednesday 17th June 2025 by zoom-conference under the chairmanship of our President, Prof Jonathan Binns in Melbourne with links to Gold Coast, Sydney, Canberra, Melbourne, Hobart, Launceston and Perth.

In opening the meeting the President noted the sad loss of Past President John Jeremy since the last meeting and welcomed new members Prof Renilson and Assoc Prof Enshaei to this meeting, the first of the 2025 Council. He thanked retiring members for their service.

Among the items discussed were:

The Australian Naval Architect

Council considered the future of our magazine following the devastating loss of both the Chief Editor and Technical Editor in the first months of this year. It noted that continued existence of the magazine would depend on sufficient volunteers coming forward to form a team, as the task of assembling and producing it needed to be spread beyond the two editors. Its form and content would need to be updated to reflect the skills and resources of those volunteers. As a short-term measure the April issue had been completed using largely material prepared by the editors before their passing. Council thanked Abigail Jane for taking-on the layout task for the April issue.

Improvement Working Group

The President reported that the working group was progressing the task of considering how to implement the recommendations from its November 2024 Workshop. Council agreed to seek views from members and employers on activities that RINA should undertake. Any responses in this regard should be sent to the President or Secretary. As many of the Workshop outcomes involved the Institution in general rather than being solely within the Division and it Sections, copies of Workshop outcome documents had been forwarded to RINA HQ.

AMSA Domestic Commercial Vessel Issues

Council noted that the Division was providing input to the Risk-based Review of the Surveyor accreditation system although it had been excluded from membership of the reference group.

Council also noted that consideration was being given to further activity urging review of requirements for lightship verification.

Succession Planning

Council has prepared position descriptions for the various positions that will need to be filled in the coming months, including Secretary, Treasurer and *ANA* Editors. These descriptions are available from the Secretary for anyone interested in these positions.

Preparations for Indo-Pacific IMC in November

Council noted preparations that are underway and appointed Adrian Broadbent to the position of Chair of the Organising Committee.

Council approved a subsidy for Student Members presenting papers to the IMC.

Mutual Recognition of Accredited Australian Degrees

Council agreed to make representations to RINA HQ in support of recognition by the Engineering Council of Engineers Australia accredited AMC degree courses being accepted as equivalent to UK degree courses accredited by RINA.

The draft minutes of the meeting have been circulated to Council members and are available to other members by request. Next meeting was tentatively scheduled for Tuesday 16th September 2025.

We would welcome any volunteers to continue this work.

Rob Gehling AO

Secretary

E: rinaaustraliandivision@gmail.com

P: 0403 221 631

RINA, Division, and Sections – Committee Members and Representatives

To keep members up-to-date with who is doing the hard yards on their behalf within the Institution in Australia, current council, section committee members and other representatives are as follows:

RINA Council (Institution)

Vice President Pacific Region	Martin Renilson
Members	Jonathan Binns (ex officio)
	Jim Black
	Martin Renilson

Developing Careers Committee

Emma Tongue

IMO Committee

John Manning

Maritime Safety Committee

Rob Gehling

Membership Committee

Danielle Hodge

Professional Affairs Committee

Jim Black

Publications Committee

Martin Renilson

Division Council

President	Jonathan Binns
Vice-President	Sammar Abbas

Members Elected/Appointed	Sammar Abbas
	Hossein Enshaei
	Ken Goh
	Martin Grimm
	Andrew Harris
	Bruce McRae
	Martin Renilson
Members Nominated by Sections	Nick Bentley (Qld)
	Phil Bevan (SA-NT)
	Peter Blackwood (NSW)
	Chris Davies (Tas)
	Tim Speer (WA)
	Nathan Wallace (Vic)
	Tamasin Welch (ACT)
Immediate Past President	Jim Black (ex officio)
Secretary	Rob Gehling (ex officio)
Treasurer	Craig Boulton (ex officio)

Division Improvement Working Group

Chair	Jonathan Binns
Members	Sammar Abbas
	Andy Harris
	Warwick Malinowski
	Michael Woodward

Division Investment Committee

Joint Chairs	Craig Boulton
	Rob Gehling
Members	Nick Bentley
	Phil Bevan

Division AMSA DCV Liaison Working Group

Chair	Rob Gehling
Members	10 (names confidential)

Walter Atkinson Award Panel

Chair	Michael Squires
Members	Dan Curtis
	Alan Muir
	Lily Webster

Standards Australia Committee CS114 (Small Craft)

Members	Peter Holmes
	David Lyons

Standards Australia Committee ME059 (Shipbuilding)

Member	Adrian Macmillan

International Standards Organisation (ISO)

Chair Working Group 35 reviewing ISO12215 Small Craft —Hull Construction and Scantlings

David Lyons

Project Leader reviewing ISO12215 Part 9 Sailing Craft Appendages

David Lyons

Offshore Racing Congress - International Technical Committee

Member	David Lyons

Sailing Yacht Research Foundation (USA)

Advisory Member	David Lyons

Indo-Pacific IMC2025 Organising Committee

Chair	Adrian Broadbent
Member	Stuart Cannon

Indo-Pacific IMC2025 Program Committee

Chair	Adrian Broadbent
Members	Craig Boulton
	Geoffrey Fawcett
	Rob Gehling
	Gregor Macfarlane
	Tauhid Rahman
	Warren Smith

Bob Campbell Prize

Coordinator	Rob Gehling

Assisted by volunteers mostly from IMC Program Committee and WAA Panel

RINA - Engineers Australia Joint Board for Naval Architecture

Chair	Jim Black
Member	Rob Gehling

The Australian Naval Architect

Chief Editor	Rob Gehling (acting)
Assistant Editors	Martin Grimm
	Jennifer Knox
	Jack McLaren
	Trevor Ruting
Referee	Noel Riley

Section Committee - Australian Capital Territory

Chair	Cameron Whitten
Deputy Chair	David Lyons
Secretary	Greg Swalwell
Treasurer	Lauchlan Clarke
Assistant Secretary	Jordan Rayson
Division Council Rep	Tamasin Welch
Members	Ray Duggan
	Peter Hayes
	James Loram
	Jeremy Nolan

Section Committee - New South Wales

Chair	John Butler

Tech Meeting Coordinator	Ehsan Khaled
Treasurer	Adrian Broadbent
Secretary	Lauren Kurts
Division Council Rep	Peter Blackwood
Members	Robert Bryce
	Pat Doherty
	Craig Boulton
	Jack McLaren

Section Committee - Queensland

Chair	Hamish Lyons
Deputy Chair	Trevor Leacy
Secretary	Tom Ryan
Treasurer	James Stephen
Division Council Rep	Nicholas Bentley
Members	Gerard Anton
	Mark Deveraux
	Tommy Ericson
	Jalal Rafieshahraki

Section Committee - South Australia and Northern Territory

(pending Section AGM scheduled for 17 September 2025)

Chair	Vacant
Secretary	Andrew Harris
Treasurer	Donald Gallagher
Assistant Treasurer	Alec Rusanoff
Tech Meeting Coordinator	John French
Division Council Rep	Vacant
Members	Vacant

Section Committee - Tasmania

Chair	Martin Renilson
Deputy Chair	Richard Boult
Secretary	Nipuna Rajapaksha
Treasurer	Chris Davies
Division Council Rep	Chris Davies
Undergraduate Reps	Remy Brannon
	Caleb O'Reilly
Members	Doupadi Bandara
	Gregor Macfarlane
	Alan Muir
	Michael O'Connor
	Michael Woodward

Section Committee - Victoria

Chair	Vacant
Deputy Chair	Vacant
Secretary	Tom Dearling
Assistant Secretary	Luke Shields
Treasurer	Alex Conway
Assistant Treasurer	Paul Duncan
Division Council Rep	Nathan Wallace
Social Media Manager	Nathan Wallace
Members	Nirman Jayarathne
	Jonathon McCowan
	Chance Ong
	Zoe Puii
	Samuel Smith

Section Committee - Western Australia

Chair	Ken Goh
Deputy Chair	Bernie O'Shea
Secretary	Leo Nowruzi
Treasurer	Hadiqa Kahn
Division Council Rep	Tim Speer
Members	Yuriy Drobyshevski
	Matt McGellin
	Vesna Moretti
	Stan Royston
	Anuj Sharma
	Malcolm Waugh

Naval Architects on the Move

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

Rohan Abbot left ABL group to join Bastion Defence for a Border Force role (2025)

Stuart Cannon retired in July '25 from the position of Assistant Director General Technology Programs at the Australian Submarine Agency.

Christopher Carl, with 7 years at ASC under his belt, has just been appointed as Nuclear Safety Engineer

Tobias Clarke has started a new role at BLW Marine Management as a Senior Naval Architect

Daniel Clayton joined Australian Missile Corporation from Thales (2024)

Riley Darrant has been appointed as Senior Project Engineer with Hall Contracting

Sam De Vincentis has left Austal and joined Incat Crowther

Peter Gawan-Taylor has done a slow move from Perth in 2018 to Canberra in December 2024, after a 6 year role as design manager at Austal Philippines working on large ferry design, developing the design team, and shipyard improvements. Peter's new role is with

Bastion Defence supporting the delivery of Border Force maritime capability.

Stephen Gilmore AM, CSC has stood down from his Tasmanian Defence Advocate role after a substantial 8 years and has become a Director on the Board of TT Lines (Spirit of Tasmania) in January 2025

Sasha Harrison has recently started a new job with Aus Ships in Brisbane, after an amazing stint with Seatransport Pty Ltd

Christopher Hawtone has started his new position as Project Manager at DOF, working with the company since 2022

Harry Hubbert has claimed the Chief Operations Officer role in the ever expanding Greenroom Robotics

Brad Hunter joined Incat Tasmania from Incat Crowther (Jun 24)

Ashley Jones has moved with TechnipFMC to become Installation Engineering Manager bringing his time at Technip to over 14 years!

Joji Kinivuwai has started a new role as Engineer with ASO Marine Consultants in Sydney, after working as a site engineer for McConnell Dowell for nearly 3 years

James Larissey has started a new position as Well Integrity Engineer (Secondee) with ExxonMobil Australian and New Zealand

SBLT Scarlett Lockyer graduated from UNSW Canberra with her BE (NA) in December 2024 and posted to *HMAS Cerberus* for Marine Engineering Application Course and is undertaking further study before a future sea posting to further her engineering officer development.

Clodagh McKechnie has moved on from Fugro after 2 years to join Raytheon in Darwin

Jack McLaren graduated from AMC and took up Naval Architect position with Incat Crowther in Sydney

SBLT Thandi Murada also graduated from UNSW Canberra with her BE (NA) in December 2024, posted to *HMAS Cerberus* for Marine Engineering Application Course and has taken up a sea posting to further her engineering officer development.

Tim Murfet has started a new role at Arup in Brisbane as Senior Maritime Engineer

Jainesh Parmer has started a new position as Asset Investment Manager and Fremantle Ports

Irene Penesis is now Interim CEO of the Blue Economy CRC (2025) on secondment from AMC (UTAS).

Aminur Rashid joined Land 8710 project (Army watercraft) in 2025.

Christian Rayes has left his position as consultant at FNC to become Lead Software Engineer at ASC

Elisha Riley continues to work on new and exciting projects at Thrust Maritime, now as Project Engineer after 5 years as Naval Architect

SBLT James Scotson also graduated from UNSW Canberra with his BE (NA) in December 2024, posted to *HMAS Cerberus* for Marine Engineering Application Course and has taken up a sea posting to further his engineering officer development.

Alistair Smith left DNE to rejoin CASG as Technical Director Land 8710 (Army watercraft) (later 2024)

Shin Wei Tham (Bert) is again showing his aptitude for engineering, just started a role as Power System Engineer for Entura in Hobart

Peter Thurling has left the position of Senior Project Manager at Leidos /Gibbs & Cox Australia and is now General Manager at Taylor Bros Marine Pty Ltd in Tasmania.

Minhas Ummer has moved on from Arup and is now working for TSA Riley

David Whittaker is Principal Naval Architect in the Research and Technology Division of BAE Systems - Maritime. (2024)

Sigrid Wilson has a new position at Babcock Australia & New Zealand as Program Engineering Manager ADF GSE

Richard Young has started a new position as Senior Project Engineer after 3 years at Wood as a Project Engineer,

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 undersigned 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 Rob Gehling when your mailing address changes to reduce the number of copies of *The Australian Naval Architect* emulating boomerangs.

Trev Ruting and Jonathan Binns

E: tbr13mob@gmail.com

The Birth of HMAS *Success*

Hugh Hyland

(With the passing of John Jeremy, Hugh's recollections of the construction of HMAS Success are presented for this issue. This project was dear to John's heart, as indeed was this column. – ed)

From Year 12 in Queensland, entry to engineering at university required Mathematics 1 and 2, English, Physics and Chemistry, plus a language at Year 10. I had taken French to Year 12. After finishing the UNSW naval architecture degree I needed to expand my education to cover airconditioning, bearings, etc, so I completed a degree in mechanical engineering. I liked French so I completed the three years of three to four hours per week evenings at the Institute of Languages at UNSW.

In 1977 the French design for the replenishment ship was chosen by the RAN to become HMAS *Success*. The other shortlisted contender was a Dutch design. As I had qualifications in naval architecture, mechanical engineering and French I was selected as part of the team to stand by the three year construction in France from 1978 to 1980. However the unions objected to an overseas build, and Codock said they could match the (leaked) cost and time. In the contract between Australia and France there was a paragraph nobody had expected to use, the option to build in Australia. Accordingly I was posted to France for 9 months in September 1979 to collect the translated "Deliverables" drawings and documents. *(John Jeremy wrote ("Working Paper No. 205 – Naval Shipbuilding: Some Australian Experience" ISBN 0 7315 0874 2, ISSN 0158-3751) that Cabinet decided in August 1977 to build to the French design and a month later that no further consideration would be given to Australian build. Cabinet reconsidered the latter decision in April 1978 and, following a tender process, a contract for Australian build of the AOR was signed in October 1979. - ed)*

Medical, official passport, then to the French Consul who said a visa was not needed provided I left and returned to France at least every 3 months. On arrival in Paris after 36 hours travelling my passport was not even checked. I was attached to the Embassy under the Australian Naval and Defence Attache, and was located to Nantes on the west coast, soon to be joined by a colleague from Canberra and a Codock purchasing superintendent, neither of whom spoke French.

The Project team was in Navy Office, Canberra, whilst the French prime contract was with Direction Techniques des Constructions Navales (DTCN), the shipbuilder DCAN being contracted to build in Brest, France, or to provide documentation to build in Australia. Documentation for French naval ships came from different establishments, depending on the ship type and subject matter. For our AOR some documentation was sourced from Lorient and some from Brest, with some from Paris nominated as deliverables. However some was not formalised but included in the expertise of their senior foremen, such as setting out penetrations through bulkheads. Indeed the French had never before provided a production package for such a build overseas and probably Navy Office had never before sent a civilian team to a foreign language country for an extended period. To further add to the problems, some of the drawings were of poor quality, despite best efforts to find better prints, and these had to be re-drawn by Codock.

(As can be imagined, the contractual arrangements for the build of this ship were complex, involving not only DTCN, DCAN, the French Government Marketing Organisation SOFMA, the Royal Australian Navy and Codock, but also various Navy agencies and suppliers. However we are unable to share these details here. - ed)

Accordingly the French had gone through one of their contractors, ACB in Nantes, where our offices were, to gather a team of translators. ACB's Nantes office contained a group of French, and one Canadian, technical translators. The deliverables only totalled around 1,500. There were many words and descriptions not familiar to the team and not found in any dictionary. I had to vet each and every description of components on the drawings and send back the corrections to be reworked and then proof read the documents. This was causing delays and morale problems, so I sat down with a leading translator and progressively developed a 1,400 word/phrase French to English and accompanying 1,400 word/phrase English to French dictionary of our own which was given to each translator. The French did not have all the drawings we required, eg, pipes, trunks and cables passing through a bulkhead would be marked off by an experienced foreman on site rather than having a detailed drawing. These extra drawings had to be subsequently prepared by Codock as a significantly extra cost. Language was an ongoing problem for the three of us in the Defence /Codock team, despite the confidentiality constraints of our respective roles. We also helped each other in the language aspects of everyday life.

Every month there was a meeting in Nantes between the Australian and French personnel including those from Brest and Paris. These were bi-lingual, and the format was new to the French who commented favourably. Visits were made to major suppliers, including Pielstick in St Nazaire to observe a similar PC2.2 engine running on their test bed.

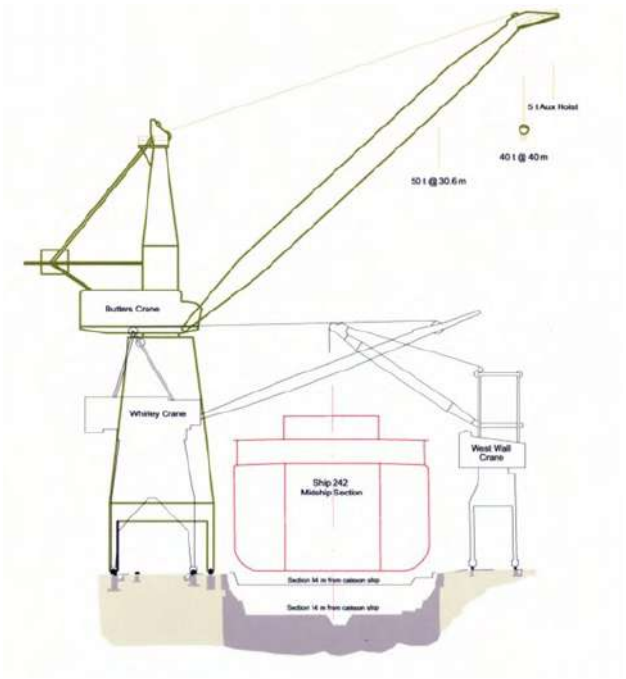
Several visits were made to Brest, 300km north, where the ship was originally to have been built. Occasionally these were made by car but mostly by two connecting trains each way.

In Brest the French Navy showed their dockyard facilities and hosted a tour onboard a sister ship of the *Durance* class complete with Admiral and drinks in the wardroom. Whilst the initial reception at the start of the project had been cool, noting the ship was no longer to be built in France, a good working relationship was developed.

On his return to France one time from a long weekend in England, Customs said the colleague from Canberra had spent more than 3 months in the country, despite his official passport. After he protested they let him in just once more. The Embassy queried the French authorities, who they told us we were all illegal and could be deported so I just kept using my British passport with no such restrictions!

Meanwhile the French had commenced construction in a graving dock in Brest of their third ship of this Class, to keep their workers employed over the cancelled planned build period for the RAN. Consolidating the partly outfitted blocks in the yard, they started to lower them into the dock in November, and by May 1980 it was afloat temporarily to allow a frigate, also being constructed in that dock, to be floated out.

(Meanwhile at Codock in Sydney, extensive preparations had been made for the build, including upgrading of berth craneage through measures including purchase of a Butters crane from the former Whyalla shipyard, adoption of 10th scale lofting, upgrade of computer systems including adoption of CAD, extensive attempts to recruit technical and trades personnel, all as necessary for a yard that had not built a ship for a number of years. These are detailed by John Jeremy in his 2004 book "To Build a Ship" for Sydney Harbour Federation Trust which has kindly authorised reproduction of some images from the book – ed)



Drawing showing sections through No 1 Slipway with the Butters crane seen in proportion to the other slipway cranes

(Image courtesy SHFT)

By June 1980 all available "deliverables" had been obtained, translated and despatched. The Embassy asked me to stay in Paris for another year, but I regretfully declined as I wanted to stand by the construction in Sydney.

After returning to Sydney I was selected to stand by the building at Codock in early 1981 where I stayed till the hull was completed, the machinery installed, the ship launched, and set-to-work (STW) commenced in mid 1984.

I was a Navy Office Representative both in France (RAN Resident Engineer, or RANRE) and at Codock (Production Authority Representative Contract Built Ships, or PARCBS) where for one of the three years I was also doing the job of my retired boss. As for adding in studying for my MEngSc at UNSW, just as well progress on the ship was slow.....

Keel laying of *Success* was in August 1980 and the

Success at an early stage of construction at Cockatoo Island Dockyard

(Photo courtesy Hugh Hyland)

Success with hull and superstructure largely complete

(Photo courtesy Hugh Hyland)

Commonwealth Office at CODOCK was set up with 3 staff initially. Progress was slow as labour could not be found. In January 1982 three French personnel arrived to assist with technical enquiries noting the relatively small number of drawings and documents, 1500 (compared to 15,000 for an FFG). This Technical Assistance Group stayed for two years, extended to four for the group leader with replacements for the other two for two years. In order to speed up work, hull blocks were pre-cut as "flat-packs" and each along with a shipwright were sent to various fabrication companies around Sydney which used different methods of welding. These blocks were then transported through the streets of Sydney in the dead of night, and barged across to Codock. Dome Engineering manufactured the bulbous bow, with extra work as it was not a dome. Consideration was given to install a bow thruster,

but the required size was too large for the available space.

Overall the welding was unsatisfactory, and additional X-rays were demanded, with multiple re-works necessary, including repairs of repairs. Once the hull was consolidated the machinery was installed. In contrast, the French fitted out each block before consolidation and saved much time and costs. Despite objections from France, the propeller shafts were installed using a Navy Office computer generated smooth curve, independently checked by a similar curve generated by a classification society. It was interesting to see four boring bars working together on the A-brackets and sterntubes, two being from WW1 and two from WW2.

Shaft brackets and stern tubes were bored using portable boring machinery set up on the slipway

(Image John Jeremy collection)

One of the A-brackets was mistakenly machined oversize, so the bearing carrier was machined undersize then external bands were fitted and machined to suit the oversize. (This had been done on a stern-tube on HMAS Torrens some years earlier, and was done on the same ship's A-brackets after grounding in 1996.) The stern frame to take the lower pintle bearing for the rudder (which was double-curved and expensive to manufacture) was also bored oversize so the pintle bush was metal sprayed to match the oversize, with metal spray considered acceptable in such a non-contact rotating regime. All deviations were sentenced under Concessions. The CP propellers, which were manufactured by ACB in France, surprised us with their wavy blade edges.

Machinery warranty had expired before the ship commissioned due to the delays.

The French ships had higher voltage alternators with step-down transformers - as test beds before constructing their (current) aircraft carrier. We opted for the lower service voltage without transformers.

There was a dispute between the Commonwealth and Codock regarding painting the lower areas of the engine

Lowering a main engine through a left-loose section of deck over the engine room

(Image John Jeremy collection)

room - was it a tank top or a bilge, with different specifications? Codock put in their interpretation followed by the main engines, the Commonwealth won their interpretation and the engines had to be removed and the areas blasted and re-painted and the engines re-installed. There was another disagreement between Commonwealth staff on site and Navy Office in Canberra regarding the dry film thickness of paint in the cargo tanks. Navy Office, to try to contain costs via a false economy, wanted half the thickness on half the tanks with a notation that they were never to carry ballast. We on-site quoted the French requirement for full protection on any tank, and won.

The French ships were fitted with astern re-fuelling. The Project chose to dispense with this and to extend the flight deck. Part through the build, the requirements were increased for the weight of forklifts and the loads carried, so all the applicable decks had to be strengthened. The hangar height was also increased, (and the hangar was lengthened in later years). The derrick in the French design was replaced by a crane.

Since the French used bulb-bars unavailable in Australia, Codock cut one flange off channels resulting in locked-in stresses that changed how those channels bent. In the French ships, the channels passed through bulkheads and tank boundaries, but here the cropped channels ended short and were bracketed to the bulkheads and tank boundaries. Initial computer analysis indicated a satisfactory fatigue life of these brackets, but subsequent analysis found shortcomings, so they received higher survey attention.

The ship was launched in April 1984, minus the funnels which were not able to be lifted on board because the Butters crane was badly damaged in a storm. Also John Jeremy had to provide the launching lady with a helping hand after numerous attempts to break the bottle on the bow. I raised concerns that the anchors were almost above the front spectators, held by ropes which could be cut by an axe-man should they need to be dropped once the ship was afloat, but the risk was dismissed. The bilge keels were installed at the first docking as they were too wide for the retaining walls lining the slipway – she was the biggest ship built at Codock. I was on board for the launch, when the ship swung to port rather than to stbd as planned for greater harbour clearance. Apparently the port drag chains had picked up some old ones from an earlier launching which had been left

Temporary cleats were fitted to the CP Propellers prior to launching to prevent the blades changing pitch before the installation inboard was complete. The restricted space available at the entrance of No 1 Slipway prevented bilge keels being fitted for the launch.

(Image John Jeremy collection)

The bottle finally breaks, after twelve attempts! Seen are Lady Stephen (who named and launch the ship) with John Jeremy (Managing Director)

(Image courtesy RAN)

NUSHIP Success on the way to the sea

(Image John Jeremy collection)

on the bottom, and these pulled up the ship quicker without any problems with travelling into shallower water.

I moved to a job at Garden Island Dockyard shortly after launch. Construction of the ship continued until 1986, having taken twice as long and cost twice as much as had it been constructed in France due to use of proven production systems, personnel and economies of scale.

Costs at Codock were higher than in France due to many factors including:

- The drawings were somewhat unfamiliar in style and did not show details;
- Codock had not built a ship in many years and had to attract labour to the site as potential workers could get the same pay living and working in the outer suburbs without the costs of travel and inner-city mortgages;
- Extra costs of the island shipyard location such as "flat-packing" blocks to the suburbs; Codock equipment was old though they were introducing the Logatone 1/10th scale lofting;
- Early outfit of blocks was generally prevented by unavailability of drawings.
- A 6 week strike in support of reduced working hours;
- Late modifications required by Navy such as rearrangement doctor's and dentist's rooms.

I attended some of the sea trials, of which a feature was the relative absence of noise and vibration experienced in the French ships. This was attributed to the RAN's curved propeller shafts rather than the French assumption of straight shafts.

The increased costs and late delivery led to the cancellation of the sister ship which had been intended to be built by Codock. HMAS *Westralia* was obtained instead.

In 2011, to conform with the double-hull requirements for commercial tankers, the ship's centre tanks were fitted with double bottoms in Singapore with oil no longer carried in the wing tanks.

HMAS *Success* key dates:

Laid down:	9 August 1980
Launched:	3 March 1984
Commissioned:	23 April 1986
Decommissioned:	29 June 2019

(Note. Following decommissioning the vessel was stripped to the hull at Port Pirie and then recycled at the slipway of my old stamping-ground, the former Whyalla shipyard. – ed)

USS Rushmore, ROK Marado, JS Osumi and USS San Diego seen from HMAS Choules during Exercise Talisman Sabre 2025
(Defence Imagery)