

THE AUSTRALIAN NAVAL ARCHITECT



Volume 12 Number 1
February 2008



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Cover Photo:

The Armidale-class patrol boat HMAS *Maryborough* on her first visit to Sydney in December 2007

(RAN Photo)

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on the

World Wide Web

www.rina.org.uk/aust

From the Division President

I have decided to follow the example of Rob Gehling and use this column to present my report on the activities of the Division during 2007. This report will be delivered to the Annual General Meeting which will be held on 19 March 2008.

The main activity during the year has been to consolidate the Division's standing and reputation as the representative body for naval architecture within Australia. The foundation for this activity was set firmly in place by the signing of the permanent agreement on 1 March 2007 between Engineers Australia and the Royal Institution of Naval Architects. This agreement provides for mutual recognition of qualifications and recognises RINA as the pre-eminent institution for naval architecture and as the associated professional body for Australian engineers. The signing of the permanent agreement has meant that the EA and RINA Joint Board can focus on developing the links at the grass-roots level. Rob Gehling accepted the Chairmanship of the Joint Board on behalf of RINA and has continued to work towards this goal. The fruits of this work are now being recognised as some naval architects are starting to appear on the National Engineering Registration Board, having proved that they meet the needs of the General Area of Practice in Naval Architecture. At the Section level the agreement means that RINA should experience the same status as other EA technical societies in terms of facilities hire and publicity for technical meetings. Progress has been made to accept this; however, further developments are required and this should be a focus for the coming year. I thank Rob for his efforts in achieving the agreement during his term as President and his continuing work to ensure that the agreement is useful.

There have been many other activities throughout the year to which members of the Australian division have contributed. In my role as the Australian Division representative on the RINA Council I need to ensure that RINA is truly international and that our views and opinions are heard at HQ. This often means a late-night teleconference and sometimes vital information could be lost. However other Australian members in attendance are John Jeremy, Bryan Chapman and Martin Renilson. This important activity by these members ensures that continuity is maintained across all levels of our organisation. Our representation will be smaller next year following the completion of Martin's term on Council. Although Martin was not resident in Australia for most of the term he continued to support the Australian perspective. Other committees at the HQ level which have been supported by Australian members include the safety committee (Rob Gehling) and the high-speed vessels committee (Tony Armstrong). Their work also ensures that our views and recommendations are noted at the highest level.

Members of the Australian Division have continued their support to local Australian committees. This has included various committees within the realms of the National Marine Safety Committee. The membership has continued to support the Technical Advisory Panel as well as the reference group on stability. The reviews of the sections on stability and anchors were completed during the year and they have been forwarded to the Australian Transport Council. Mem-

bers have also been active in supporting Standards Australia and state bodies such as Marine Safety Victoria.

Probably the committee with which most will be familiar is the organising committee of the Pacific 2008 International Maritime Conference. The conference itself is organised jointly by RINA, Engineers Australia and the IMarEST. The odd years (e.g. 2007) are the years when much of the organising, planning and preparation takes place for the forthcoming conference. I'm sure that by the time this report goes to press the Pacific 2008 conference will have been a great success. John Jeremy has continued to chair this committee and has been ably supported by Keith Adams. The conference itself is the premier maritime conference held in the region and our thanks need to go to both these members.

The Australian Naval Architect has continued to provide our members with up-to-date information relating to the sections and activities within Australia. Our thanks need to go to all of those involved in making this journal possible. They include the Editor-in-Chief, John Jeremy, the Technical Editor, Phil Helmore, and all those members who submitted articles from the sections. We must also acknowledge the generous support of the journal's sponsors and advertisers.

The Institution has continued to support the University of New South Wales and the Australian Maritime College by providing prizes for its students. Austal ships have continued to support the RINA/Austal prizes and we are indebted to them for this. These awards are important to the students and competition is strong to win them. My congratulations go to all those recipients.

The year also provided times when we reflected on the contributions made by members who passed away during the year. In August I noted the contribution from Alan Colquhoun and in this edition of *The ANA* the contribution provided by Bob Herd, who passed away on 28 December 2007, is recorded. He will be sadly missed by all those that knew him. Bob was the only Honorary Fellow of RINA in Australia. I am indebted to Bryan Chapman and John Jeremy who took time out during the festive season to ensure that Bob's obituary was written for publication in the RINA 2007 annual report.

Much of the work listed above is managed and carried out by the members who elect to stand for the Australian Division Council. Throughout the year I have enjoyed the support of all members of Council, those continuing and newly elected. My thanks go to all members of Council and I look forward to working with you in 2008.

Stuart Cannon

Editorial

The Pacific 2008 International Maritime Conference has come and gone in the blink of an eye. Two years of preparation and three days of intense activity in Darling Harbour marked the fifth in the series of major conferences conducted by RINA, IMarEst and Engineers Australia in association with Maritime Australia Limited and the Royal Australian Navy. The Pacific 2008 IMC was a great success, with some 380 delegates registered to attend. The Exposition run by Maritime Australia was the biggest yet, with over 430

companies represented, some 240 of which were Australian. The RAN Sea Power Conference was also a great success with high-level military delegations attending from some 36 countries.

Planning will begin very soon for the Pacific 2010 IMC, which will be held at about the same time of the year in Darling Harbour. As is always the case, there are lessons to be learned from this year's experience, and it will be our intention to continue to raise the standard of this series of conferences.

During the IMC cocktail party at the Australian National Maritime Museum, I was honoured to receive from Trevor Blakeley a Certificate of Appreciation from the RINA Council for my role as Chairman of the IMC organising committee and as Editor-in-Chief of *The ANA*. As is usually the case, the success of such endeavours is the result of the efforts of many. The organising and programme committees of the IMC devoted much time and effort to producing such a high-standard event, and *The ANA* is very much a team effort, for without Phil Helmore's enormous contribution to *The ANA* it might not appear. To everyone involved in both the IMC and *The ANA*, my thanks for your support and efforts.

Changing the subject entirely, one of the frequent topics of discussion in Sydney is the future of the Sydney Harbour ferry services. The service, provided by a ferry fleet comprising a variety of types of now-aging vessels, has had its difficulties in recent years and we await the State Government's reaction to a recent inquiry, with privatisation or partial privatisation amongst the options for change.

Much of the debate centres on the type of vessel most suited to replace the existing fleet. In this edition of *The ANA*, Stuart Friezer sets out his views, and suggests that the existing Many ferries, in particular, should be replaced by a number of 35 to 42 m wave-piercing catamarans with a peak-time service speed of 30 kn. Perhaps that is a solution but in the debate we must remember to pay due heed to what the customers (the ferry passengers) and other harbour users actually want from the service.

I am only an occasional ferry traveller but, to me, frequency, reliability and coordination with other forms of public transport are far more important than speed. As a regular recreational user of the harbour, I also believe that low wash and excellent manoeuvrability are essential qualities for the harbour ferries. I have a feeling that ferry masters might find trying to maintain a timetable on the Manly service at 30 kn on a Friday evening in summer or on a Saturday afternoon, when the harbour is a mass of small craft from dinghies to Sydney 38s, something of a challenge!

As is always the case, new ferries for Sydney Harbour will ultimately be some form of compromise judged best to meet all requirements. Australia is not short of modern ferry-design expertise, so it will be interesting to see, in due course, what types of craft appear on the harbour.

John Jeremy

Letters to the Editor

Dear Sir,

I would be grateful if you would allow me space in *The ANA* to thank those members from all Sections who took the time to visit the RINA stand at Pacific 2008. The International Maritime Conference was once again a great success, thanks largely to the efforts of the Organising Committee. I was very pleased to be able to present the Council's Certificate of Appreciation to John Jeremy, in recognition of his work as Chairman of the Organising Committee and as Editor-in-Chief of *The ANA*.

I would also like to thank those members I subsequently met when I visited the Victoria and WA Sections, as well as those in SA. I was particularly grateful to members of the companies I visited, including DSTO, AMOG, AMT, SKM, BMT, ASC, Techport Australia, Defence SA, AWD Systems, Austal, Formation Design Systems and AMC, who took the time to brief me on their company activities. Such background information is invaluable in ensuring that the Institution's publications and conferences are able to respond to the changing needs of industry and, therefore, members.

It was very pleasing to find the Division in good heart and active, despite the pressures of work. I would like to use this opportunity to pay tribute to the officers and members of the section committees, without whose efforts such activities would not happen.

I look forward to my next visit, and to welcoming any members of the Division who find themselves near Upper Belgrave Street to call in at RINA Headquarters. They too would be assured of the same warm welcome I received.

Trevor Blakeley
Chief Executive
RINA London

Dear Sir,

I am from a small town in NSW located roughly 600 km north-west of Sydney, and am currently studying naval architecture at UNSW. You may be asking yourself "How did someone from the often drought-stricken country end up studying a degree which involves water?" Why would I choose a degree which seems so out of place where I'm from?

I've always been intrigued by water and always felt very at home on boats, at least during the very few times that I have been on them. I knew from around the age of 14 that I definitely wanted to be an engineer, I have an uncle in Belfast who is a partner in a ship contracting and repair firm, Millbro Engineering Ltd, and it was him who really gave me the idea.

It wasn't until I had to make my university selections that I realised how small an industry I was getting into. I could really only find one university offering this degree, and there wasn't a lot of information on the degree, and no websites that I could find giving detailed descriptions of what one could do after graduating. To this day, I have to explain to people what my degree involves and what it allows me to do upon graduating. The one question that I always get asked, without fail, is whether I'm in the Navy now, or will I join

after I've graduated. This is why I believe that we should be advertising more, possibly with a really detailed website about the naval architecture industry and the opportunities it provides, and which are not just navy-related.

Wider knowledge of the field would attract more potential engineers to the university courses on offer and this may, in turn, encourage more universities to offer programs in naval architecture. If more people realise what our industry involves, then I believe we could expand and, perhaps, encourage more work to be brought to Australia. That way we may once again be competitive with the overseas market, instead of educating people and sending them overseas. I believe it is important to look further into advertising, because I don't believe that our industry in Australia should be as small and underrepresented as it is when compared with leading industries in other countries.

Nichola Buchanan
UNSW Student

Dear Sir,

NSW Minister, Joe Tripodi, recently announced that a round of the World Offshore Power Boat Championships would be held on Sydney Harbour in 2009. But is this a good or bad thing?

Notably, there are reasons against holding the races on Sydney Harbour, such as thousands of non-boat-enthusiastic commuters becoming disgruntled, and having to strain the already-burdened trains and buses as ordinary ferry routes are disrupted. However, I ask: how much *more* disruption was caused by the APEC meeting held in Sydney last year?

At the very least, spectators enthusiastic to view this exhibition of offshore powerboat racing will be able to do so without threat of a bomb or Secret Service misunderstanding; in fact they will be able to do so free of cost from the many public vantage points around the harbour. They will be able to witness the 14 m twin-hull vessels traversing the harbour at speeds in excess of 270 km/h, representing the 500 plus international competitors. Control, speed and safety rivalling that of Formula 1 motor racing will be impressively demonstrated on water.

This is an exceptional proposition to the community for reasons including, but not limited to, the impending economic boost, the increased hype and interest in high-speed marine applications and, more importantly, providing a window for the narrow-minded masses into the exceedingly complex

and impressive feat which the naval architects of the world can achieve.

So, I welcome the world offshore power boat championships. I'll be one of the many with open arms and open minds out on the harbour witnessing this momentous occasion in 2009. I hope to see you there.

Brocque Preece
UNSW Student

Dear Sir,

The central figure in the execution of the manifold duties of a classification society is the surveyor. It is very important for the understanding of the functioning of the system to recognise a surveyor's capabilities in general, and to understand the conditions under which s/he works.

My background is as a marine engineer with 17 years of sea service and, in that time, I have witnessed many avoidable incidents. In my current job as a surveyor, I often have to work under intense pressure and in potentially-unsafe environments. It is expected that the shipowner will make the working environment safe before any survey is commenced, but many shipowners pay little or no attention to the matter.

To satisfy the customer's demand as well as avoiding any conflict (failing to do so may result in loss of the job or use of another classification society), surveyors often have to carry out surveys where short-cut safety procedures are adopted. As a result, many innocent lives have been lost over the years and, just recently, I have lost one of my own colleagues in this way.

While carrying out joint surveys, I have found that even experienced surveyors sometimes work in extremely hazardous conditions. The prime objective of the surveyor is to ensure safety and protection of the environment but, unfortunately, surveyors' lives have been put at risk.

I welcome the joint initiative taken a few years ago by Lloyd's Register, Det norske Veritas, the American Bureau of Shipping, along with ClassNK and CRS as signatories, to improve the safety of surveyors. This is truly a remarkable step and, at the same time, a harmonised approach included in the Quality Safety Certification Scheme, which will be beneficial for all members of the International Association of Classification Societies in the future.

Nazmul Hossain
UNSW Student

THE AUSTRALIAN NAVAL ARCHITECT

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

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

Photographs and figures should be sent as separate files with a minimum resolution of 150 dpi. A resolution of 200–300 dpi is preferred.

NEWS FROM THE SECTIONS

Victoria

After a positive 2007 for the Victorian RINA/IMarEST technical-meeting calendar, both organisations are now working hard to deliver another year of quality presentations for their members.

Dates for the technical meetings in 2008 are as follows:

- 6 Feb Drew Shannon, *The Salvage of Pasha Bulker*
- 10 Apr *The 2007 Survey of AE2 in Turkey*
(including the AGM)
- 12 June TBA
- 14 Aug TBA
- 9 Oct TBA
- 11 Dec TBA

Once again we are fortunate to have the support of SKM and meetings will continue to be held at their theatre in Armadale.

On Wednesday 6 February, the first technical meeting for the year was held in conjunction with IMarEST. A solid turnout, with the Chief Executive of RINA, Mr Trevor Blakeley, in attendance, was delighted with a personal and unique insight into the salvage of *Pasha Bulker* from Nobby's Beach at Newcastle. Capt. Drew Shannon, of Svitzer Australia, talked members through what proved to be an interesting and challenging salvage, using an excellent array of impressive photos. Mr Trevor Blakeley gave the vote of thanks and presented Capt. Shannon with a newly-minted RINA/IMarEST coin featuring the RINA crest, in appreciation of his presentation.

At the second technical meeting on 10 April, we will be presenting a follow-up on the Australian contingent which travelled to Turkey to explore and evaluate *AE2*, the Australian submarine which played such an important role in WW1.

Unfortunately, late last year saw the passing of Bob Herd, OAM. Bob made a strong contribution to his profession and, in particular, should be noted for his dedication to the heritage ship, *Polly Woodside*. Bob will be sorely missed by all who had the privilege of knowing him.

Sam Tait

New South Wales

Committee Meeting

The NSW Section Committee met on 10 December and, other than routine matters, discussed:

- SMIX Bash 2007: Generally regarded as successful (see report below). There was one sponsorship still to come, and some expenses still to be paid, but indications that there would be a small profit from the event. The proceeds of the silent auction would be donated to the Sydney Heritage Fleet, subject to ratification by IMarEST.
- TM Program for 2008: Topics and presenters were discussed, and pencilled in against dates, with two topics as backups (see *Coming Events* in this issue).
- TM Venue for 2008: The EA venue at Chatswood had been secured for 2008. Alternative venues and

arrangements were being investigated but, with no firm prices, it was considered prudent to go with EA at Chatswood for 2008.

- RINA Stand at Pacific 2008: The Australian Division will be seeking help for the NSW Section from interstate members attending Pacific 2008 in crewing the RINA stand at the Pacific 2008 Exposition.

The next meeting of the NSW Section Committee is scheduled for 25 February 2008.

Salvage of *Pasha Bulker*

Captain Drew Shannon, Salvage Master for Svitzer Australia, gave a presentation on *The Salvage of Pasha Bulker* to a joint meeting with the IMarEST, the Company of Master Mariners and the Nautical Institute attended by 101 on 21 November in the main auditorium of the Chatswood RSL Club.

Captain Ted van Bronswyk of the Company of Master Mariners chaired the proceedings and, in welcoming everyone, commented that this was the first time that all four institutions had cooperated to organise a joint technical meeting, and hoped that it would not be the last.

He introduced Drew by saying that he had grown up in Drummoyne, Sydney, and spent his weekends on Snapper Island. He began his marine career as a deckhand on the Sydney ferries, and then spent eleven years sailing in a variety of vessels and gained his certificate as Master Class 1. He also did a Master of Business Administration, and up to Year 3 of a law degree. He signed on as a tugmaster for Adsteam, and then moved into salvage operations. He became salvage master for United Salvage in 2004, and is now salvage master for Svitzer Australia for the Pacific and UK.

Video

Drew began his presentation with a video (prepared by Svitzer's head office) to give an overview of the salvage operation. The video first showed news clips of the violence of the storm in the Newcastle area and then the vessel aground on Nobby's Beach, a news interview with Drew Shannon, the ground tackle being laid, and then the Svitzer tugs *Keera* and *Woonah*, and the anchor-handler *Pacific Responder* which had been chartered for the operation. The video then showed the bow of the vessel swung to seawards, and the final, successful, refloating of the vessel and under tow to sea. The vessel then entered Newcastle harbour for further assessment and repairs, and the ground tackle was recovered. The whole operation was a team effort, with people from three countries working well together, and some equipment being brought in from overseas.

The Stranding

Pasha Bulker is a Panamax-sized bulk carrier of length 225 m, 40 000 GT and 76 000 DWT, built in 2006 by Sasebo Heavy Industries, operated by Lauritzen Bulk and Panama flagged. On the morning of 8 July 2007 she was in ballast, waiting at anchor outside Newcastle harbour to load coal, when a violent storm came through the area. The Newcastle Port Authority advised vessels to move further offshore, but not all did. *Pasha Bulker* ended up ashore on

Nobby's Beach with the bow facing ashore and the anchors in the hawse pipes. Svitzer entered discussion with the owners, and a Lloyd's Open Form 2000 was signed. Svitzer immediately started to mobilise personnel and equipment, and Drew arrived on board the vessel on 9 June to begin assessing the situation.



Pasha Bulker ashore at Nobby's Beach
(Photo John Jeremy)

Initial Preparations

Svitzer's main base for equipment on the east coast of Australia is in Brisbane, and so equipment had to be mobilised from there. They hired a big area of the general cargo area in the West Basin at Newcastle harbour to use as the shore base, to store necessary equipment (fuel oil transfer pumps, oil-spill response equipment, etc.) as it was trucked in. At the height of operations, they had 41 trucks ferrying equipment from Brisbane! Access from the water side was not good, so they operated mostly by chartered helicopter to ferry personnel and equipment to and from the vessel. The landing area for the helo at the West Basin was a big deal, as all OH&S requirements had to be met before approval was given for commencement of operations.

The crew had abandoned the vessel and the salvage team arrived on board to a dead-ship condition. However, they had ship's power restored from shortly after they took over. They had a full team of 16 on board the vessel to (two Dutch, one Singaporean and the remainder Australian), with five ashore at the West Basin base looking after logistics. Drew himself flew backwards and forwards between the ship and base every day.

The vessel was very much on public view, and certainly within easy reach of Novocastrians and Sydneysiders who turned out in their droves to see the vessel. Everyone, except the sightseers, wanted to refloat the vessel as quickly as possible. However, the salvage crew needed to understand the state of the vessel, the hydrostatics and stability, the state of tanks, and any damage, and all these things take time. The draft marks were well out of water. She had about 4000 t of ballast and 700 t of fuel oil on board. The LOF2000 contract required that the salvor minimise the effects on the environment. The weather was initially foul. They ballasted the vessel down with a further 2000 t to prevent further damage and, in the early stages, oil retention on board was paramount.

Drew showed slides of the vessel ashore, with waves bursting against the vessel's port side and spray going

everywhere. The port side aft copped a pounding, with the rudder bearing the brunt. The rudder eventually broke off during the swinging of the bow.

The naval architects saw that the ship was hogged and plating creased amidships from Day 1, and both showed up clearly in Drew's slides. However, the creases stopped at the bottom of the topside tanks, and they maintained their structural integrity throughout.

The owners cooperated, supplying drawings of the ship and information which they had available, but had no emergency response service available (as is becoming progressively more common).

Ground Tackle

They began setting up with three sets of ground tackle and three tugs. They had three 15 t anchors, each with 100 m of chain plus 44 mm diameter wire from Brisbane. These were laid with two forward in preparation for swinging the bow to sea, and one aft to prevent the stern going further ashore. Tug *Woonna* was connected up to act as a handbrake. The anchor handler *Pacific Responder* was chartered via the Australian Maritime Safety Authority and she laid the ground tackle for them and subsequently connected up forward. Tug *Keera* was connected up forward via a two-leg bridle.

The set up of the ground tackle was not easy. They did not know what the sea bed was like, and needed to carry out a complete survey of the area. The hydrographic vessel was able to survey further inshore as the sea abated. The ship was out of water at the bow, and held down by the stern (the way she landed) plus the ballast.

It also took time to lay the ground tackle. They had to get *Pacific Responder* onto the job. The water was very shallow, and they couldn't get the vessel in to where she would have to be to connect up. So the helo ran a messenger line, and they used the ship's power to haul in the main towline.

On board the vessel, the blocks for the ten-part ground tackle were each 1100 kg! They could not be lifted by the crew and had to be moved by crane. At full stretch, they were limited to 50 m between blocks by the length of clear deck.

The Tugs

Pacific Responder is a UT anchor-handling rig tender with a bollard pull of 75 t, owned by Swire Pacific and chartered by the Australian Maritime Safety Authority for duty on the east coast of Australia.

Keera is a twenty-year-old tug, a true workhorse, with a bollard pull of 62 t, owned by Svitzer and based in Melbourne.

Woonna, with a bollard pull of 70 t is owned by Svitzer and is based in Sydney.

Wickham with a bollard pull of 47 t was on stand-by in Newcastle harbour, but was not called out during the operation.

Refloating

Preparations for refloating were completed on 28 June and when all tugs were connected up, they commenced deballasting of 6000 t at low tide, and completed just before high tide. The first attempt was to swing the bow to port to face the sea, and the bow lifted for the first time. However, during the operation, they broke *Keera's* towline and so

had to ballast the vessel back down while *Keera* headed for Newcastle to change the towline. Next morning they tried again, but this time they broke *Pacific Responder*'s towline and one leg of the ground tackle, and these also had to be replaced. This took two days, and the media thought that they were failing in their salvage attempt.

The swell was going down, and that was good. However, some swell gives a "bounce" effect, sometimes just when you need that extra little bit to start movement, and can be beneficial. Too little or too much is not good.

At the next attempt on 1 July, they connected up and they turned the bow around 75° to seaward. They stood by, regrouped and, at 2137 on 2 July, the vessel floated free. She was towed out to sea and held 11 n miles out while divers carried out an underwater inspection for oil leaks and the extent of damage to the hull. On the basis of the inspection, the Newcastle Port Authority and the NSW Maritime Authority gave approval for the ship to enter Newcastle harbour, and Drew gave them full credit for their part in the salvage operation. For entry to Newcastle harbour, in addition to *Keera* and *Woonah*, they also used Newcastle-based vertical-axis-propelled tugs *Wickham* and *Mayfield*. *Pasha Bulker* went into the West Basin, and just fitted alongside, without much room for the tugs.

Repairs

They were required under the contract to carry out temporary repairs so that the salvors would not be required on board for any delivery voyage. The NSW Maritime Authority's oil-spill response vessel, *Shirley Smith*, laid an oil boom around the vessel at the berth, and repairs were carried out on the

vessel, including external side girders to strengthen the hull in way of the creases and patches on hull damage.

Pasha Bulker was towed out of Newcastle harbour on 26 July and, 2 n miles to sea she was taken in tow by the 100 t bollard pull Japanese salvage tug, *Koyo Maru*, owned by Nippon Salvage. For the voyage she had a riding crew made up of some of the original crew (who had been repatriated) plus some from Nippon Salvage. Svitzer's responsibility for the vessel was passed over to Nippon Salvage with the towline to *Koyo Maru*. *Pasha Bulker* was towed to Viet Nam, where she awaited a dry-dock slot for repairs.

Media and the Crowds

The media were hot on the job. The salvage team had to manage that process and let the public know what they were doing. Captain David Hancox, as Salvage Master, was on board *Pasha Bulker* the whole time with Captain Ian Hoskinson on *Pacific Responder*.

The NSW Minister, Joe Tripodi, was there most of the time. He took part in many press conferences, but was also on hand when he was needed.

The Minister and the CEO of the Port of Newcastle took to giving a morning brief for the media to keep them as well informed as possible.

Crowd control provided a massive logistics problem, as sightseers came from Newcastle, Sydney and the surrounding regions, and occasionally brought traffic in the area to a standstill.

Slides

Drew illustrated the presentation with many slides of the

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vessel, the equipment, the people, and the conditions under which they worked.

Questions

Question time was lengthy, and some further interesting points were elucidated.

As far as OH&S and accidents went, Svitzer's motto for their employees worldwide is "Do it safely, or don't do it at all". There were no accidents with the salvage crew members. Only one person was injured, and that took place in the wet conditions, on board a tug alongside the wharf at the West Basin.

The vote of thanks was proposed by Captain Ken Ross, a previous salvage master for United Salvage. He considered that the assumption of United by Svitzer was a good thing, as they are part of the AP Moller group, and they are very professional shipowners.

However, he wondered if he was in line for a "spotter's fee". He had watched the midday news on 8 July, and seen the vessel nearing the shore. He had immediately rung Drew Shannon to advise him, and then put in a mobile call to Ian Hoskinson, expecting him to be in Fiji. However, Ian answered from the immigration queue at Sydney airport, and he told Ian to get his running shoes on!

In cases of vessels carrying cargo, the value of the cargo can often outstrip the value of the vessel itself. If *Emma Maersk* (the world's largest container vessel) were to be lost, then the total value could easily exceed \$1 billion! The "no cure, no pay" contract is the ultimate focus. If you fail, then the shareholders are up for a lot of money. The weather is the major variable; the weather, always the weather.

The vote was carried with acclamation.

Marine Ramjet Propulsion

Prof. Alon Gany, Head of the Propulsion and Combustion Laboratory and Head of the Sylvia and David I.A. Fine Rocket Propulsion Centre in the Faculty of Aerospace Engineering at the Technion — Israel Institute of Technology, gave a presentation on *Two-phase Marine Ramjet Propulsion* to a joint meeting with the IMarEST attended by seven on 28 November in the School of Mechanical and Manufacturing Engineering at the University of New South Wales.

The unique feature of the marine ramjet is that energy needed to form a high-speed exhaust jet for thrust generation is provided via the introduction of compressed air bubbles into the water, which transmit their expansion work to the accelerating jet without any moving parts (for example, pumps) in contact with the water. Analysis and testing of the two-phase marine ramjet power cycle revealed high efficiency over a very broad vessel speed range, absence of cavitation problems, and noticeable thrust increase with increasing cruise speed. These features make the two-phase marine propulsion particularly attractive for high-speed cruise vessels.

Prof. Gany's presentation is expected to appear in the May 2008 issue of *The ANA*.

SMIX Bash

The eighth SMIX (Sydney Marine Industry Christmas) Bash was held on Thursday 6 December aboard the beautifully-restored *James Craig* alongside Wharf 7, Darling Harbour,

The Australian Naval Architect

from 1730 to 2130. The Bash was organised jointly by the IMarEST (Sydney Branch) and RINA (NSW Section). About 200 guests came from the full spectrum of the marine industry, including naval architects, marine engineers, drafters, boatbuilders, machinery and equipment suppliers, regulators, classifiers, surveyors, operators, managers, pilots, navigators, researchers, and educators. Equally importantly, the full spectrum of age groups was represented, from present students to the elders of the marine community.

It was also great to see intrastate, interstate and international visitors in the throng, including Glenn and Margaret Cobb from Lloyd's Register Asia in Melbourne, Gregor Macfarlane, Giles Thomas, Jon Duffy and Martin Renilson from the AMC in Launceston, Stuart and Helena Cannon from DSTO in Melbourne, Rob Gehling from AMSA in Canberra, Phil Christensen from Formation Design Systems in Western Australia, Neil Rodger and Peter Iredale from Hamilton Jets in New Zealand, and George Wortham from the UK.

Sydney turned on a beautiful evening, after a thunderstorm in the early hours of the morning and rain till late morning, and many partners in attendance enjoyed the view from the decks of *James Craig*. Drinks (beer, champagne, wine and soft drinks) and finger food (baby beef bourguignon rolls, quiches and smoked salmon) were provided. A delicious buffet dinner was served in the 'tween decks, and many tall tales and true were told.



Graham Taylor welcoming guests on board *James Craig*
(Photo John Jeremy)

"Early bird" pricing and credit-card facilities for "early bird" payments continue to be successful, and all tickets were sold before the event — you really do have to be early!

Formalities were limited to one speech from the Chair of the NSW Section of RINA, Graham Taylor, who welcomed the guests and thanked the industry sponsors. Graham made a presentation on behalf of RINA (NSW Section) to Phil Hercus in recognition of his significant contribution to the inauguration and success of SMIX Bash. The presentation was of a half-block waterline model of 2001, an Incat-designed wave-piercing catamaran, beautifully made by Bill Bollard. Phil, in thanking Graham, remembered Joe Natoli who, for many years, ran the Deutz-MWM Christmas parties in Sydney.

The lucky-door prize was drawn by Ms Ngaire Francis of Maersk Line. The winner scored a \$50 gift voucher to the Australian National Maritime Museum's shop.

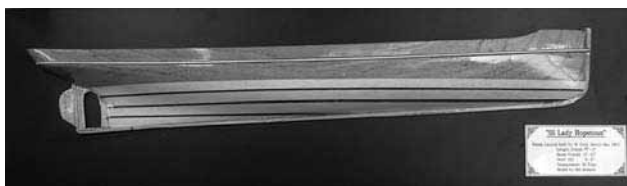


Phil Hercus speaking after Graham Taylor presented him with a model of 2001
(Photo John Jeremy)

The raffle was drawn by Mrs Anne O'Connor, and the winners were:

First	Neil Loveland	\$150 gift voucher to the ANMM shop
Second	Dusko Spalj	\$75 gift voucher to the ANMM shop
Third	Steve Renkert	\$50 gift voucher to the ANMM shop

Bill Bollard had built a magnificent half-block waterline model of the Sydney Heritage Fleet steam yacht *Lady Hopetoun*, which was built by Wattie Ford in Berry's Bay and launched in 1902, and the model was put up for silent auction. Phil Helmore submitted the winning bid and the model was presented to him by Mrs Anne O'Connor. Our thanks to Bill for his expertise in building and generosity in donating this model.



Bill Bollard's beautiful model of *Lady Hopetoun*
(Photo courtesy Bill Bollard)

A free bonus was provided by a firework display, set off from the King Street wharf on the other side of Darling harbour at 2100, and SMIX Bash attendees on *James Craig* had a grandstand view.

This year's event was sponsored by the following organisations:

Platinum

- Wartsila Australia Pty Ltd

Gold

- ABS Pacific
- AMC Search Limited
- Det Norske Veritas

February 2008

- Electrotech Australia Pty Ltd
- Energy Power Systems and WesTrac (Caterpillar)
- Formation Design Systems Pty Ltd (ShipConstructor)
- International Paints (Akzo Nobel)
- Lloyd's Register Asia
- Wattyl Australia Pty Ltd
- ZF Australia Pty Ltd

Silver

- Ausbarga Marine Services Pty Ltd
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- CWF Hamilton and Co Ltd (Hamilton Jets)
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- Rolls Royce Marine Australia Pty Ltd
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- Twin Disc (Pacific) Pty Ltd

Bronze

- ASO Marine Consultants Pty Ltd
- Ceiling Works
- EMP Composites
- Shearforce Marine Services Pty Ltd

Our thanks to them for their generosity and support of SMIX Bash 2007.

Some of the stayers, who were shown the gangplank late in the peace, rocked on to other venues and continued to party until the wee small hours.

Pacific 2008 IMC and Exhibition

The Pacific 2008 International Maritime Conference was held at the Sydney Exhibition and Convention Centre, Darling Harbour, from 29 to 31 January, in conjunction with the RAN Sea Power Conference and the Pacific 2008 International Maritime Exposition.



Stuart Cannon, Trevor Blakeley and Aminur Rashid at the RINA stand
at Pacific 2008
(Photo John Jeremy)

RINA had a stand at the exhibition, crewed continually by the Chief Executive of RINA, Trevor Blakeley, members visiting Sydney for the event, and members of the NSW Section Committee. Thanks to those who contributed: Samantha Tait, Aminur Rashid, Lindsay Emmett, Peter

Crosby, Craig Boulton, Adrian Broadbent, and Graham Taylor for their effort and providing the benefits of their wisdom to interested customers.

Presentation of Certificate of Appreciation to John Jeremy

The Pacific 2008 Cocktail Party was held in the Terrace Room at the Australian National Maritime Museum on the evening of 30 January. Following the traditional short speech by the Chair of the Pacific 2008 IMC Organising Committee, John Jeremy, the Chief Executive of RINA, Trevor Blakeley, presented a certificate to John Jeremy from RINA in appreciation of his outstanding service to the Institution over many years. John is a former President of the Australian Division, has served on the Australian Division Council for many years (and continues to do so), has chaired the Pacific IMC Organising Committee since 2002 and represented RINA at many other various functions and enquiries and, last, but by no means least, has been the Editor-in-Chief of *The Australian Naval Architect* since Vol. 2 No. 2, and guided it to being the publication we all enjoy today.

The certificate reads “The Council of the Royal Institution of Naval Architects wish to record their appreciation of John Jeremy’s service to both the Institution and the naval architecture profession through his contribution towards achieving the Institution’s objective of promoting and facilitating the exchange of technical information, as Chairman of the International Maritime Conference Organising Committee and as Editor of *The Australian Naval Architect*”

Congratulations, John!



John Jeremy and Trevor Blakeley at the Pacific 2008 IMC Cocktail Party
(Photo Peter May)

Survey of AE2

Dr Roger Neill, Head of the Unmanned Marine Systems Branch in the Defence Science and Technology Organisation, gave a presentation on *DSTO’s Contribution to the 2007 Survey of AE2* to a joint meeting with the IMarEST attended by 28 on 6 February in the Harricks Auditorium at Engineers Australia, Chatswood.

Introduction

Roger began his presentation by outlining his involvement in the survey project: he was the scientific director for the expedition to Turkey. He is not a marine archaeologist, but is involved in remotely-operated vehicles (ROVs). Neither is he an engineer, but a medical scientist! However, since being asked casually if it would be possible to survey *AE2* by ROV, the deeper he has become involved in the project, the further he has fallen in love with the vessel and has invested huge amounts of his own time because of it.

AE1 and AE2

The Royal Australian Navy took delivery of *AE1* and *AE2* as a two-ship submarine flotilla in Sydney in May 1914, shortly before the outbreak of World War I. Roger showed photos of *AE1* and *AE2* berthed alongside each other at Garden Island, and *AE2* and *AE1* in the Fitzroy Dock at Cockatoo Island. The vessels were built as E-class submarines (the prefix “A” for Australian) by Vickers at Barrow-in-Furness and were Nos 7 and 8 off the stocks, being the last two built in the first of an eventual three sub-groups.

Principal particulars of the vessels were:

Length	181 ft (55.2 m)
Beam	22 ft 6 in (6.86 m)
Depth	12 ft 6 in (3.81 m)
Displacement	660 tons (646 t) surfaced 800 tons (787 t) submerged

AE2 was laid down on 10 February 1912, launched on 18 June 1913, and commissioned at Portsmouth, England, on 28 February 1914. The vessels were propelled by two 8-cylinder diesels driving either the two propellers or generators (astern drive was via the electric motors only). They were fitted with four 18-in torpedoes, and for (but not with) a deck-mounted gun.



AE2 alongside *AE1* at Garden Island in 1914
(Photo John Jeremy Collection)

Achievements

AE1 and *AE2* created many precedents for submarine operations. Among them were:

- Sailing halfway around the world on their delivery voyage, much of it submerged.
- At the outbreak of WW1, they were the first submarines to operate in the western Pacific theatre.

- After the loss of *AE1* off New Guinea, *AE2* steamed back to the Mediterranean (another voyage almost halfway around the world) to operate as part of a British submarine squadron.
- After several unsuccessful attempts by other vessels (including both battleships and submarines), *AE2* became the first vessel to successfully breach the defences on the Dardanelles on 25 April 1915, and gain access to the Sea of Marmara.

Having done so, the vessel under Captain Stoker faithfully followed the orders to “generally run amok”. They circulated widely, penetrated as far as Istanbul, fired seven of their eight torpedoes causing some damage, and caused a lot of consternation by surfacing close to fishing vessels. Eventually, *AE2* was stopped by a Turkish gunboat, following an engagement in which she was holed above the waterline, and the crew surrendered after scuttling the vessel. No lives were lost in the engagement, although four of the crew died during their three-and-a-half year captivity. The vessel is thus not considered a war grave, which would have made the survey more difficult to arrange.

Location of the Vessel

The vessel lay on the sea bed in the Sea of Marmara, regularly hooking up fishermen’s nets. She was finally located in 1998 by Turkish marine archaeologist and Director of the Rahmi Koç Museum in Istanbul, Selçuk Kolay. He had been searching for the vessel since 1995. Where he (and others) had previously failed to find the vessel with side-scan sonar and the like, he eventually resorted to the expedient of asking the fishermen where they hooked up their nets, and many pointed to a particular area, where he located a possible wreck on the sea bed. With his Australian counterparts, Tim Smith and Mark Spencer, he conducted archaeological dives on the vessel in 1998 and 2004, finding and positively identifying *AE2* on the first dives in 1998.

The vessel was lying almost level on a flat sea bed in 73 m of water. Externally, the vessel appeared in good condition, apart from battle damage (not evident on those dives), and some further damage from fishing equipment. Of the 57 E-class submarines built, *AE2* is the only one remaining intact, and is therefore of enormous historical value.

Roger showed photos of the vessel taken on early dives, including the bow with the chain towing pendant still in place from the stemhead to the side of the vessel, and the port forward hydroplane (showing the distinctive curved shape compared to the builder’s drawing), and both of these were used to positively identify the vessel.

How to Look After the Old Lady?

Having located the vessel, the first question was: How would it be best to conserve her? That immediately raised another question: What condition was she in? The external condition could be assessed by divers, but that raised the next question: Was it possible to gather information about her internal condition using a remotely-operated vehicle to undertake an internal survey?

That question being asked of him was the start of Roger’s and DSTO’s involvement. Most of it has been in his own time, but DSTO has also been generous. In considering the question, Roger thought that, on the positive side, there might not be many expected hazards because:

- Battle damage was quite localised, comprising just three 37 mm shell holes.
- Being essentially a closed environment, there was a reasonable probability that the interior of the vessel would be virtually intact and with minimal siltation.

Which was just as well, because, on the negative side, there were likely to be plenty of *unexpected* hazards.

3D Visualisation and Simulation

To commence planning for such a survey, he started to collect information about the vessel, and to model the vessel in three dimensions.

The initial plan was to generate a high-fidelity 3D representation of *AE2*, and to combine that with realistic simulations of the operation of ROVs and their tethers. However, that ended up being far too ambitious!

He used a 3D graphics package called Blender, which is open-source (and therefore free!) and can generate high-definition 3D representations of complex objects, has scripted animations, and an extensive user base (more than 250 000, many of whom publish ideas and suggestions for doing various things they have found ways to do — very useful!)

Information was used to create the model in Blender as archival material was discovered in various repositories.

Archival Material

The first material he found was a set of nine drawings of the vessel in the RAN archives; i.e a very incomplete set compared to the original 200 or so. The Navy very kindly scanned the drawings for him.

The Australian Archive also had a partial set of drawings, and the building specification, but were unwilling to copy freely. Eventually he photographed the drawings and specification, imported the drawings to Blender and had to fiddle with scaling to take out the photo distortions, and typed out the specification! [*You can see where the time went!* — Ed.]

Bits of information were found in all sorts of places, such as the Submarine Museum in Gosport, UK. However, some organisations do not have the information which one might expect. As examples, Marconi did not have a record of the wireless fitted to the vessel; nor did Sperry have a record of whether they had supplied a gyrocompass to the vessel or the RAN.

Modelling

Photos, mostly of other E-class vessels (all later models), also came to light and, while similar, show that there were differences between almost all vessels (and not just the three sub-groups). Where plans were available, they were imported into Blender, and used to progressively build a model of the vessel. Detailed plans (e.g. of the periscopes) helped enormously, and then photographs were used, tempered with common sense, to fill in the missing details. For example, the linkage system for the hydroplane controls was substantially worked up from photographs.

He then showed the 3D model he had built of the control room, including the periscope, hydroplane control linkages, depth gauges, etc. The depth gauges read to 100 ft (30 m), and the design depth was 200 ft (60 m). One E-class vessel is reported to have dived to 250 ft (90 m) and re-surfaced!

There were inconsistencies between some of the various plans. Some contained obvious errors. Others contain real gems, such as instructing the manufacturer to “fashion plate to suit torpedo cap opening gear”. In such cases, common sense had to be used in shaping the plate. Another example showed the batteries outside the pressure hull, and they were moved inside using common sense.

Other views showed models of the vessel underwater, firing a torpedo, the aft end showing the internal detail of the steering gear and hydroplane actuation mechanism.

The periscope was a marvel of technology (of the time). It had an electric training mechanism, which seemed to disappear from submarines, and only re-entered the scene with the Oberon-class vessels. It is likely that the mechanism was noisy, having a big cone clutch for operation but, as there was no sonar for detection in WW1, that did not matter then. However, by WW2, it did matter!

As a matter of interest, the saddle tanks were made part of the pressure hull in the region of the control room, and the control room had a flat deck, both of which provided limits on the deep-diving depth.

The 2007 Survey

To help prepare for the 2007 survey, Roger built specifically-targeted computer models of the submarine — inside and out. He showed slides of a diagram he had prepared for the divers on which they could mark where they had been during a dive, and a model of the tight access through the main hatch to the control room.

The 2007 survey aimed to gather a diverse range of data to facilitate the development of detailed and defensible proposals for the long-term management of *AE2*. The survey was undertaken under the banner of the *AE2* Commemorative Foundation, established by the Submarine Institute of Australia. A number of “serials” was established in order to address the principal objectives.

Objectives

The principal objectives were to:

- undertake still and video recordings of the submarine and the surrounding site;
- survey the surroundings using video and sonar;
- take measurements of the environment, including the dissolved oxygen content of the sea and sea-bed material, and the bearing strength of the sea bed;
- assess the characteristics of the external concretion (protective layer);
- take measurements of the residual hull thickness; and
- determine the state of internal preservation and siltation.

Operation *Silent Anzac*

The vessel used for the survey operation was the Turkish salvage tug, *MV Detek Salvor*, having length 33 m, beam 8 m, draft 3.7 m and displacement 800 t, and carrying a robust steel workboat.

Many of the “serials” were based on diver support, for which they assembled a team of ten volunteer sports divers, all experienced with deep diving and the use of re-breathing apparatus, and led by Dr Stuart Cannon of DSTO as dive

master for the expedition.

Other serials were supported by DSTO’s ROV, which was a hand-deployable SeaBotix LB150 carrying sonar and video equipment. Peter Graham was the ROV pilot and Roger was his right-hand man.

Other equipment included a sting penetrometer (i.e. a long steel rod!), dissolved-oxygen sensor, ultrasonic thickness tester, PAL high-definition video equipment, etc.

They had a full medical team, including three hyperbaric specialists, two general practitioners, a chamber operator, a paramedic, and a decompression chamber. Their headquarters and diving support centre were based in the local dive shop.

Serial 1: Visual Documentation

The first serial was to visually document the whole fabric of the vessel above the mud. Divers used both still cameras and video, and DSTO’s ROV used a standard PAL video camera. While the ROV lost out on resolution, it had the advantage of unlimited endurance (compared to the divers). Virtually 100% coverage of the vessel was achieved.

Fishing gear has hooked onto the towing pendant, which has been dragged from the starboard side to the port side, and has peeled back the bow plating for some distance and exposing the anchor winch. The forward hydroplanes are at an inclination of 5° up, while the aft ones are horizontal.

Serial 2: Hull Thickness Measurement

Ultrasonic measurement of the remaining thickness of the hull was difficult due to the thickness and hardness of the concretion (growth of coral, barnacles, etc. on the outside of the hull). One section of the hull was cleared of growth by accident, and measurements were taken there.

Results were inconclusive; the ultrasonic measurements generated thicknesses which were too high; e.g. in one location the measured thickness was 7.7 mm, compared to the builder’s drawing which showed 1/4 in (6.35 mm). They are therefore planning to conduct additional research to resolve this issue. However, the measurements confirm the visual inspection that the hull is in good condition.

Roger showed slides of various areas of the hull, including areas where rivets are still tight.

Serial 3: Assessment of Internal Condition

This was the most challenging of all the proposed serials. The aim was to assess the internal state of the vessel and the level of internal siltation. The initial proposal was to attempt to open the main hatch and to insert a small ROV to carry out the survey, but this was dependent on being *able* to open the hatch. However, just days before this operation was due to begin, the Turkish authority issued a permit which prohibited them from altering the vessel’s structure, and that included opening the hatch.

So, Plan B was hastily dreamed up and executed. The hatch was open about 100 mm, and so everything had to be able to go through that space to enter the vessel. Roger designed a rig with a camera and torch on the end of a length of length of flexible cable which ran through a PVC tube with a long-radius bend at the top end. The torch was suspended below the camera, and was aimed slightly off the camera line to minimise back-scatter from silt particles. When the flexible cable was turned by a diver using a pair of vice-grips

outside the hatch, the camera and torch swivelled around through 360° inside the control room, and could be raised and lowered to take views at different levels. The bend at the top end was to enable the camera to be raised and lowered vertically at the centre of the hatchway while the control exited through the open side of the hatchway. This was very much a Heath-Robinson rig, and caused a great deal of scepticism among the divers when they were introduced to it but, in the event, it worked well. Communications from surface control asked for the camera to be raised/lowered/swivelled, and this was done by the divers below.

On the sidelines, there was a conger eel living in the tower and, during one of the diver change-overs when no divers were present but the camera was left in position, decided that s/he didn't like the camera being there and attacked it, leaving teeth marks!

The pictures showed by the camera astounded the team. Inside the conning tower was in remarkably good condition, and the control room was remarkably free of silt. The machinery visible inside the control room also appears well preserved.

Serial 4: Measurement of Bearing Strength of Sea Bed

The team wanted to know if the vessel was sitting on sediment or on a rock base and, if the former, how well was she supported? They used a sting penetrometer at a series of points around the vessel. Data from the series was used to predict the depth of burial for *AE2* by consulting Melbourne naval architect, Michael Rikard-Bell, who undertook a draft prediction using an iterative approach with increments of 27 waterplane-area sections. The predicted depth of burial came out as 2.7 m, which is close to the actual.

Photos

Roger then showed photos of a typical day in the life of the team, which began with sunrise and the muezzin's call to prayers at about 0520. They rose at 0530, breakfasted, and headed out to *Detek Salvor* in the workboat. The day was spent on the surveys, usually leaving *Detek Salvor* well after sundown. They would have their evening meal, and then spend the evening getting ready for the next day, and averaging about four hours' sleep per night! Their hotel they considered to rate one star, because it had one star on the Turkish flag outside. The shopping centre in the town had a cobbled road, and many people seemed to use tractors for transport, as registration for a tractor costs much less than for a car in Turkey. On the sidelines, a doctor was photographed taking burrs out of a dog's paw in the middle of the main road.

Video

Roger then showed a video which he had put together from his own camera, plus video taken from the surveys, which included:

- The opening ceremony, with a Turkish admiral raising the flag.
- Divers preparing for three-hour dives, working in teams of three.
- The underwater views of *AE2* as the divers approached for the first time. The damage caused to the bow by fishing equipment enabled the team to see that all of

the torpedo mechanism and the forward door is intact and in place.

- The telegraphy post (wireless mast) is still in place, from which Captain Stoker sent his signal to General Hamilton that the vessel had reached the Sea of Marmara. The jumper wire is also in place.
- The aft half of the conning tower is gone, probably because the battery vents were located there and the area had received its fair share of sulphuric acid fumes.
- The ROV was small (deployable by one hand) but had long endurance. It had one vertical thruster and two manoeuvring thrusters. It would drive down a shot line, then approach the vessel and turn the lights on for video.
- Corrosion of the hull was worst around the exhaust exits from the hull, as this was a heat-stressed area.
- The rudder is still turned to starboard, indicating that the vessel was probably still manoeuvring when she sank.
- Pictures taken in the control room were compared to the computer model, and the striking resemblance was noted, especially of the periscope. However, there was a lot which *didn't* show up, because there turned out to be a vent trunk running through the space which was not shown on any of the drawings! On the sidelines, it was possible to see paint still on the electro-mechanical steering shaft.

Questions

Question time was, unfortunately, curtailed by our time limit at EA; however, some further interesting points were elicited.

The water in which the vessel is lying is very salty. The salt water comes up from the Mediterranean, and fresh water comes down from the Black Sea, and there is a distinct layering of the water, with the denser salt water on the bottom. The water temperature is around 20°C on the surface, and 12°C at the bottom. However, the water is very low in oxygen, and that is ideal to resist corrosion.

Visual inspection of a small piece of casing brought up by a diver indicates that the vessel's hull has probably been buried four times by mud over the years, further preserving the condition. The piece was donated to the museum at Çanakkale on the eastern side Dardanelles.

In general, the vessel has been parked in just about the best possible condition for preservation, and she is in wonderful condition. The vessel is presently not protected. However, there is a workshop scheduled with the Turks on the vessel's preservation in April, and it may well be that there will be a "no-go" zone established for her protection.

The vote of thanks was proposed, and the "thank you" bottle of wine presented, by Bill Bixley who thanked Roger for his enthusiastic (some would say passionate) and informative presentation. The vote was carried with acclamation.

Phil Helmore

COMING EVENTS

Australian Division AGM

The Annual General Meeting of the Australian Division of RINA will be held on Wednesday 19 March in the Campbell Park offices of the Department of Defence, Canberra, at 5:30 pm. All members welcome. For further details, see separate notice in this issue of *The ANA*.

NSW Section AGM and Technical Meetings

The Annual General Meeting of the NSW Section of RINA will be held on Wednesday 5 March immediately following the scheduled technical meeting of RINA (NSW Section) and IMarEST (Sydney Branch) at 6:00 for 6:30 pm at Engineers Australia, 8 Thomas St, Chatswood. For further details, see separate notice in this issue of *The ANA*.

Technical meetings are generally combined with the Sydney Branch of the IMarEST and held on the first Wednesday of each month from February to October at Engineers Australia, 8 Thomas St, Chatswood, starting at 6:00 pm for 6:30 pm and finishing by 8:00 pm.

The program of meetings for 2008 (with exceptions noted) is as follows:

- 6 Feb Roger Neill, Defence Science and Technology Organisation *DSTO's Contribution to the 2007 Survey of AE2*
- 27 Feb Jonathan Earthy, Lloyd's Register (fourth Wednesday) *People and Marine Systems — The Human Focus*
- 5 Mar Jonathan Toomey, Sydney City Marina *The new Sydney City Marine Refit and Maintenance Complex*
- 2 April Neil Edwards, Edwards Marine *Design and Construction of Ramparts 3000 tugs for Rio Tinto at Weipa*
- 7 May Stuart Friezer, Stuart Friezer Marine *Design and Construction of Incat's 112 m Wave-piercing Catamarans*
- 4 June Michael Mechanicos, Germanischer Lloyd *Ship Classification Societies within the Safety Care Regime*
- 2 July Simon Robards, NSW Maritime Authority *Resistance of High-speed Transom-stern Craft*
- 6 Aug Robert Dane, Advanced Technology Watercraft *Hybrid Propulsion for Ferries*
- 3 Sept Adrian Broadbent, Lloyd's Register Asia *Classification of the RAN's New Navantia-designed LHDs*
- 1 Oct Eric Clarke, MAN Diesel *51/60 Dual Fuel Engines for LNG tankers*
- 4 Dec SMIX Bash 2008

Put these dates in your diary now, and we look forward to seeing you there.

Victorian Section AGM and Technical Meetings

The Annual General Meeting of the Victorian Section of RINA will be held on Thursday 10 April in the SKM The-

atrette, SKM Building, 590 Orrong Rd, Armadale at 5:30 for 6:00 pm. For further details, contact the Secretary of the Section.

Technical meetings are generally held on the second Thursday of the even months in the SKM Theatrette, SKM Building, 590 Orrong Rd, Armadale, starting at 5:30 for 6:00 pm.

The program of meetings for 2008 (with exceptions noted) is as follows:

- 6 Feb Drew Shannon, Svitzer Australia (first Wednesday) *The Salvage of Pasha Bulker*
- 10 April *The 2007 Survey of AE2 in Turkey* (includes AGM)
- 12 June TBA
- 14 Aug TBA
- 9 Oct TBA
- 11 Dec TBA

Put these dates in your diary now, and we look forward to seeing you there.

Marine Safety Conference 2008

The National Marine Safety Committee will host the next national Marine Safety Conference at the Hilton Adelaide hotel in Adelaide from 27 to 29 May 2008. This is the fifth two-yearly Marine Safety Conference organised by NMSC. In 2006, the event attracted 350 delegates and 50 national and international speakers.

The Conference will deal with a wide range of current issues impacting on the marine industry, and covering the following sectoral interests:

- Recreational Boating
- Commercial Operations
- Seafood Industry
- Engineering
- Boat/ship Design and Building
- Training
- Safety and Environmental Management
- Surveying
- and more specialist topics — depending on papers submitted.

Key dates are as follows:

- February 08 Early-bird bookings open
- March 08 Submission of papers
- March 08 Conference program finalised

For further information, visit the NMSC website at www.nmsc.gov.au and follow the links, phone the NMSC Secretariat on (02) 9247 2124, or email secretariat@nmsc.gov.au.

Ausmarine 2008

After a number of very successful showings in Fremantle, Cairns and Brisbane, the well-known marine trade show Ausmarine will be presented in Sydney for the first time at the Sydney Convention and Exhibition Centre from Tuesday November 11 to Thursday November 13.

Focussed very clearly on commercial and government ship and boat owners and operators, Ausmarine is a very practical exhibition and conference for practical mariners.

Ausmarine 2008 will be the eighth showing since 1994. "Ausmarine has now been held in four Australian maritime cities over fourteen years," said organiser Kevin Parker. "We have tried to locate it at the epicenter of commercial marine action in Australia and, at the moment, Sydney is very definitely that centre."

Covering all kinds of commercial and government vessels, Ausmarine will include ferries, tugs, cruise and dive boats, patrol and rescue boats, fishing and aquaculture boats, OSVs, cargo ships, tankers and work boats. Every aspect of their activity from design, construction, propulsion, navigation, fish finding, paints and coatings through to fuel and lubricants, insurance and finance, will be covered.

For further information, contact Baird Events on (03) 9645 0411, fax 9645 0475, email marinfo@baird.com.au, or visit the website www.baird-online.com.

HPYD 2008

The third High Performance Yacht Design conference will be held on 2–4 December 2008 in Auckland, New Zealand. Following on from the success of the last two conferences, papers are now invited on a broad spectrum of topics covering the design of high performance yachts and power craft:

- Performance prediction and measurement
- Wind tunnel and towing tank technology
- Regulations and rating rules
- Computational methods
- Materials and structural analysis
- Hull and appendage design

Abstracts of no more than 500 words should be submitted to technical@hpyd.org.nz by 31 March 2008 in either PDF or MS Word format. In addition to the abstract of your work, the document should also include the proposed title of your paper, the names and affiliations of all authors and the contact details of the principal/corresponding author.

The conference organisers will be sending out regular updates by email, so you may subscribe to their update list now to keep up to date with progress.

Check out all the current information, including details of previous conferences, at www.hpyd.org.nz.

PACIFIC 2008

The Pacific 2008 International Maritime and Defence Exposition and the Pacific 2008 Congress were held at Darling Harbour in Sydney between 28 January and 1 February 2008. It was the biggest event in the Pacific series so far, and set the bar high for the next in 2010.

The Pacific 2008 Congress, comprising the RAN Sea Power Conference and the Pacific 2008 International Maritime Conference, organised by the Royal Institution of Naval Architects, the Institute of Marine Engineering, Science and Technology and Engineers Australia, was opened on the morning of 29 January by the Minister for Defence, the Hon. Joel Fitzgibbon. It was his first public speech as Minister and he took the opportunity to set out the new government's defence priorities. He said:

"As it is my first speech, I thought it timely to address the important question; what does the election of the Rudd Labor Government mean for Defence and defence industry?"

"While the time available to me today does not allow me to go in to every detail, let me respond to that question by making four key points.

"First, one of the new Government's highest priorities is the commissioning of a new Defence White Paper.

"The strategic document from which we are working was developed in the late 1990s and released in the year 2000. The world has changed so much since then.

"September 11, subsequent terror events in London, Madrid, Bali and Jakarta, the wars in Iraq and Afghanistan, the proliferation of nuclear weapons — including North Korea's nuclear tests and Iran's emerging nuclear program, emerging fragile states in the South West Pacific, rising tensions in the Taiwan Straits, and paradigm shifts in the global distribution of power.



The Minister for Defence, the Hon. Joel Fitzgibbon, opening the Pacific 2008 Congress on 29 January 2008
(Photo Peter May)

"All these developments and events demand a review of our strategic outlook. Indeed, we should have had that review some time ago.

"In the absence of the analytical rigour an up-to-date White Paper should provide, an apparent drift and disconnect has emerged between high-level guidance and capability and force-structure planning.

"The White Paper process will be essential to ensuring that we have a sound basis for making the hard decisions needed to establish Defence's mission and what capability it will need to do what we ask of it.

"Which brings me to my second point. Fulfilling the future capability needs of the ADF will take money and plenty of it. That's why the Rudd Government has committed to growing the Defence budget by 3 per cent real over the course of the next decade. This is a big call, given the broader inflation-



One of the exhibition halls at Pacific 2008
(Photo John Jeremy)

ary environment we've inherited, but the commitment is set in concrete.

"That is not to say we won't be looking to find savings and efficiencies. Every defence dollar wasted is a dollar not available for expenditure on crucial capability or the needs of our defence personnel."

The Minister continued:

"The Government is committed to ensuring that a competitive defence industry is maintained in Australia so that a reasonable choice of suppliers is maintained. In particular, we want a strong, viable and responsive shipbuilding, maintenance and repair industry to be retained.

"I'm pleased to see so many representatives of local defence industry here today. Many Australian companies — large and small — have made crucial and positive contributions to major defence projects.

"Many of them have been particularly important in delivering rapid acquisition of new equipment and services to support ADF deployments at a time of high operational tempo. The Government appreciates the timeliness and responsiveness of industry in supporting these rapid acquisitions.

"Importantly, the new Government fully supports the decision to acquire two new amphibious ships and three air-warfare destroyers for the Navy. These purchases will increase Australia's maritime reach, flexibility and adaptability.

"In particular, the amphibious ships will be a massive boost to Australia's ability to deploy and sustain forces offshore. They will significantly enhance Australia's operational impact wherever they are deployed. In addition to an im-

portant combat role, they will also be valuable in support of humanitarian assistance and stabilisation operations.

"The air-warfare destroyers will be a powerful strategic force which will provide greater protection for ADF operations.

"Not only will they be capable of traditional combat roles (including the provision air defence), they will also be significant command and control platforms. This function means that they will be able support a range of other operations.

"Continuing the theme of maritime capability, many of you will also be aware that I have directed the Department to start initial work on developing our future submarine capability.

"This will be a long-term task, but the increasing development of underwater capabilities in our region means that it is vital that we maintain our edge in submarine operations and that our anti-submarine capabilities continue to evolve at good pace.

"However, while this Government is committed to the purchase of amphibious ships and air-warfare destroyers, I want to reiterate my earlier comments about making sure that Defence spending is effective."

After welcoming the overseas visitors to the Congress, the Minister declared the event open and then spent considerable time inspecting the Exposition displays, as did several of his Commonwealth and State colleagues.



HMA Ships *Armidale*, *Gascoyne* and *Benalla* in Cockle Bay, Darling Harbour, for Pacific 2008
(Photo John Jeremy)



A ceremonial sunset ceremony was attended by many Congress delegates and members of the public in Darling Harbour on the evening of the first day of Pacific 2008
(Photo John Jeremy)

CLASSIFICATION SOCIETY NEWS

LR Selects NACE International to Expand PSPC Training for Shipyards in China

Lloyd's Register recently offered the first training course designed to qualify coating inspectors employed at China's leading shipyards to meet the global requirements for the Performance Standard for Protective Coatings (PSPC).

NACE International, whose courses are recognised by the International Maritime Organization (IMO) to deliver PSPC training, will provide its Coating Inspector Program (CIP) at Lloyd's Register's new Marine Training Institute in Shanghai.

"In January, Lloyd's Register was the first to offer a series of seminars around China and we used the feedback to develop our gap-analysis service, which gives the yards a clear path to PSPC compliance," says Nick Brown, General Manager, Marine Business Development, China, for Lloyd's Register Asia. "Together with International Paint (Shanghai), we have delivered more than 30 gap analyses to shipyards across China. Demand for this service has been strong, with new enquiries extending across China and, more recently, to Taiwan, Korea and Japan."

"The feedback from our gap analysis indicated that the yards in China felt there was a critical lack of coating inspectors with the qualifications required by the PSPC, and an urgent requirement to deliver the courses in Mandarin," Brown says. "Their demand for training created the impetus for this initiative."

A full program of NACE CIP courses is intended to be delivered in Mandarin throughout 2008, helping Lloyd's Register's clients to directly meet the prescriptive requirements of PSPC inspector qualifications.

"NACE is delighted that Lloyd's Register has selected our CIP certification program as the standard to offer their shipyard clients," said Tony Keane, Executive Director of NACE International. "For 25 years, CIP has set the standard for training on coating inspections. Through this agreement, both parties are providing timely support to China's shipyards as they prepare to meet the PSPC requirements."

The PSPC calls for shipyards, coating manufacturers, ship owners, and classification societies to ensure that protective coating systems in water-ballast tanks are specified, qualified, applied, and inspected throughout the ship's construction. It calls for minimum qualifications, specifically identifying NACE as an official entity to certify coating inspectors.

"The Lloyd's Register Maritime Institute (Shanghai) is an ideal platform from which to deliver this type of high-end training to our clients in China," says Roy Ellams, Marine Training Services, Manager, North East Asia. "But we also needed to find a globally-respected coating organisation which could provide industry-level training locally."

The PSPC regulations specify that the coating inspector involved in the application and inspection process must be qualified as NACE Coating Inspector Level 2-Certified or equivalent.

Since the adoption of the new PSPC regulations by the IMO last December, Lloyd's Register has led the way in providing practical assistance to Chinese shipyards.

The Australian Naval Architect

NACE CIP has been the leading training and certification program for the protective coating industry for over 25 years, with more than 9 500 active CIP-certified professionals in 95 countries.

NACE International is a professional technical association dedicated to promoting public safety, protecting the environment, and reducing the economic impact of corrosion. Established in 1943, NACE International has more than 18,500 members worldwide and offers technical training and certification programs, sponsors conferences, and produces industry standards, reports, publications, and software. More information about NACE International can be found at www.nace.org.

Lloyd's Register's Hellenic Committee calls for Concerted Industry Efforts on Fuel Emissions and Port Terminals

Lloyd's Register's Hellenic Advisory Committee met in Piraeus on 7 December 2007. Leading issues addressed during presentations given by Lloyd's Register employees included the need for concerted efforts from all sides of the shipping industry on the subject of fuel emissions to ensure that a holistic approach to this complex topic is introduced on a practical and structured basis. The committee also discussed common safety concerns at the high turn-around of ship loading rates through port terminals — as a consequence of logistical and market conditions.

Capt. Panayiotis Tsakos, the Advisory Committee Chairman, said "For obvious environmental and commercial reasons, the Greek operators are very interested to work with respected organisations such as Lloyd's Register to influence the study/implementation of new technical and operational measures which will correctly support the future of shipping as the leading and cleanest industry in the international trading markets."

Lloyd's Register's Chairman, David Moorhouse, present for the Advisory Committee Meeting, said afterwards "We have always received strong support from the Hellenic shipping community. We are expanding our services here in Greece and the ability to further improve the services available to Greek owners world-wide. The work of our Committee members plays a crucial role in establishing the present and future direction of Lloyd's Register."

Apostolos Poulouvassilis, Area Business Manager for Greece and Eastern Mediterranean, stressed the importance of open policy and technical discussions between all involved in shipping. The Hellenic Advisory and Greek Technical committees are important conduits of information both from and to a large, highly-experienced ship-management and ownership base.

Lloyd's Register Asia's General Manager, Business Development in China, Nick Brown, provided an overview of Chinese shipbuilding capacity and capability. Contracting to Lloyd's Register class in China has risen 500% this year. He commented that in 2006 China's newbuilding capacity overtook Japan, while in 2007 China is ahead of Korea, by 49.9 Mdw (million deadweight tonnes) to 42.8 Mdw. Nick emphasised the need for owners to undertake research into

yard facilities, management and track record to help them ensure that quality matches expectations.

The Committee also reviewed the technical/commercial implications of VLCC–VLOC conversions and developments in the Chinese shipbuilding market.

Dean Tseretopoulos, Technical Manager of Thenamaris Ships Management, reported to the Advisory Committee following the Lloyd's Register Technical Committee meeting held last month. The 43-member Technical Committee, chaired by Mr Tseretopoulos, had received presentations on:

- Moving from compliance with prescriptive rules to reliability-centred maintenance approaches. He explained how Lloyd's Register can help shipowners and operators in focusing on ensuring reliability rather than only complying with rules.

- The recent changes in the Common Structural Rules for Tankers and Bulk Carriers and the harmonisation process and industry involvement.
- Nippon Steel Corporation explained their project for producing anti-corrosion steel for cargo oil tanks.

These presentations were well received and provoked active and productive discussions.

Present at the HAC meeting as guests were the Secretary-General of the Greek Ministry of Merchant Marine, Aegean and Islands Policies, Prof. Ioannis Tzoannos; His Excellency the British Ambassador to Greece, Mr Simon Gass; and the President of the Hellenic Chamber of Shipping, Mr. George Gratsos.

THE ROYAL INSTITUTION OF NAVAL ARCHITECTS

AUSTRALIAN DIVISION

NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the Australian Division of The Royal Institution of Naval Architects will be held in Room Number CP3-5-004, Department of Defence, Campbell Park Offices, Canberra, ACT, on Wednesday, 19 March 2008 commencing at 5.30 pm Australian Eastern Summer Time.

AGENDA

1. Opening.
2. Apologies.
3. To confirm the Minutes of the AGM held in Melbourne on Wednesday 14 March 2007.
4. To receive the President's Report.
5. To receive, consider and adopt the Financial Statements and Auditor's Report for the year ending 31 December 2007.
6. Announcement of appointments to the Australian Division Council.
7. Other Business.

Keith M. Adams
Secretary
February 2008

Following the AGM a technical address will be given by Mr John Jeremy. His subject will be *The Twenty-first Century Passenger Ship — Queen Mary 2*.

THE ROYAL INSTITUTION OF NAVAL ARCHITECTS

AUSTRALIAN DIVISION

NEW SOUTH WALES SECTION

NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that the Tenth Annual General Meeting of the New South Wales Section of the Royal Institution of Naval Architects will be held in the Harricks Auditorium at the Institution of Engineers, Australia, 8 Thomas St, Chatswood on Wednesday 5 March 2008, immediately following the conclusion of the March Technical Presentation. The NSW Section AGM is expected to commence at about 7:45 pm.

AGENDA

1. Opening and apologies.
2. Minutes of the AGMs of 2006 and 2007.
3. To receive the Annual Report by the Chair.
4. To receive the Financial Statement by the Treasurer for the year ending 31 December 2007.
5. Other Business.
6. Closing.

Note: All financial members of the Australian Division of the Institution who are resident in NSW have the right to attend and to vote at this meeting by attending in person.

Lina Diaz
Secretary
February 2008

FROM THE CROWS NEST

Maxsurf Upgrade to v.13

Maxsurf, the well-established suite of hull-design software from Formation Design Systems, has recently been upgraded to Version 13. This new version sees Windows Vista as well as 64-bit support, new all-in-one installers and some new user-interface features which offer alternative ways to manipulate the Maxsurf model. The upgrade adds a number of enhancements, including automated surface fitting, enhanced modelling efficiency, dynamic trimming enhancements, improved Hydromax reporting, and roll motions of catamarans in Seakeeper.

Automated Surface Fitting

A common project for naval architects is checking the stability characteristics of existing designs. Existing designs can arrive in a range of different input formats including paper lines plans, CAD drawings or a table of offsets. Before a stability booklet can be produced, a Maxsurf model must be created. Maxsurf already offers a multitude of import options to allow users to create marker points from offsets, images or CAD drawings. The user then typically fits a NURBS surface to these markers using the surface fitting tools available in Maxsurf and Prefit. One of the advantages of using NURBS is that the user can achieve a fair hull shape. However, this can be a time consuming process and often it is not required to produce a fair hull shape — especially if only hydrostatic calculations are required. To address this, users can now automatically generate a TriMesh surface from a set of organised marker data. This means that checking the stability characteristics of existing designs using data from offsets or linesplans in CAD or paper format is now possible without doing any manual surface modelling.

For example, starting with a paper lines plan, the user can scan the image and import it in to Maxsurf. This is used to digitise the sections one by one in body-plan view. Then, using new commands in the Markers menu, generate a grid from the markers and sort the marker stations from bottom to top. The final step is to simply run the “Generate TriMesh” command. The resulting TriMesh can easily be checked using a rendered view in the Perspective window. Although a TriMesh is quite different to a NURBS surface (it is a mesh of triangular panels between marker points) this mesh can be used to automatically generate sections for analysis in Hydromax, Hullspeed or Seakeeper. TriMesh surfaces can be used for monohulls and multihull vessels of any size.

Enhanced Modelling Efficiency

The main focus for Maxsurf Version 13 has been to enhance user productivity while modelling in Maxsurf. In Version 12 the ability to customise the user interface of all Maxsurf applications including toolbars and docking options for the Assembly Pane was added. In Version 13, a Properties Pane has been added which provides the user with an alternative way to modify properties of surfaces, control points and markers. When the Properties Pane is visible and a control point or group of control points is selected, the control-point properties are displayed in the Properties pane. These properties can then easily be edited, for example to move the entire selection to the centreline or a certain deck height.

In the same way as the Assembly Pane, the Properties Pane can be set to floating anywhere on screen, docked or set to auto-hide so that it is never in the way, but always at hand.

Dynamic Trimming Enhancements

The dynamic trimming in Maxsurf still offers users a unique advantage in working with automatically-updating trimmed surfaces when they are modified or moved relative to one another. Version 13 now has right-click trimming on rendered surfaces in the perspective view.

Trimming in rendered mode has the advantage that it is much clearer to see which regions of the surface should be trimmed away. Selecting and right clicking rendered surfaces will now display a right-click menu which includes the most-commonly used surface commands including trimming and the ability to switch the selected surface in case there are several surfaces behind each other.

Another important enhancement is that the surface-precision setting is now saved with the design and all applications in the Maxsurf suite open the model at the saved precision. This guarantees that the trimming information is the same as when you last saved your model.

Hydromax Reporting

Hydromax now has an option to send analysis results directly to Microsoft Word after each analysis or batch analysis. This means that editing reports can now be done directly in the Word editor without the need to copy and paste individual tables or editing the Report in Hydromax’ in-built RTF report editor.

The Hydromax Loadcase window has been enhanced to allow additional formatting and grouping options. Loadcases now include a weight per item as well as a total weight column. These minor changes in Version 13 reduce the need for downstream editing of reports.

Roll Motions of Catamarans in Seakeeper

A novel approach for the modelling of catamaran roll motions has been implemented in Seakeeper. The theoretical background to this work was fully described and comparisons with model basin experiments shown in the paper *Catamaran Motions in Beam and Oblique Seas* presented at FAST’07 in Shanghai by Giles Thomas, Lawrence Doctors, Patrick Couser and Mani Hackett.

Essentially, the roll added mass and inertia for catamaran vessels is computed from the heave properties of a single demihull. This has been found to provide accurate predictions of the roll response, particularly for catamarans with wider-spaced demihulls (s/L above about 0.35). The premise is that, for a catamaran in roll, the motions of the demihulls are predominantly in the vertical plane with very little roll.

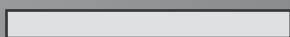
Maxsurf News, September 2007

Cruise Ship Safety Forum

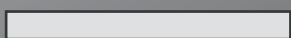
The first meeting of the newly-formed Cruise Ship Safety Forum (CSSF) occurred in December 2007 in London under the coordination of Cruise Lines International Association

The Complete Shipbuilding Software Solution

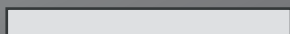
HULL DESIGN



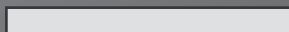
STABILITY



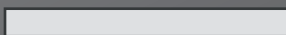
RESISTANCE



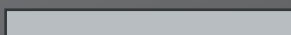
MOTIONS



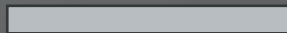
INITIAL STRUCTURE



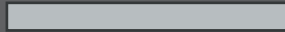
STRUCTURAL DETAILING



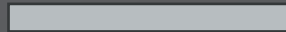
PIPING



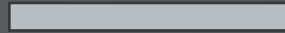
HVAC



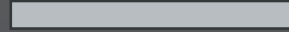
EQUIPMENT



NESTING



CUTTING



MAXSURF

ShipConstructor

Maxsurf is an integrated suite of design, analysis and construction software suitable for all types of vessels. All modules feature a consistent, graphical Windows interface, work from a common database, and provide data exchange with AutoCAD, ShipConstructor and Microsoft Office.

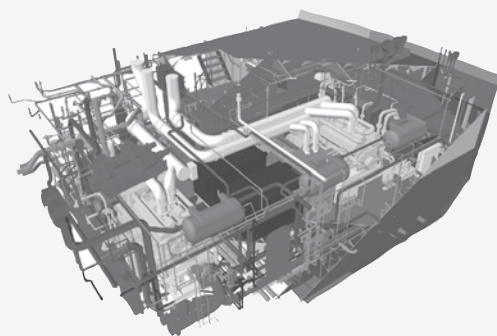
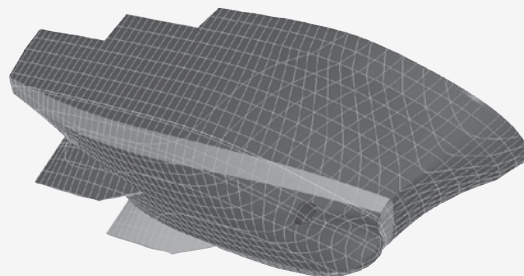
ShipConstructor offers shipbuilders a complete detailing and production solution for all zones and systems within a ship including structure, equipment layout, piping, and HVAC. The 3D product model is tightly coupled to production output which reduces re-work and most importantly, reduces man-hours in the yard.

Available in versions for smaller yards and design offices or for major, multi-site projects. Contact us for a free demo CD, or download online.

www.formsys.com

Formation Design Systems, P. O. Box 1293, Fremantle WA 6959 Australia

Tel: +61 8 9335 1522 Fax: +61 8 9335 1526 Email: info@formsys.com



(CLIA). The Forum is a consortium of cruise-ship operators, shipyards, classification societies and CLIA to advance cruise-ship safety in a coordinated and focussed manner.

“The Cruise Ship Safety Forum is the effort of many organizations committed to achieving the highest levels of cruise ship safety,” said Terry Dale, CLIA’s President and CEO. “Instead of each entity working on the same issues separately, we believe the strength lies in working together and anticipating the operational and technical issues that make these ships both beautiful and safe.”

The Forum’s purpose is threefold:

1. to develop strategic direction for advancing cruise-ship safety issues in their broadest sense;
2. to proactively address issues as they relate to the future of the industry and pertain to the design and construction of new passenger ships and modification of existing cruise ships; and
3. to provide a forum for consideration of regulatory and other safety initiatives and to develop a coordinated response to external bodies such as the International Maritime Organization (IMO).

As part of its initial work, CSSF will be focusing on an initiative of the IMO known as “safe return to port” regarding the design and operation of a passenger ship to allow it to safely return to port in the event of a major accident or incident.

The Forum’s activities will be guided by a steering committee comprising senior executives from the three major cruise lines, Carnival Corporation, Royal Caribbean Cruises and Norwegian Cruise Line; shipyards Aker Yards, Meyer Werft and Fincantieri; classification societies Det Norske Veritas, Lloyd’s Register and Registro Italiano Navale; and CLIA.

The chairman of the Forum is Tom Allan, the former director of the Safety and Standards Division of the United Kingdom’s Maritime and Coastguard Agency of the Department of Transport. Allan previously served as the

permanent UK representative to the IMO and was Chairman of IMO’s Maritime Safety Committee. During his tenure as Chairman, he led meetings on maritime security following 11 September and was key to the development of new international requirements for maritime security for ships and port facilities.

CSSF, chartered in November 2007, is a reconstitution of a similar forum which was established in 2001 to address emerging safety issues at the IMO categorized under the term “Large Passenger Ship Safety.” That group developed a series of recommendations, the majority of which were subsequently adopted by the IMO, to enhance the safety of passenger ships.

CSSF is expected to meet at least three times each year.

The non-profit CLIA is North America’s largest cruise-industry organisation. CLIA represents the interests of 24 member lines and participates in the regulatory and policy development process while supporting measures which foster a safe, secure and healthy cruise-ship environment. CLIA is also engaged in travel-agent training, research and marketing communications to promote the value and desirability of cruise vacations and counts as members 16 000 travel agencies. For more information on CLIA, the cruise industry, and CLIA-member cruise lines and travel agencies, visit www.cruising.org.

WWSR

World Water Speed Record aficionados may be wondering what has happened to the web pages for Blowering Dam, so that they can keep an eye on the water level with a view to Ken Warby’s pending attempt to break his own record with his new boat. The URL for the website has changed, *again!* However, sleuths will have managed to locate it at <http://waterinfo.nsw.gov.au>, and click on Site List, then Tumut River at Blowering Dam.

Inspection shows that the level has been at around 25% for the last month or so, much better than it was last February at around 11%, but still not nearly high enough for world-record speeds.

GENERAL NEWS

Boost for Defence Materials Capability

On 20 December, Warren Snowdon, Minister for Defence Science and Personnel and Senator Kim Carr, Minister for Innovation, Industry, Science and Research, announced the establishment of an \$82 million Defence Materials Technology Centre — to drive innovation in Defence technology.

Commencing operations in 2008, the Centre — a collaborative venture with Australian industry and the research sector — will focus on four key research programs: air platforms, maritime platforms, armour applications and propulsion systems.

Mr Snowdon said that a number of significant outcomes would be delivered through the Centre.

“The Centre will deliver improved armour protection for military personnel carriers — vital for the protection of Australian troops deployed around the world — and new high-tech materials for use in major Defence acquisitions such as the Joint Strike Fighter,” Mr Snowdon said.

The Australian Naval Architect

“To nurture the innovation needed to maintain Defence capability and to address the skills shortage in this area, an education and training program will also be designed. The goal of this program will be to produce engineers and scientists with skills attractive to the Defence industry and other research providers,” he said.

Small-to-medium enterprises (SMEs) will benefit from the Centre through the establishment of a technology transfer program to help SMEs compete in the global manufacturing market.

“The Defence Materials Technology Centre marks an important milestone in the Australian Government’s commitment to improving Defence capability through innovation,” Senator Carr said.

“The Centre will enhance the nation’s Defence capability and Australia’s international reputation for innovation by bringing together the combined expertise and resources of key industry representatives, universities and publicly-funded research agencies,” he said.

A key element of the collaboration, and a cornerstone of the research, is the adoption and application of world-leading materials-engineering capabilities.

These will be used to develop, integrate and validate new materials and manufacturing technologies across existing and planned Defence platforms and structures.

“The technology transfer program will ensure that the Centre’s benefits will spread well beyond the Defence industry,” Senator Carr said.

“It will assist areas as diverse as civilian aerospace and power generation, as well as in general manufacturing industries,” he said.

The Centre will primarily be located in Victoria and will receive Australian Government funding of \$30 million and a further \$52 million from the collaborative partners. These partners include major companies such as BAE Systems Australia, GKN Aerospace, BlueScope Steel, Surface Technology Coatings, Thales Australia and the Cooperative Research Centre for Advanced Composite Structures.

Tenix sells Defence Businesses

Tenix has agreed to sell its defence businesses in their entirety to BAE Systems Australia, which is a subsidiary of BAE Systems Plc (BAES).

The sale of these defence businesses is subject to regulatory and other approvals, and is expected to be finalised during the first half of the 2008 calendar year.

BAES is a global defence and aerospace company delivering products and services for air, land and naval forces, as well as advanced electronics, information technology solutions and customer support services.

“BAES is one of the largest defence companies in the world with a record of innovation and leadership in the defence sector,” said Tenix Chairman, Paul Salteri.

“BAES’s purchase of Tenix’s defence businesses will position these operations for the future through access to enhanced research and development, expanded distribution networks and access to greater capital.

“BAES has the scale, the depth of production activities and the experience to achieve the objectives that we set at the start of this sale process of fostering international growth for Tenix’s defence businesses.

“From a personal perspective, once completed, this sale will bring to an end my family’s long association with the defence industry and I would like to thank all the men and women who have worked so hard for Tenix over the years and helped make these defence operations the great businesses they are.

“I wish Tenix’s defence employees all the very best for what I expect to be a bright future,” Mr Salteri said.

LHD Contract for Saab Systems

Saab Systems has signed a contract with Tenix Marine to design and develop the combat management system for Australia’s new amphibious ships (LHD).

Merv Davis, Managing Director of Saab Systems said, “The Saab LHD combat system will be based on highly-advanced technology which builds on our experience in the Anzac-class frigates”.

In June this year the federal government announced that it had chosen Tenix-Navantia to design and build two amphibious ships for the Australian Defence Force. As part of this decision, the government nominated the Saab 9LV combat-management system as the preferred system, subject to successful contract negotiation.

“Saab Systems is ideally placed to provide the LHD combat system because it has existing skills, experience and infrastructure built up over its 17 years of successfully supporting naval combat systems in Australia,” said Davis.

“The selection of our system confirms Saab’s leadership in naval combat systems in Australia — with Saab providing the only system which will be fitted onto multiple classes of Australian ships”.

According to Davis, the 9LV combat-management system has been extremely reliable and highly capable for the Royal Australian Navy for the eleven years it has been at sea with the Anzac-class frigates. Over that time, Saab has developed a specialised workforce, who initially developed this system and has since supported it through its life. Saab personnel are currently enhancing the system as part of the Navy’s anti-ship missile-defence upgrade of the Anzac-class ships.

On 23 November 2007 Saab and Tenix agreed a contract that will see Saab responsible for design, development and integration of the LHD combat system. The ship’s combat system includes the electronic sensors, weapons, and command-and-control system.

“Under the contract Saab Systems will supply the 9LV Combat Management System and Sea Giraffe AMB radar,” said Mr Davis.

“The combat system to be installed on the LHD is based on the anti-ship missile-defence system upgrade being installed across the Navy’s Anzac-class ships.

Special features of the system will include helicopter control, watercraft control and close-in self-defence against military and asymmetric threats.

According to Davis, work under the \$106 million contract will begin immediately and will cover a span of more than six years, until the LHDs are delivered in 2013 and 2015. “When you include the ongoing support to the system after its installation, it is a long-term task indeed.”

The selection of Saab as a contractor for this project ensures the longevity of Saab’s support to the Royal Australia Navy with skilled capabilities largely based in South Australia. It also confirms the company’s leading role in both naval and land-force command-and-control systems and systems integration.

“The majority of the work will be performed in both Adelaide and Melbourne, and the project will require staff increases. Saab is currently recruiting top-quality staff, mostly systems engineers, for the challenging and exciting work,” Davis said.

“Saab is grateful to its staff and partners for their hard work in achieving this important contract.

“We are highly committed to the Australian Defence Force and pleased to be a part of this project to boost Australia’s amphibious capabilities,” Davis added.



Young Endeavour (centre) with *Endeavour* and *Svanen* during the Tall Ships Race on Sydney Harbour on Australia Day
(Photo John Jeremy)

Young Endeavour Celebrates Anniversary

Two decades after STS *Young Endeavour* first unfurled her sails, the sail-training ship manned by the Royal Australian Navy, celebrated her anniversary at a ceremony in Sydney on 25 January 2008.

The 44 m square-rigged ship was presented to the people of Australia as a Bicentennial gift from the United Kingdom in 1988. During her 20 years of service, more than 8500 young people from across the nation have taken to the high seas, learning leadership, teamwork and sailing skills under the watchful eye of RAN personnel.

Held at the RAN Heritage Centre on Garden Island, the ceremony brought together the original Navy and youth crews and was attended by Commander Australian Fleet, Rear Admiral Nigel Coates AM RAN.

"Since her inception, STS *Young Endeavour* has provided thousands of young Australians with a once-in-a-lifetime quest for adventure," Rear Admiral Coates said.

"The competence of the professional crew and the world class success of the youth-development program was recognised last year in the awarding of the 2007 International Sail Training Organisation of the Year.

"I congratulate the Young Endeavour Youth Scheme and the RAN personnel for twenty successful years," Rear Admiral Coates said.

The not-for-profit organisation is run in partnership with the RAN, with young people aged 16–23 selected by ballot for each voyage.

Honours for HMAS Sydney Mast

On 26 June the Royal Australian Navy initiated what will become a Naval tradition by announcing that all Australian and foreign naval vessels proceeding into Sydney Harbour will render ceremonial honours to the HMAS *Sydney I* Memorial Mast which is located at Bradley's Head.

The HMAS *Sydney I* Memorial Mast is considered to be one of Australia's premier naval monuments and a memorial of national significance. The mast was removed from *Sydney I* when she was decommissioned in 1928 and erected at Bradleys Head in 1934. The ceremonial will represent a mark of respect and recognition of the Australian officers, sailors and ships lost at sea and in combat.

The announcement coincides with the 94th anniversary of the commissioning of HMAS *Sydney I*, when she was bought into the service of the RAN at a ceremony at Portsmouth, England, on 26 June 1913.

This was an initiative of the then Commander Australian Fleet, Rear Admiral Davyd Thomas, AM, CSC, RAN, who said, "It is appropriate that in a regular and formal way we recognise our heritage and demonstrate a mark of respect for the sacrifices of naval personnel who have played such a significant part in shaping this nation, particularly those who have laid down their lives. It helps remind us where we come from."

The actual ceremonial conducted by the ships will consist of bringing the ship's company on the upper decks to attention, and then 'piping' the mast. 'Piping' is the prolonged sounding of the boatswain's call.

The Australian White Ensign was raised in a traditional colours ceremony on 22 January 2008. Illuminated at night, it will be flown 24 hours a day.

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Austal Awarded JHSV Preliminary Design Contract

In February Austal announced that it had been awarded a preliminary design contract for the Joint High Speed Vessel (JHSV) programme for the US Navy and Army. The JHSV requirements and concept of operations are similar to those of the Austal-built *WestPac Express*, which has been successfully serving the III Marine Expeditionary Force in Okinawa, Japan, for more than six years.

Executive Chairman, John Rothwell commented on the achievement, "As one of three companies selected for the preliminary design contract, Austal has a strong chance of advancing to final selection, given its large skilled workforce and world class facilities in Mobile, Alabama."

At the conclusion of the six-month JHSV preliminary design contract, Austal will submit a proposal for the detailed design and construction contract. This contract will include the award of a construction contract for the first ship, and options for a further seven ships planned to be ordered between US FY09 and FY12.

If successful, the JHSV programme will be supported by the existing Austal labour force and facilities and, with the current facility expansion underway at Austal in the US, will allow the construction of a combination of JHSV and LCS ships concurrently.

Austal USA CEO, Bob Browning said, "The JHSV design is right in the middle of the Austal breadth of experience. We are the only shipyard in the United States to have built a high-speed aluminium ship larger than 100 m in length, and therefore feel justifiably confident that Austal is best placed to deliver a low-risk JHSV to the US Army and Navy."

Incat JHSV Contract

Incat Tasmania Pty Ltd and Revolution Design Pty Ltd announced on 1 February that they have been awarded one of three US multi-million dollar design contracts by the US Department of Defense.

The Tasmanian-based companies are part of an international consortium responding to the US Department of Defense (DoD) acquisition program for the Joint High Speed Vessel (JHSV). The JHSV program brings together United States Navy, Army, Marines, and SOCOM to pursue a multi-use platform.

The consortium is led by Incat's US partner, Louisiana-based Bollinger Shipyards, Inc., and includes Australia's Incat and Revolution Design, Incat Chairman Robert Clifford explained.

"As one of three companies chosen for the preliminary design contract, the Incat consortium is well placed to proceed to the next build contract phase, thanks to its vast and successful experience providing three vessels for intensive US military service," Mr Clifford said.

The Australian Incat-built high-speed vessels, HSV-X1 *Joint Venture*, TSV-1X *Spearhead* and HSV-2 *Swift*, have already been employed by the US DoD for experimentation and demonstration of high-speed vessel technologies as well as for logistics support. These craft have been used to support operations in the Global War on Terrorism and during Operation Iraqi Freedom. They have been deployed to the

Horn of Africa, the Persian Gulf and Southeast Asia.

Additionally, HSV-2 *Swift* supported relief operations in Indonesia and in the Gulf Coast region following hurricane Katrina. In both cases, *Swift's* high speed and shallow draught combined to make her an ideal platform for the delivery of relief supplies and support of other platforms operating in the area. During operations following Katrina, *Swift* was able to access ports inaccessible to other ships in the logistics force, and therefore played a critical role in the early delivery of supplies.

The Royal Australian Navy has also experienced the benefits of Tasmanian-designed catamarans, operating the Incat 86 m HMAS *Jervis Bay* during the East Timor crisis.

The JHSV is a new-generation, multi-use platform capable of transporting troops and their equipment, supporting humanitarian relief efforts, the ability to operate in shallow waters and can reach speed in excess of 35 kn fully loaded.

The Incat 112 m, vessel which forms the base of the consortium's submission, is the largest catamaran ever built in Australia and is already proven in commercial service.



Incat's JHSV contender
(Image courtesy Incat)

Third JHSV Contract to Bath Iron Works

The third JHSV preliminary design contract for the JHSV project has been awarded to Bath Iron Works, a subsidiary of General Dynamics. BIW will be teamed with Rolls-Royce for the project.

The ship concept proposed by BIW and Rolls-Royce is based on a Rolls-Royce design for a roll-on/roll-off passenger vessel. The steel monohull design features a combined diesel and gas-turbine propulsion plant, water jets, self-sustaining roll-on/roll-off and load-on/load-off capabilities, and a flight deck for helicopter operations.



An impression of the Bath Iron Works/Rolls-Royce JHSV contender
(BIW image)

HMAS *Adelaide* Decommissions

HMAS *Adelaide* was decommissioned at Garden Island in Western Australia on Saturday 19 January. The time-honoured tradition marked the end of 27 years of service for what was the Royal Australian Navy's oldest frigate.

The ship's Australian White Ensign was lowered for the last time and handed to *Adelaide's* Commanding Officer, Commander Robert Slaven.

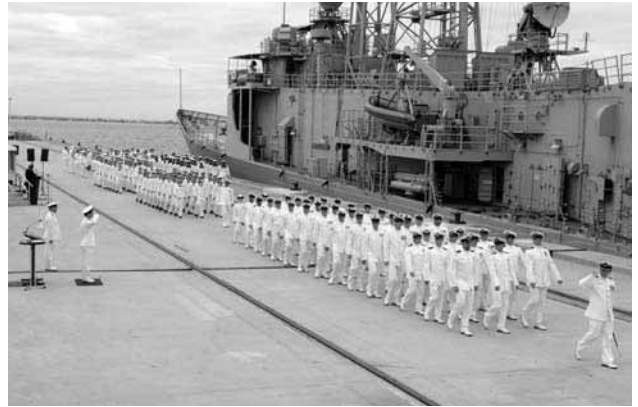
"Today is an historic occasion, one which the crew of *Adelaide* is proud to be a part of," Commander Slaven said.

Parliamentary Secretary to the Minister for Defence, the Hon. Dr Mike Kelly MP; Chief of Navy, Vice Admiral Russ Shalders; Commander Australian Fleet, Rear Admiral Nigel Coates, and a number of other distinguished guests joined *Adelaide's* crew, past and present, for the ceremony.

Adelaide is the second of the Adelaide-class frigates to be decommissioned, the first being HMAS *Canberra* in November 2005. Their four sister ships, *Sydney*, *Darwin*, *Melbourne* and *Newcastle* remain in service.

Adelaide was constructed by Todd Pacific Shipyard in the United States and commissioned into the RAN on 15 November 1980. She was the second ship in the RAN to bear the name — her predecessor was a light cruiser which served from 1922–1946.

Adelaide has proudly represented Australia in a number of theatres of conflict during her years of service. She was one of the first Australian warships to be deployed to the Persian Gulf in 1990. *Adelaide* was again deployed to the Gulf on two more occasions in 2002 and 2004. She also participated in both major East Timor operations in 1999 and 2006.



The decommissioning ceremony for HMAS *Adelaide* at Fleet Base West on 19 January
(RAN Photo)

In peacetime, one of *Adelaide's* more notable achievements was her involvement in the high-profile search and rescue of solo yachtsmen Thierry Dubois and Tony Bullimore from the Southern Ocean in 1997.

Adelaide will be given to the NSW Government and sunk off the NSW Central Coast at Terrigal as an artificial reef and dive attraction.

Order for Incat 112 m Catamaran

Incat Tasmania Pty Ltd and MGC Chartering Limited announced on 1 February an order for Incat's third state-of-the-art 112 m wave-piercing catamaran for delivery in February 2009.

Incat Hull 066, the latest vessel in the successful 112 m range from Incat, is specifically designed with the European ferry market in mind. The new craft will operate at speeds of approximately 40 kn while offering capacity for up to 417



Adelaide departing HMAS *Stirling* on 22 January. Now at Sydney's Garden Island, she will be stripped of useful equipment before handing over to the NSW Government
(RAN Photo)

cars or 567 lane metres of trucks and 195 cars. The stylish accommodation has been arranged to cater for 1200 persons in high levels of luxurious comfort.

The buyer, MGC Chartering, is an Irish-based leasing company which can provide a wide range of financial solutions to ferry operators, including longer-term bareboat charters of both new and second hand vessels. MGC Chartering Director, Darryl Tishler, said “We have over 25 years of experience in aviation leasing and, in founding MGC Chartering, we have adapted that very successful aviation model to the needs of the ferry market. Our intention is to acquire quality assets like the Incat 112 m wave-piercing catamaran and then market a range of charter options to potential global operators, be they commercial or military.”

Mr Tishler added “In choosing the Incat 112 metre, we have drawn other lessons from the aviation model, for example, the ever-increasing importance of minimising fuel burn and environmental impact. The Incat 112 m is built to be as light as possible, it consumes clean diesel fuel, for maximum efficiency it offers dual-speed operation (23 or 40 knots), NOx emissions are less than 10g/kWh and importantly, it burns less fuel per cargo tonne per nautical mile than any other high-speed ferry built to date. The economic and environmental credentials of the Incat 112 m wave-piercing catamaran are outstanding.”

The Incat 112 m is the largest catamaran ever built in Australia and it provides unparalleled seakeeping and passenger comfort even on rough open-sea routes. Power is supplied by four MAN 20V 28/33D diesel engines, each rated 9000 kW at 1000 rpm and consuming less than 190g/kWh.

Austal Completes Trials on World's Fastest Diesel Ferry

Austal's 65 m Auto Express catamaran ferry, *Shinas*, built for the Sultanate of Oman, has achieved a record service speed of 52 kn during sea trials, making it the fastest diesel-powered vehicle-passenger ferry currently in commercial service.

The vessel's confirmed service speed of 52 kn exceeds contract requirements by one knot, with the vessel also reaching a peak speed of 55.9 kn during her recently-completed sea trials.

Shinas is the first of two identical vessels being built for the Sultanate of Oman at Austal's facilities in Henderson, Western Australia.

The Sultanate's requirements challenged Austal's experienced team of naval architects to develop a new, customised, high-efficiency hull design capable of delivering record-breaking performance, while the construction team were required to meet demanding weight targets.

The 65 m catamaran adds to Austal's list of record-breaking vessels, which includes the 88 m *Villum Clausen* — current holder of the 24 hour distance record for a commercial passenger vessel (1063 n miles at an average speed of 44.29 kn, set in 2000).

Ordered in May 2006, the two vessels are earmarked to become the flagship vessels in the Sultanate's expanded coastal marine-transport network, and will set new standards in performance, comfort, safety and quality of finish.

Following a competitive international tender, Austal's innovative design — which complied with the highest



Shinas on trials
(Photo courtesy Austal Ships)

standards for passenger ferries and is tailored to local Omani conditions — was selected to meet the Sultanate's requirements.

Each vessel will carry 208 passengers and 56 cars along a 180 n mile route between Shinas and Oman's rugged Musandam Peninsular.

The vessel has the capability to assist in search and rescue and medivac operations due to its helicopter landing facility, which is suitable for a medium-class helicopter.

Both vessels are powered by four MTU 20 cylinder 1163 series diesel engines, each producing 6500 kW and driving Rolls-Royce/Kamewa waterjets. The vessels meet Det Norske Veritas survey requirements and conform to the HSC code.

Shinas is scheduled to arrive in Oman in February 2008, with her sister vessel to follow in July.

A general arrangement and particulars of the two vessels were published in the November 2007 issue of *The ANA*.

Tasmanian Industry News

***Platinum* Launched**

The culmination of over five years of design and detailing and three-and-a-quarter years of construction time were realised with the launching of MV *Platinum* on Saturday 19 January 2008 at the Launceston synchro-lift. Designed and detailed by naval architect Alan Muir, and built in Launceston by construction supervisor, Haydn Borella, for Jack McKeddie of McKeddie Marine Pty Ltd, Queenscliffe, this 38 m luxury motor yacht is one of the largest vessels built at the King's Wharf site in recent years.

Construction to Lloyds 100 A1 SSC, Yacht, Mono, G6 class provides this round-bilge steel-hulled, aluminium-topsides vessel with worldwide capability. *Platinum* is powered by two MTU series 60 main engines, delivering 354 kW each through ZF gearboxes to conventional shafting and 1.4 m diameter three-bladed propellers. Being a luxury charter vessel for 100 day passengers or 10 exclusive berthed guests, four Westmar active roll fin stabilisers have been fitted to supplement passenger comfort.

Unusually for a vessel's build program, the aluminium topsides were started on 4 October 2004 and constructed first, moved 12 months later from the build yard to a fit-out shed whilst the keel was laid and hull construction commenced. The 65% fitted out (including windows), faired and painted topsides were successfully married to the hull on 24 August 2007 without incident or mis-alignment. The pre-fabricated fit out is being continuously supplied by Dennis Gorge in North Gosford, NSW, with sea trials expected in late April or early May 2008. A trials report and more general particulars will be forthcoming upon completion and delivery.

Alan Muir

Cotai WaterJets Order Four more Ships from Austal

Austal has signed a contract for four additional 47.5 m passenger catamarans with Cotai WaterJets (Macao) Ltd, adding to the initial ten-vessel contract signed in 2006 by sister company Venetian Marketing Services Limited (VMSL).

February 2008



Erecting the superstructure on *Platinum*
(Photo courtesy Alan Muir)



Platinum ready for launching
(Photo courtesy Alan Muir)

The new vessels will be identical to those currently under construction at Austal's Henderson shipyard and will be delivered in the first half of 2009.

Completion of the entire 14-vessel order will see the number of Austal vessels delivered to China/Hong Kong waters grow to 52, reinforcing Austal's success in the region.

Commenting on the order, Executive Chairman, John Rothwell, said "It is a pleasing start to the year to see the Cotai WaterJet order expand to 14 ferries based on the success of the initial deliveries already operating between Hong Kong and Macau."

Of the initial ten vessels ordered by VMSL in 2006, five have already been completed, with the construction of two catamaran ferries for another Hong Kong operator continuing at Austal's shipyard in Tasmania.

The four Cotai Waterjets passenger ferries will capitalise on the rapidly growing demand for the Hong Kong-to-Macao service, currently the world's largest route in terms of passenger numbers. Driven by the Las Vegas Sands Corporation's development of the Cotai Strip, traffic on the route is likely to double in the next three years.

Macau's emergence as an entertainment, shopping, conference, gaming and mega-resort epicentre has seen a remarkable increase in tourist arrivals, with last year's passenger numbers from Hong Kong to Macau rising more than 13% to 14.3 million.

The new order is a fitting start to Austal's 20th year celebrations, given the company first found success for high-speed ferries in Hong Kong in the early 1990s.

With the capacity to carry 411 passengers at a service speed of 42 kn, the four additional vessels will be powered by four MTU 16 cylinder 4000 series diesel engines driving a Rolls-Royce/Kamewa waterjet propulsion system. Each ferry is also fitted with transom-mounted SeaState Interceptors providing an active high-speed ride-control system for maximum passenger comfort.

The vessels are being built in accordance with the requirements and under the survey of Det Norske Veritas, conforming to the IMO High Speed Craft code (HSC 2000) in conjunction with the Hong Kong Marine Department requirements for high speed ferries.

Principal Particulars

Length OA	47.5 m
Length WL	43.8 m
Beam mld	11.8 m
Hull depth mld	3.8 m
Maximum draft	1.6 m
Deadweight (max)	70 t
Passengers	411
Crew	8
Fuel (max)	20 000 L

Propulsion

Engines	4 × MTU 16V 4000 M70 each 2320 kW at 2000rpm
Gearboxes	4 × Reintjes VLJ 930
Waterjets	4 × Kamewa 63 SII
Speed	42 kn (90% MCR)

Survey

Classification	DNV ✱1A1 HSLC Passenger R2 EO
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New South Wales Industry News

OPLs from Kamira

NGV Tech in Malaysia will shortly commence construction of three 22 m OPL (outside port limits) supply vessels designed by Kamira Holdings for a Singaporean customer.

There are two standard vessel types which provide supply and transfer services in and around Singapore — the 12 m "bum" boats and the larger OPLs. The government is slowly coercing operators into upgrading their vessels and, with several hundred operating, the market is substantial. However, the simple catch is that the market is so competitive that the construction costs are pinned to almost impossible levels. In Australian dollar terms, a classed OPL is competitive in a moderate six-figure range.

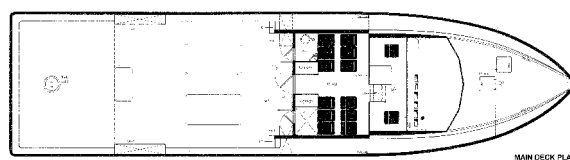
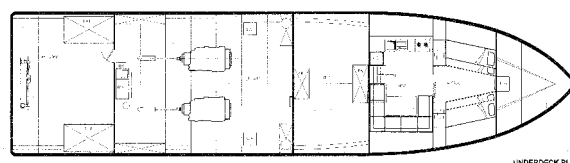
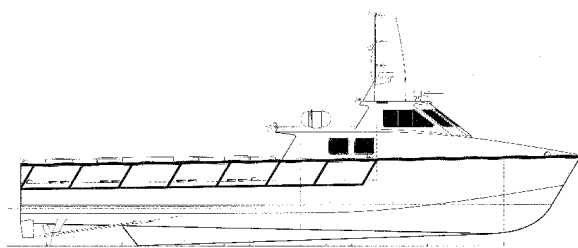
The passenger capacity is limited to 12 to avoid passenger-vessel certification and there is rarely a need to carry more than 12 between ship and shore. The deck cargo capacity is a nominal 10 t with an upper limit of 20 t. As with most vessels in the region, many of which use foreign crews, the crews live aboard for extended periods and, in some cases, the boat represents their only in-country accommodation.

One benefit the shipyard retains with such price-conscious contracts is the right to select the most cost-effective (i.e. cheapest) equipment, within certain constraints.

The Caterpillar 3406C engines were selected due to the favourable exchange rate between the Malaysian ringgit and US dollar, as well as the simplicity of this older, mechanically-governed engine. In a style that typifies the south-east Asian thinking, fuel costs are ignored in favour of lower capital costs.

Principal particulars of the new vessels are:

Length OA	22.0 m
Length WL	20.7 m
Beam	5.5 m
Draught hull	1.00 m
overall	1.50 m
Displacement	24.8 t light 42.8 t loaded
Engines	2 × Caterpillar 3406C each 358 kW at 2100 rpm
Gearboxes	2 × ZF 360, red. ratio 2.478:1
Gensets	2 × 27 kW Kohler
Fuel	6000 L
Water	1000 L
Crew	4
Passengers	12
Cargo	10 t nominal 20 t maximum
Speed	15 kn at full load
Construction	Aluminium
Class	BV
<i>Greg Cox</i>	



General Arrangement of OPL vessels for Singapore
(Drawing courtesy Kamira Holdings)

Eagle from Incat Crowther

The latest Incat Crowther vessel to be built by Richardson Devine Marine was successfully launched, and trialled along Hobart's Derwent River just prior to Christmas 2007. MV *Eagle*, a 36 m catamaran ferry, was built for World Heritage Cruises who operate scenic wilderness cruises from their base in Strahan, on Tasmania's west coast.

Eagle was designed to carry 222 passengers at a service speed of 28 kn fully loaded. The main cabin can seat 136 passengers with a mix of reclining seats, seats at tables and comfortable lounges. A void space in each hull has been utilized as a library in the port hull and a children's play area in the starboard hull. The children's play area has been fitted with a large TV and video, and includes interactive toys based on a wilderness theme.

The aft end of the main cabin has been arranged with male, female and disabled toilet spaces. Forward of these are the galley, bar and servery. A dumb waiter connects the galley with a bar and servery located on the mid deck. The mid deck has seating for 86 passengers in reclining seats, many of them rotated outboard to provide easier visibility for the passengers. A special feature of the mid-deck cabin is the 360° uninterrupted view. Special attention was paid to minimize any full-height facilities or structure through this part of the vessel. In addition, there are exterior bench seats behind the mid- and upper-deck cabins.

The upper deck also houses a modern, fully-equipped helm station for the master and engineer, in a small self-enclosed wheelhouse with exterior wing stations. The vessel provides excellent viewing positions on all decks, including the large enclosed foredeck, allowing passengers to take in the impressive scenery which this world-heritage region of Tasmania has to offer.

Powered by twin MTU 8V4000 M70s, each producing 1160 kW, the vessel reached a top speed of 33.6 kn during trials. The vessel also incorporates special low-wash features developed by Incat Crowther for low-speed operation in the sensitive ecological regions of Macquarie Harbour and the Gordon River.

The vessel was built locally by Richardson Devine Marine, and was the first vessel to be built in their brand-new purpose-built shipyard. It was RDM's 17th vessel with Incat Crowther over an eleven-year period. In addition, RDM have two other Incat Crowther vessels under construction.

World Heritage Cruises operate daily tours of the world-heritage-listed region of Macquarie Harbour and the Gordon River, visiting convict settlements, high-tech aquaculture farms, and viewing the magnificent pristine scenery along the river. Their company was founded in 1896 and is now operated by the fifth generation of the Grining family. This is the Grining family's sixth Incat Crowther/Richardson Devine Marine vessel.

Principal particulars of *Eagle* are:

Length OA	36.60 m
Length WL	32.20 m
Beam	9.50 m
Draft hull	2.10 m
Passengers	
Main deck	136 internal
Upper deck	86 internal
Total	222
Deadweight	28.23 t
Fuel	10 000 L
Fresh water	1500 L
Main engines	2 × MTU 8V4000 M70 each 1160 kW @ 2000 rpm
Gearboxes	2 × ZF 4540

Propulsion system
Service speed
Construction
Survey

Fixed-pitch propellers
28 kn
Marine grade aluminium
Marine and Safety Tasmania
USL Code Class 1C



Eagle shows her paces
(Photo courtesy Incat Crowther)



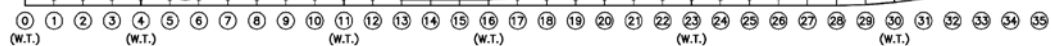
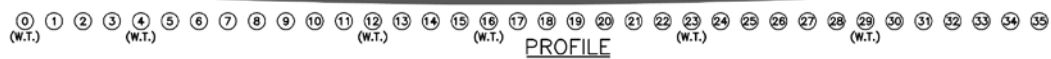
Eagle's interior
(Photo courtesy Incat Crowther)



Eagle's control console
(Photo courtesy Incat Crowther)

***Fusion* from Incat Crowther**

Incat Crowther has shown its diverse capability with the design of a slow-speed dinner-cruise vessel for operation on Sydney Harbour. The new vessel, MV *Fusion*, will provide one-and-a half-hour lunch and afternoon-tea cruises from Sydney's King Street Wharf. In addition, the vessel will be available for evening charter cruises and target the lucrative reception market.



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The main-deck cabin will contain loose seating for approximately 166 passengers in various configurations to suit the desired function. The main cabin will also incorporate a fully-stocked bar, food servery, DJ booth and dance floor, plus a removable raised stage. A fully-equipped galley and cool room have been arranged in the port hull, capable of providing food service for the full complement of 400 passengers.

The mid-deck cabin will seat 96 passengers in similar configurations to the main deck and will have its own bar, servery, DJ and dance-floor facilities, enabling separate groups to be on the same cruise. Food access to this cabin will be provided via a dumb waiter. Access between the decks was carefully arranged to enable the two groups to be kept separate, while still providing access to the vessel's main viewing decks. Toilets are located aft on each deck. A small self-enclosed wheelhouse is positioned at the forward end of the mid deck.

Powered by twin Caterpillar C7s, each producing 205 kW brake power, the vessel will have a service speed of 11 kn at full load. This speed will allow the vessel to complete the full loop from Darling Harbour to Watson's Bay and back in 1½ hours.

Fusion Cruises is a new company put together by two local operators who have been working on Sydney's waterfront for the last ten years. They have formed strong business ties with inbound tour groups, providing sightseeing tours of Sydney and Australia.

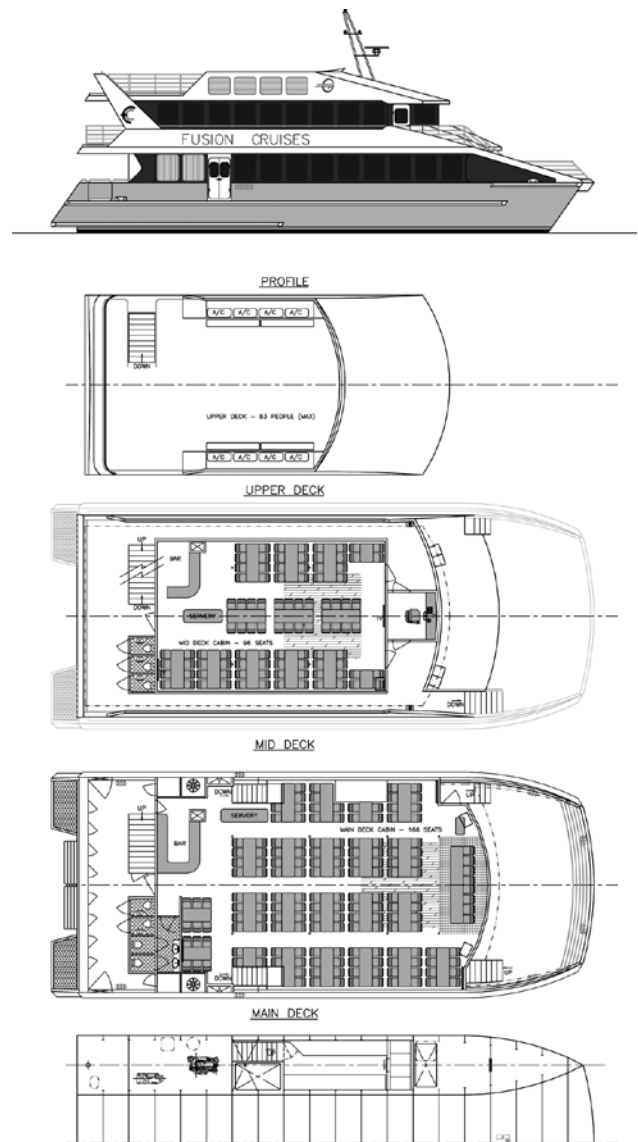
The vessel was built by Aluminium Boats Australia, who operate their shipyard from the new Brisbane Marine Complex. They built the vessel in an impressive nine months, under extreme pressure to have the vessel in Sydney for the Christmas-party season which, traditionally, is the busiest time of the year for the local charter-boat industry.



Fusion on Sydney Harbour
(Photo courtesy Incat Crowther)



Fusion's dining area
(Photo courtesy Incat Crowther)



General Arrangement of *Fusion*
(Drawing courtesy Incat Crowther)

Principal particulars of *Fusion* are:

Length OA	24.00 m
Length WL	21.80 m
Beam OA	10.00 m
Draft (approx)	1.92 m at skeg
Passengers	
Main deck	166 internal
Upper Deck	96 internal
	138 external
Total	400
Fuel	2 × 2000 L
Fresh water	2 × 1500 L
Engines	2 × Caterpillar C7 each 205 kW
Gearboxes	2 × ZF305-2
Propulsion	Propellers
Speed (full load)	11 kn
Construction	Marine-grade aluminium
Survey	NSW Maritime Authority USL Code Class 1E

Ben Hercus

Cruising

The summer cruise season has moved into high gear, with visits to Sydney in December by *Statendam*, *Sun Princess*, *Pacific Dawn*, *Orion*, *Superstar Gemini*, *Mercury* and *Topaz*. In addition to returns by some of these vessels, January saw visits by *Silver Whisper*, *Sapphire Princess* and *Nautica*. February added visits by *Amadea*, *Seven Seas Voyager*, *Astoria*, *Asuka II*, *van Gogh*, *Saga Rose*, *Crystal Serenity* and *Oriana*.

There was much excitement with the last visit of the grand lady *Queen Elizabeth 2* and the first visit of the brand-new *Queen Victoria* crossing paths on the harbour on Sunday 24 February.

Orion also made Eden a port of call this summer, on 8 December.

Phil Helmore



Orion in Twofold Bay, Eden
(Photo courtesy Robert Whiter)



Sun Princess departing Sydney late in December
(Photo John Jeremy)



Pacific Dawn moored in Athol Bight in Sydney on Australia Day
She was anchored forward and secured to the Athol buoy aft
(Photo John Jeremy)

THE INTERNET

ATSB Marine Safety Reports

The Australian Transport Safety Bureau (ATSB) is an operationally-independent body within the Australian Government's Department of Transport and Regional Services, and is Australia's prime agency for transport safety investigations. Their reports on marine safety investigations are available for download from www.atsb.gov.au. From the left bar on the home page, click on Transport/Marine Safety/Safety Investigation Reports, and up will come a table of completed and pending reports.

Groundings and collisions are probably of most interest to naval architects. The table can be searched for a particular vessel name, or re-ordered in ascending or descending order of information in each column by clicking up- or down-arrows in the header of each column.

For example, the investigations into the recent groundings of *Pasha Bulker* at Nobbys Beach, Newcastle, NSW, and *Endeavour River* at Gladstone, Queensland, are still in preparation, but the report on the collision involving the bulk carrier *Lancelot* and the fishing vessel *Jenabar* east of Diamond Head, NSW, has been released. You may read an abstract of any released report online, or download the full report in PDF format.

Phil Helmore

Coastal Watch

Chris Lane, founder of Coastal Watch, mounted his first streaming webcam on the beach at Burleigh Heads, NSW, in 1998 so that he and his friends could check surfing condi-

tions before leaving home. Today, www.coastalwatch.com draws live feeds from 84 cameras throughout Australia. A team of 32 surf reporters, swell forecasters and PhD students around the country combine the information provided by the webcams with weather and surf data from the Bureau of Meteorology. The result is a site visited daily by surf lifesavers, marine rescue organizations, beachgoers, overseas tourists and, increasingly, Australia's boaters.

Curious boaters logging on to the site will find that, although biased towards surfing and the surfing lifestyle, coastalwatch.com is full of useful information for them too. Amidst the surfing news there is a wealth of well-organised facts and figures. In addition to the live video, there are the tides and a surf and weather report which includes minutiae such as UV index, wind speed and water temperature.

The cameras are also particularly useful for boaters negotiating the entrances to bar harbours, such as at Narooma. Additional cameras are expected soon at Seaway Spit, Duranbah and Port Macquarie, NSW. Visit www.coastalwatch.com.

Club Marine, Vol.22, No. 6

The NSW Maritime Authority and Coastalwatch have embarked on a web-camera trial at Narooma in a bid to improve safety for those people planning to cross a coastal bar in a boat. NSW Maritime believes the real-time footage, together with updated swell, wind and tide information, can play a key role in helping people prepare for and plan a crossing in what can be an extremely dynamic boating environment. But as they say: "If in doubt, don't go out".

www.coastalwatch.com

The Australian Naval Architect

Considerations for Sydney Ferries' Future

Stuart Friezer

I am a ferry designer based in Manly Vale, Sydney, and have been involved in the ferry industry for 17 years. I worked for Hercus Marine Design when they designed the 35 m Jetcats currently used on Sydney Harbour.

My clients and I have been involved in some of the most competitive ferry markets in the world. Working together we have come up with some of the best technical solutions around today. By working closely with builders, operators and port authorities, we optimise the vessel design to achieve the goals of all parties. Incat Tasmania has a reputation for having the most-efficient car/truck/passenger high-speed ferries in the world. Incat Vessel 049 holds the Blue Riband Hales Trophy for the fastest crossing of the Atlantic by a commercial vessel (41.3 kn average speed). Dive Charter company, Haba Dive in Port Douglas, has many direct competitors and their new 27 m wave-piercing catamaran ferry gives them a significant cost advantage for fuel and maintenance, while the colour and style of the boat attracts more customers.

The best outcome for Sydney Harbour will only be achieved by all parties working together to achieve the best result: reliable, efficient, iconic ferries to service one of the most spectacular harbours in the world.

Objectives

Sydney ferries and trips on the Harbour are an intrinsic part of Sydney. The ferries are an icon of Sydney and its beautiful harbour. With a much-needed re-invention of our ferries we can choose the ideals that they represent, for example:

- Australia's technology
- Concern for the environment
- Safety
- Efficient public transport

By using these, and other ideals like these, we can create a Sydney ferry we can be proud of and which will enhance Sydney's reputation for both business and tourism.

Environmental Considerations

The world we live in today is very different from that of ten years ago. Our environmental standards are now quite onerous and this should have a big effect on Sydney ferries. The areas of concern are pollution, carbon emissions, ferry wash and foreshore damage.

My expertise is in designing efficient ferries with minimal carbon emissions and low wash. To achieve this we must compromise on the size of the vessels we choose.

Ferry wash has three major components, Bow wave, stern wave and transverse wave. The bow/stern wave systems can be manipulated by changing design features such as bow and stern shape, but the transverse wave system is (simplistically speaking) only dependent on displacement. This wave is often experienced as a surge, when it meets the shore and can be very destructive, even at low heights.

For a Sydney Harbour ferry this means that the displacement of the vessels needs to be restricted, depending on the part of the harbour in which it operates. Even for the route to Manly, wash can be a big issue at Manly and at Circular Quay. We need to significantly improve on the wash performance of both the Freshwater class and Jetcats. The Freshwater-class ferries are very heavy and therefore put a lot of energy into their transverse/surge wave system. The Jetcats are not as heavy but have a hull design that produces large bow/stern wave systems, especially in the mid-speed range. By today's standards, the Jetcats are a very heavy boat for the number of passengers they carry and, as such, their transverse/surge wave system could be significantly improved.

Many people would have us continue with a Manly ferry service with around 1000 passenger capacity. I disagree. I suggest that we build ferries that will exceed the wash/

environmental targets we have today by using a greater number of smaller vessels.



The Freshwater-class ferry *Narrabeen* passing HMAS *Stuart* outbound for Manly. These ferries have a service speed of 14 kn and a top speed of 18 kn
(Photo John Jeremy)

Cost minimisation

Running a cost-effective Sydney ferry service is definitely a key objective. Looking at the most recent cost breakdowns, wages and maintenance are extremely high. This is partly due to the fleet getting older and passenger numbers dropping, but there are fundamental factors in the ferry operation which could also be improved. For example:

- Improve passenger/crew ratios by sizing vessels appropriately and negotiating with union and maritime safety organisations to update regulations to be more realistic. As wages are such a large component of total cost, operating fewer vessels at higher speeds would reduce costs for the same number of passengers carried.
- Newer more efficient ferries. Ferry design has come a long way just in the course of my career and only a few of these developments can be seen in the current fleet. Modern ferries could see fuel usage and carbon emissions slashed. I believe that fuel savings as high as 40% could be achieved.
- Simple ferries with simple systems will reduce maintenance costs, capital costs and weight. This weight reduction then has a further follow-on reduction for fuel costs.
- Outsource ticketing to newsagents and other retail outlets to cut the cost of ticketing.
- Optimise wharf manning. My plan would be to use

smaller lighter and more-maneuvrable catamaran vessels and it would be possible, with the required crew on board, to berth them with minimal assistance from wharf staff.

- More efficient management. Private ferry operators run much more efficiently than Sydney Ferries.
- Wharf costs are a complex issue, as our ferry service is to be compared to buses and trains. The issue then becomes: do buses and trains pay for their infrastructure? Does the cost of running buses include the exclusive use of bus lanes? Wharves can become significant retail centres, the value and income from which will be enhanced by a better ferry service.

Reliability

The ferries must be able to achieve the high level of reliability we expect. A lot of ferry operators expect 98% as the required level of service. This is very onerous as it also has to accommodate the extreme weather cancellations we get in Sydney.

The vessels have to be set up to be easy to maintain and check, and this will almost certainly represent a small increase in capital costs but be very worthwhile. The systems need to be simple and reliable. There may be some exceptions to this philosophy but only with good reason, for example high-quality radar for night operation and modern toilet systems to minimise water use and weight. The weight of effluent and water being carted around the harbour can cost a great deal in extra fuel.

In my experience, the high-tech efficient diesel engines we use in today's ferries need to be run at no more than 85% of maximum power (MCR) for all the maintenance targets to be achievable. History has shown that above 85% MCR, unpredictable engine breakdowns can be expected.

The Jetcats have had poor engine-room ventilation since they were designed. The cool outside air is drawn over the hot turbochargers before going into the air filters. As a result, the engines have had difficulty achieving full power and the boats have suffered many engine room fires. Good engine-room ventilation is paramount for reliability.

Vessel Selection

Weight in ferries is extremely important. It is more critical than it is in road transport, but not as critical as in aircraft. A cheap ferry will be heavy and hard to maintain so, when selecting a vessel, we must be conscious of weight, maintenance and quality. Capital costs are very big factors in the cost equation so, if an operator were to maximise short term profits, he would choose a vessel that would not be suitable for Sydney ferry service.

The new ferry needs to be an icon of Sydney, and this will involve some extra style and complexity in the design. Capital cost will increase and once again, if we were to maximise short-term profits, this would not be possible. My wave-piercing catamaran designs represent state-of-the-art ferry technology and style, and their presence around the world makes them an ideal icon for Sydney harbour. Haba Dive in Port Douglas, QLD has used this unique design to positively distinguish themselves from their competitors.



Haba Evolution, a Stuart Frezier Marine 27 m wave-piercing catamaran
(Photo courtesy Stuart Frezier Marine)

Capacity

For the Manly–Circular Quay run I have assumed a load of 2000 passengers per hour in peak times. I suggest a 10 minute timetable with six 350-passenger vessels travelling at up to 30 kn. As passenger demand tapers off, speed can be reduced to reduce costs. One complete vessel would be kept in reserve to substitute for routine maintenance of the fleet.

Size and Speed

An optimised vessel for the above would be in the range of 35 to 42 m and be capable of running efficiently at a wide range of speeds.

Displacement

The design should be built structurally light and strong to handle the roughest Sydney Heads crossing. It is quite usual for our designs to be both lighter and stronger than the competition. The fit-out should incorporate lightweight materials as far as practical. A low-displacement design will have superior fuel consumption and low carbon emission.

Fuel efficiency

Good hydrodynamic hull design will ensure good fuel efficiency and minimal wash. We must choose engines which are more efficient, and consider alternatives such as bio-diesel and natural gas.

Seakeeping

The Sydney Heads crossing can be quite nasty in bad weather, worse than further offshore. Off Middle Head the reflected swells combine with the incoming seas to create holes that these ferries can fall into. Interestingly the Freshwater-class ferries always avoid Middle Head, while Supercat incidents occurred there.

The Freshwater-class ferries roll to large angles and I don't consider them to be good sea boats. The Jetcats with their high freeboard handle these rough conditions well, and should be used as a benchmark for the seakeeping of new designs.

Different catamaran designs can perform very differently in the same seaway, and our wave-piercing designs have an excellent reputation. DNV has recognised this with lower accelerations in their design rules. Our 27 m ferry for Haba Dive was delivered from Brisbane to Port Douglas in following seas up to 6 m, and performed beyond our expectations. Our wave-piercing catamaran configuration has much higher freeboard forward which reduces the chance of water getting on deck and causing havoc. They effectively

give you a greater degree of safety in rough weather over conventional catamarans.

An active ride-control system is standard on every Incat Tasmania wave-piercing catamaran. It improves motion and reduces the incidence of seasickness onboard. The extra cost is offset with fuel savings as the system also improves the hull's attitude to the water, even in smooth conditions. I would suggest that active ride-control would be essential for the Manly run.

Conclusions

I truly believe that it is possible to have Sydney Harbour ferries that are an icon for Sydney and can be more cost effective than other forms of public transport. To achieve this the designer, builder, operator, NSW Government, NSW Maritime Authority and marine unions need to work together to achieve the best possible result.

The vessels must be simple and cost effective, with the following exceptions:

- The vessels must have style which complements Sydney and its harbour.
- They must be as light a practical to minimise wash and ensure maximum efficiency.
- They will feature a lightweight, low water use, toilet/sullage system.
- They will utilise active ride-control to reduce motions and reduce seasickness.
- The main engines will be sized to achieve in service speeds at 85% MCR.

The table shows some sample ferry cost calculations for a version of our 27 m wave-piercing catamaran design, capable of carrying up to 200 passengers. Although the passenger numbers are not the required 350 I have suggested the cost breakdown and costs per passenger should be similar.

7x400 Passenger Ferries, cost Summary - Manly to Circular Quay					
SFM "MANLY SEACAT" Design					
	Invested	i rate	Daily Cost		
	\$ 49,000,000.00	7.5%			
	p+i over	15 years			
Capital Cost	\$454,236.06	per month	\$14,933.79	per day	
	pa	% of Value			
Maintenance Costs	\$ 1,225,000.00	2.5%	\$ 3,356.16	per day	
	Vessel and public indemnity pa	% of Value			
Insurance Costs	\$ 367,500.00	0.75%	\$ 1,006.85	per day	
Approx Overhead Costs ?? (Wharves, management etc.)			\$ 3,500.00	per day	
Approx Crew Costs (3 crewx49hrs per day x \$50per hr x 150%)			\$ 4,024,125.00	p.a.	\$11,025.00 per day
		Subtotal	\$33,821.80	per day	
Daily Diesel Fuel cost at	30 knots	\$15,120.33	per day	31% of tot	
	26 knots	\$13,025.00	per day	28% of tot	
	22 knots	\$11,077.73	per day	25% of tot	
	13 knots	\$ 7,110.00	per day	17% of tot	
Total Daily Running costs at	30 knots	\$48,942.14	per day		
	26 knots	\$46,846.80	per day		
	22 knots	\$44,899.53	per day		
	13 knots	\$40,931.80	per day		
Passenger number calculations					
	Assuming	98 trips per day			
Number of passengers Carried at	125 pax per trip	12250 pax per day.(31%full)			
	200 pax per trip	19600 pax per day.(50%full)			
	275 pax per trip	26950 pax per day.(69%full)			
	350 pax per trip	34300 pax per day.(88%full)			
Trip costs per passenger		Trip costs per passenger			
	% of max pax	31%	50%	69%	88%
	at 30 knots	\$ 4.00	\$ 2.50	\$ 1.82	\$ 1.43
	at 26 knots	\$ 3.82	\$ 2.39	\$ 1.74	\$ 1.37
	at 22 knots	\$ 3.67	\$ 2.29	\$ 1.67	\$ 1.31
	at 13 knots	\$ 3.34	\$ 2.09	\$ 1.52	\$ 1.19
Fuel Consumption data		6 Nautical mile Journey			
	Vknots	litres/nm	Litres used	Journey time minutes	Fuel Cost @ \$ 1.30
	30	17.90	107	12.0	\$ 139.60
	26	15.16	91	13.8	\$ 118.21
	22	12.61	76	16.4	\$ 98.34
	13	7.42	45	27.7	\$ 57.86
JetCat Estimate	27	24.59	148	13.3	\$ 191.82

EDUCATION NEWS

Australian Maritime College

AMC/UTAS Integration

The Australian Maritime College (AMC) and the University of Tasmania (UTAS) integrated on 1 January 2008, with AMC becoming a specialist institute of the University. AMC will continue to build Tasmania's reputation as a centre of expertise in maritime-related studies, including naval architecture, ocean engineering and maritime hydrodynamics, integrated transport logistics, marine science and technology, fisheries and sustainable management of ocean resources. As an enhanced maritime institute of the University, AMC will expand on its "applied marine" focus and its established strong links with industry, building on its reputation, course offerings and research activity in key marine/maritime sectors.

AMC will operate as a semi-autonomous institute under the governance of the Council of the University, with an industry-focused Board and a Principal/CEO who will also be a member of the University's senior management team. Assets which AMC brings into the integration with the University of Tasmania, including its intellectual property, buildings, research infrastructure, vessels, and cash reserves, will be applied to expand activities and support the growth of AMC. All Commonwealth Government funding provided for AMC, such as national institute funding, will similarly be used to expand activities and stimulate growth. AMC will have clearly-defined operational and capital-expenditure budgets within the University's financial framework. Realisation of economies of scale and working cooperatively will benefit stakeholders, by improving student and staff experiences, as well as providing a stronger client service to employers, industry and government.

AMC will continue to ensure that Australia meets its international obligations in relation to education and training of seafarers. It will remain at the leading edge of global technological and economic changes which affect international shipping and the inter-modal transportation chain. The University and AMC currently offer courses in a number of complementary areas, and the integration provides the opportunity to exploit these and other areas of synergy resulting in the strengthening of courses and activities, an enhanced international reputation, and a springboard for growth at the Launceston campus. AMC will continue to embrace maritime disciplines in the broadest sense, including the full range of its existing programs, and will be able to take advantage of greater access to research and scholarship funding sources.

AMC Search Ltd will continue to be a commercial arm of the unified body.

Professor Tom Hardy will continue in the role of Director of the National Centre for Maritime Engineering and Hydrodynamics. The start of the 2008 academic year has seen a change in personnel running the academic programs within this National Centre, with Associate Professor Norman Lawrence stepping down after seven years at the helm. Associate Professor Dev Ranmuthugala has taken over this role. Professor Neil Bose will continue to run all

research activities within the National Centre.

Educational awards (such as the Bachelor of Engineering degrees in the fields of naval architecture, ocean engineering and marine and offshore systems) will recognise graduating students as graduates of the Australian Maritime College, an institute of the University of Tasmania.

AMC and DSTO Research Collaboration

Research collaboration between the Defence Science and Technology Organisation (DSTO) and AMC continues to grow, with a number of interesting projects active at present, each involving members of AMC academic and facility staff.

For example, work has commenced on a two-year collaborative project focusing on measuring the motions and loads experienced by a frigate in severe seas. A hydroelastic model of a generic-style frigate is currently being designed and constructed. It will undergo testing in the AMC towing tank and model test basin to measure motions and bending moments for a range of sea conditions. The work will enable the validation of numerical codes for predicting the motions, and loads on warships. The project team includes Giles Thomas and Tim Lilienthal from AMC and Bernie Phelps from DSTO.

In a different project, DSTO is currently evaluating a number of commercial underwater vehicles in parallel to developing their own Remote and Autonomous Underwater Vehicle (ROV and AUV) platforms. As part of this task, the AMC and DSTO jointly carry out computer modelling as well as full-scale and scale-model testing in AMC's hydrodynamic facilities. The computer analysis is mainly based on CFD modelling, enabling the analysis of existing and proposed systems. These models enable the evaluation of changes to the vehicle configuration before their implementation.

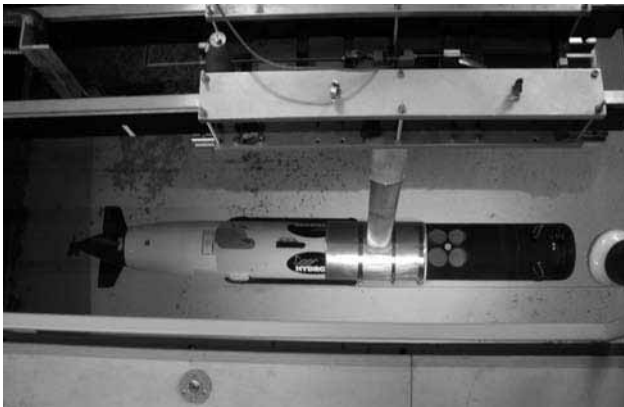
The experimental work supplements the analytical investigations as well as providing data to validate the CFD models. The former is also used to compare existing commercial vehicles against each other, as well as the available configurations for each vehicle. Data from the CFD and experimental work is also used to calibrate new systems, develop the vehicle control algorithms, and to optimise the hydrodynamic characteristics in conjunction with payload and size requirements. Currently a number of new vehicle configurations and designs are being evaluated through these methods. The AMC project team includes Dev Ranmuthugala and two final year naval architecture students, Cameron Whitton and Phil Murdoch.

Another project began recently in which it is aimed to undertake a preliminary study into predicting the motions of military platforms when operating in shallow waters. A series of physical scale-model experiments has been completed in the model test basin using the new non-contact motion capture system donated by DSTO to AMC (see *The ANA*, November 2007, page 33). The AMC staff involved include Martin Renilson and Gregor Macfarlane. Adam Rolls, a final-year naval architecture student, will also conduct his research project on a similar topic during 2008.

There are also several active projects currently underway in collaboration with DSTO within the cavitation field (these will be covered in more detail in an upcoming edition of *The ANA*).



Stuart Cannon (DSTO), seen here with Martin Renilson, recently paid a visit to AMC to witness a series of scale model experiments being conducted in the AMC Model Test Basin
(Photo courtesy AMC)



An AUV under test at AMC
(Photo courtesy AMC)

The AMC Establishes new Port Development Unit

Australia relies heavily on its ports for both exports and imports to support economic development in the country. With the current boom in resources, these are being stretched and are proving to be a critical bottleneck to further economic prosperity. Hence, there is a desperate need to make the ports more productive.

In order to bring together the extensive professional know-how in this field already existing at the Australian Maritime College, a Port Development Unit has been established which will sit across its three national centres and tap into expertise ranging from hydrodynamics, ship handling and channel design, to logistics, port operations and environmental issues.

Professor Martin Renilson has been appointed Director of this Unit, and he will lead activities in this field at AMC. 'I am sure the synergy inherent in this unit will result in significant benefits to industry and government,' Professor Renilson said. He can be contacted by email at m.renilson@amc.edu.au or telephone (03) 6335 4667.

T-Foil testing at AMC

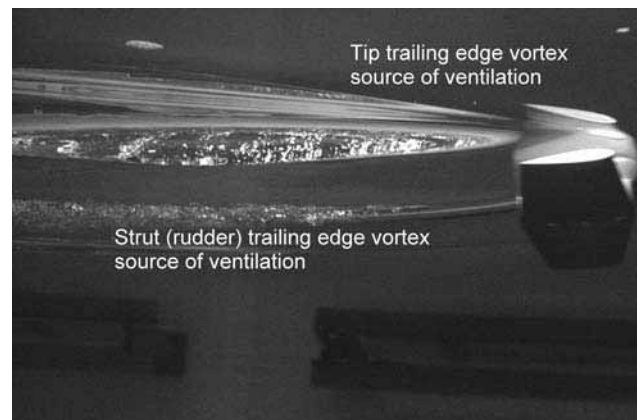
December 2007 saw the towing tank conduct the first hydrofoil tests at the AMC for a decade. The impetus has come from an increasing interest in sailing hydrofoils, now quite dominant in the international Moth class.

February 2008

Assoc. Prof. Paul Brandner and Dr Jonathan Binns are supervising Misha Merzliakov in his final year research project looking at a generic t-foil which has the same dimensions as an aft foil attached to the rudder of a Moth. Parameters investigated included heel angle, depth of submergence and angle of attack. Flow visualisation was also achieved using the side window recently installed in the towing tank. Although results have not yet been fully presented, intra-test checks have shown the new force balance and test equipment to be producing reliable results.



T-foil seen from above the surface
(Photo courtesy AMC)



T-foil flow visualisation
(Photo courtesy AMC)



T-foil test rig in the AMC towing tank
(Photo courtesy AMC)

AMC Representation at Pacific 2008 International Maritime Conference and Exhibition

AMC had a strong representation at the recent Pacific 2008 Exposition and Congress with no fewer than six staff delivering technical presentations at the International Maritime Conference, including (co-authors in brackets);

Principal Malek Pourzanjani (J. Allsop) — *Law and an Interdisciplinary Approach to Maritime Affairs*.

Professor Tom Hardy (Lou Mason) — *A Synthetic 100 000 year Database of Tropical Cyclone waves*.

Professor Neil Bose (and others) — *Memorial University's Explorer AUV Missions in Coastal Newfoundland*.

Professor Martin Renilson — *Cost Savings for Warships using the Reconfigurable Hull Form Concept*.

Associate Professor Dev Ranmuthugala (Roger Neill) — *Quantifying Flight Characteristics of Unmanned Underwater Vehicles*.

Associate Professor Dev Ranmuthugala (Andrew Davies, Jay El-Atm and Yan Tso) — *Reduction of Roll Motion of a Surfaced Submarine in Beam Seas*.

Roberto Ojeda (Ganga Prusty) — *Geometric Non-linear Analysis of Stiffened Structures: a Critical Review*.

Gregor Macfarlane (Greg Cox) — *A Guide to the Assessment of Vessel Wash within Sheltered Waterways*.

AMC graduate, now DSTO employee, Tristan Andrewartha, presented a paper co-written by Dr Giles Thomas (AMC) and Stuart Cannon (DSTO) on the seakeeping behaviour of a damaged warship. In addition, Malek Pourzanjani, Neil Bose and Martin Renilson each chaired a session and AMC and AMC Search Ltd operated a stand at the exhibition.

Incat Crowther teams up with AMC to Analyse High Speed Hull Forms

Since the early 1980s Australia has been at the forefront of the high-speed vessel industry producing many of the world's aluminium passenger ferries and workboats. Incat Crowther has long been at the centre of this development, providing successful designs for many shipyards, here in Australia and abroad. They have currently designed over 250 craft which operate successfully in some 29 countries.

To further advance the world-leading technology employed by Incat Crowther, they have recently signed a research agreement with the Australian Maritime College. The work being conducted under this agreement is initially focussing

on studying the comparative hydrodynamic performance of monohull, catamaran and trimaran hull forms. One of the primary objectives of this work is to develop a tool to facilitate comparison of each of the three hullform types, such that the best option can be chosen for any given application. Professor Martin Renilson, Professor of Hydrodynamics at AMC, said: "there is a lot of speculation into whether monohulls are better than catamarans, and recent developments in trimaran technology are challenging both these configurations. This work will develop a sound basis for comparison, enabling the designer to select the best configuration to meet the client's needs."

Incat Crowther commented that "many studies have been undertaken into these hull forms individually, creating beliefs that are generally biased one way or another. Our aim here is to produce a series of unbiased outcomes which will enable us to offer better design solutions to our clients in the future. We felt the extensive knowledge of the hydrodynamics of high-speed craft gained through an interactive approach with industry, made the AMC the logical institution to work with".

The program, which is already underway, is scheduled to produce initial results by mid 2008, with finalisation of design tools by the end of the year.

University of New South Wales

Undergraduate News

New Programs

The new degree program structure, which commenced rolling out for Year 1 students in 2006, rolled into Year 2 last year, and will roll into Year 3 this year. Under the new structure, all courses are worth six units of credit (6 UoC), where, previously, there has been a combination of 3 UoC and 6 UoC courses. The resulting lower number of courses means that students have fewer exams at the end of session, but a heavier reliance is placed on in-course assessment and the consequences of a failure in a big course are more serious.

Feedback from students in Years 1 and 2 so far has generally been positive, especially for the Year 1 introduction to design, ENGG1000 Engineering Design and innovation.

Staff Changes

After five years of supervising the final-year ship-design projects, and teaching about tendering, contract documentation and using classification society rules in NAVL4710 Ship Standards, Graham Taylor has retired from teaching at UNSW. Graham brought a wealth of experience from the ship design, building, operation and high-speed craft sectors to the classes, gave excellent notes to the students and was thorough in marking. He will be missed by students and staff alike.

Craig Singleton has also retired from teaching the hydrodynamics component of NAVL4101 Design of High-speed Craft, and this has been taken over by Phil Helmore.

Thesis Projects

Among the interesting undergraduate thesis projects under way or commencing are the following:

Hydrodynamic Performance of Frigate Hullforms

Rowan Curtis is investigating the performance of frigate hullforms with and without stern flaps. The hullforms are already fitted with integrated stern wedges, and Rowan is investigating whether the performance can be improved, especially for deeper displacements, by extending the buttock lines through the wedges with flaps and, if so, what size the flaps should be and what angle they should have to the wedges. A model had been constructed, which he will test in the towing tank at the Australian Maritime College, and compare the results with those from a hydrodynamic prediction package at UNSW.

Aerodynamic Drag of Hydrofoil Craft

Much is known about the resistance of hydrofoils, but much less is known about the aerodynamic resistance of these vessels. Henry Morgan will be testing a model of a hydrofoil craft in the large wind tunnel at UNSW to measure the aerodynamic resistance in the foil-borne mode. Test will be done with various superstructures to help gain insights into the contribution of the superstructure to the total resistance. Wind tunnel results will be compared with those from CFD analysis.

Post-graduate and Other News

Presentations at Pacific 2008

The Pacific 2008 International Maritime Conference was held at the Sydney Exhibition and Convention Centre, Darling Harbour, from 29 to 31 January.

UNSW academics were involved in the planning and running of the conference, and in presenting papers.

Mac Chowdhury and Gangadhara Prusty were on the papers committee for the conference, and Mac Chowdhury and Phil Helmore both chaired conference sessions.

Among the papers presented at the conference were the following by UNSW postgraduate students and staff:

- *Determination of Ship Grounding and Accident Scenarios of a Geographical Area using Risk Analysis*, Mohed Sidek, A.H. (UNSW), Prusty, B.G. (UNSW) and Ray, T.
- *Geometric Non-linear Analysis of Stiffened Structures: A Critical Review*, Ojeda, R.E., Prusty, B.G. (UNSW) and Lawrence, N.
- *Experimental and Numerical Analysis of Top-hat Stiffeners for Keel Structures*, Raju (UNSW), Prusty, B.G. (UNSW), Kelly, D.W. (UNSW), Ikeda, J. and Lyons, D.
- *Update on van Oortmerssen's Resistance Prediction*, Helmore, P.J. (UNSW).
- *Hydrofoils Applied to Canting-keel Yachts*, Milne R.S. and Helmore, P.J. (UNSW).

Maritime Advancement Australia Award

The Australian Naval Institute, in conjunction with the Australian National Centre for Ocean resources and Security at the University of Wollongong, recently announced the 2008–2009 winner of the Maritime Advancement Australia Award, sponsored by Booz Allen Hamilton, EDS and Saab Systems.

The award is in the form of a two-year grant for research and development in an Australian maritime activity. \$22 000

each year is made available to the winning project. The grant is awarded to the most-promising research or development proposal from any of the various fields of maritime endeavour, including science, the environment, maritime law and policy, defence, commerce, shipbuilding and maritime industry. The intent of the award is that it be available to the widest range of potential researchers and innovators, rather than just one sphere of maritime endeavour.

The 2008–09 award winner is Alison Jones of Central Queensland University. She recently completed her dissertation for her doctorate of philosophy, and her project for the award will be *Marine "refugia" in the Keppel region of the Great Barrier Reef*: a pilot study aimed at identifying, mapping and protecting marine "refugia", i.e. pockets of diversity which can survive extreme environmental disturbance and seed coral regeneration on impacted reefs. The project will be conducted in collaboration with the Australian Institute of Marine Science and in close consultation with the Great Barrier Reef Marine Park Authority.

A number of other applicants for the 2008–09 award were considered by the selection committee to be of a quality which also merited recognition. Certificates of Merit were therefore presented to Emeritus Professor Lawrence Doctors of the University of New South Wales for his proposal *A High-efficiency Environmentally-friendly River Ferry*, and to Dr Mateus Mangala for *Sustaining Supply Chains in an Energy-constrained Future* and, in conjunction with Mr Adrian Sammons, *A New Approach to Port Choice Modelling*.

The award and merit certificates were presented by Vice-Admiral Russ Shalders AO, CSC, RAN and Chief of Navy and Patron of the Australian Naval Institute, at the final session of the RAN's Sea Power 2008 conference (as part of Pacific 2008) on Thursday 31 January at the Sydney Convention and Exhibition Centre.

Alex Churches AM

Adjunct Associate Professor Alex Churches was named in the 2008 Australia Day Honours List, receiving an AM (Member of the Order of Australia) for his services to engineering (particularly the promotion and development of mechanical design), to education and through professional organisations. For most of his academic career, Alex showed his strong dedication to the engineering profession and championed the cause of engineering design and development.

Many ex-students will remember Alex for his insistence on spending thinking time on a design to get it right the first time.

Engineering Alumni Dinner

The year of graduation is taken as the year in which your testamur was awarded. For most graduates, this is usually in the year following that in which their last coursework requirements were completed. For example, if you completed your coursework requirements at the final exams in November 2007, then you would expect to graduate in April 2008, and 2008 would be the year of your graduation.

The Engineering Alumni Anniversary Dinner for 2008 will be held on Friday 19 September 2008 in Leighton Hall, Scientia Building, for the graduates of 1958, 1968,

1978, 1988 and 1998. So, if you graduated with Antony Krokowski or Tauhid Rahman (1998), Peter Crosby or Tony Laubreaux (1988), Peter Hayes or Mike Warren (1978), or Richard Caldwell or Philip Hercus (1968), then you should be dusting off the tux or cocktail dress, polishing your shoes and asking your partner to keep the evening of Friday 19 September free.

The latter class is distinguished by being UNSW's third graduating class of naval architects, the second having been David Hill, John Jeremy and Conan Wu in 1967, and the first having been Brian Robson in 1963.

Watch this space for updates, or check the Engineering website www.eng.unsw.edu.au/news/index.htm.

Phil Helmore

THE PROFESSION

Collaborative Relationship Supports Marine Standards

In a move to support the marine regulatory system across Australia, the National Marine Safety Committee (NMSC) and Standards Australia have signed a Project Management Services Agreement which will aid in the development and review of Australian Standards for marine safety. Made up of representatives of the Commonwealth, State and Northern Territory Marine Authorities, the NMSC was established in 1997 to guide the development and review of consistent marine safety standards, legislation and policies within Australia.

The agreement was signed by Ms Maurene Horder, CEO of NMSC, and Mr John Tucker, CEO of Standards Australia, on 19 November 2007. The agreement establishes a collaborative relationship between Standards Australia and the NMSC to enable both parties to better manage the development of standards to support the marine industry across Australia.

Both organisations believe that aspects of marine safety can be accelerated by NMSC providing direct support for the development of some of these standards. Under the agreement, Standards Australia will pilot the revision of AS1799.1—1992 *Small Pleasure Boats Code — General Requirements for Power Boats*, through a co-resourced arrangement allowing the standard to be made available via free download from the NMSC website for a period of seven years from the date of publication.

Additionally, Standards Australia will accelerate the development of marine standards with the assistance and direct support of the NMSC who will provide the project-management services for the related projects and committees.

For further information, contact NMSC CEO Maurene Horder or Communications Officer Rosemary Pryor on (02) 9247 2124.

Call for Comment on NSCV Navigation Equipment

The National Marine Safety Committee (NMSC) is now seeking public comment on a new national draft standard for navigation equipment. The National Standard for Commercial Vessels (NSCV) Part C, Subsection 7C — Navigation Equipment will replace those parts of USL Code Section 13 — Miscellaneous Equipment which pertain to navigation equipment.

NMSC's CEO, Maurene Horder, noted that much has changed in the field of electronic navigation equipment since the USL Code was published. "To some extent, this draft is simply recognising the type of equipment currently on the



John Tucker (SA) and Maurene Horder (NMSC) signing the Project Management Services Agreement
(Photo courtesy NMSC)

market and current navigation practices," Ms Horder said. "The new standard deals with the minimum requirements for the carriage of navigation equipment to ensure the safety of the vessel and recognises that many vessels may go beyond that minimum for operational reasons — for example, to keep to the most economic course or to assist in locating fish. And, because watchkeeping is such an important element of safe navigation, the draft standard proposes some additional requirements for the carriage of night-vision aids and binoculars," she said.

The requirements for the carriage of radar equipment have also been extended, compared to the USL Code, and the draft encompasses the navigation equipment needed for collision-avoidance equipment such as sound signals, navigation lights and navigation shapes.

Ms Horder said that the paper also seeks comment on the proposal to refer to "coastal voyages" rather than Area of Operation C in the requirements. A coastal voyage is defined as a voyage within 30 n miles of land, rather than within 30 n miles of a safe haven. "In practice the two areas are similar; however, the need for additional navigation equipment is based on whether or not a vessel can visually observe features on the coastline, rather than the ability to return to a safe haven in adverse conditions," she said.

In summary, the draft standard specifies minimum performance-based requirements for navigation equipment in relation to the class of vessel, its length and operational area.

The draft standard's accompanying Regulatory Impact Statement (RIS) has also been released for comment.

For further information, contact NMSC CEO Maurene Horder or Communications Officer Rosemary Pryor on (02) 9247 2124.

To obtain a copy of the draft standard and RIS, please contact the NMSC Secretariat on (02) 9247 2124 or visit www.nmsc.gov.au. The public comment period closes on 5 March 2008, so get your copy today and comment away.

Technical Advisory Panel Guides ABP Standard

The National Marine Safety Committee (NMSC) has instituted a system of technical advisory panels (TAPs) to consider interpretations of national standards for marine safety. The panels are composed of technical experts and their role is to help establish a uniform national approach to applying the national standards in practical situations, consistent with the outcomes which those standards are seeking to achieve.

NMSC's Standards Team Leader, John Henry, said that "importantly, the TAP's role is not to analyse the words in the standard but, rather, to look at the underlying safety principles and ensure that they are not compromised"

A Technical Advisory Panel met recently to develop some interpretation guidelines for the national standard for the Australian Builders Plate (ABP). The request for the interpretation came about after an apparent inconsistency was identified when determining the buoyancy performance of boats under 6 m in length which rely upon air compartments for their source of buoyancy.

Mr Henry explained that the Panel was asked to clarify the question of whether such a boat could meet the requirements of the ABP with a single, integral air compartment — which seemed to be allowed if the buoyancy performance was determined using ISO 12217-3 — when other technical standards referenced in the ABP standard required at least three compartments.

"The Panel considered whether a single air compartment met the safety objectives of the ABP standard, given the possibility of air compartments leaking," he said. "The Panel concluded that, if air compartments are used as a source of buoyancy — regardless of which technical standard is employed to check the performance — the buoyancy shall be assessed with the two largest compartments vented at their high and low points, effectively meaning that a single air compartment is not adequate".

More detailed information on the Panel's latest findings and interpretation on the ABP can be found in the Guidance Circular, *Technical Interpretation of Buoyancy Performance of Recreational Boats in Relation to the ABP Standard*, now published on the NMSC website www.nmsc.gov.au

The NMSC aims to achieve nationally-uniform marine safety practices and is made up of the CEOs of Australia's marine safety agencies.

For further information, contact NMSC CEO Maurene Horder or Communications Officer Rosemary Pryor on (02) 9247 2124.

Issues Paper on Accommodation and Personal Safety

An issues paper on the NSCV Part C Section 1 — February 2008

Accommodation Arrangement and Personal Safety is currently being drafted and is expected to be released for public comment in March. It is likely that the closing date for comment will be around the end of May so, if you have an interest in this area, then keep an eye on the website www.nmsc.gov.au for the release of the issues paper.

Marine Safety in the Spotlight

Professor Bilal M Ayyub, a maritime risk analysis expert, author and professor of civil and environmental engineering from the University of Maryland, USA, has been confirmed as a major keynote speaker for the Marine Safety Conference 2008.

Professor Ayyub will speak about risk-based analysis and design as well as safety equipment performance — making special reference to hurricane management. He will join a host of other keynote speakers at the conference, to be held from 27-29 May in Adelaide, including:

- Dr Graeme Peel, Qantas's Group General Manager of Occupational Health and Safety, who will talk about how he has overseen significant developments in occupational health and safety across the group.
- Mr Peter Foley, from the Australian Transport Safety Bureau, who will focus on the changing face of international marine casualty investigation.
- Mr Matt Mitchell, who has first-hand experience on the human impact of a marine accident, and delivers a message of how easily a life-changing injury can occur.

NMSC CEO Maurene Horder explained that the conference would also discuss the future development of the industry in relation to the uptake and acceptance of new technology. "The industry employs more than 230 000 people directly in Australia, and we want to put processes in place to ensure that this number continues to grow."

Other areas in focus on Tuesday 27 May and Wednesday 28 May include developments in occupational health and safety, training, fishing and aquaculture, design and construction, commercial vessel standards, research, search and rescue, recreational initiatives, legislation, the environment, pilotage, ports and navigation. The third day of the conference on Thursday 29 May will involve workshops and site visits to South Australia's marine industry locations.

The Marine Safety Conference 2008 also presents a chance for companies to showcase their business to government and industry representatives. This is the fifth bi-annual marine safety conference hosted by the NMSC, and it has attracted more than 1500 delegates since it was first held.

The NMSC aims to achieve nationally-uniform marine safety practices and is made up of the CEOs of Australia's marine safety agencies. For further information about the conference, please visit www.nmsc.gov.au and click on Marine Safety Conference 2008, or contact NMSC Communications Officer Ursula Bishop on (02) 9247 2124.

National Lifejacket-wearing Study Released

The first major study of Personal Flotation Device (PFD) wearing rates to be published in Australia will provide a basis from which to develop strategies to encourage PFD wear amongst recreational boaters.

The Personal Flotation Devices Wear Rate Study 2007,

undertaken by marine safety authorities and the Monash University Accident Research Centre, was released on 4 December 2007 by the National Marine Safety Committee. The study recorded PFD wearing on powered recreational vessels from 116 popular locations in Queensland, New South Wales, South Australia and Western Australia during the 2006/07 summer boating season. Victorian data from 2005 was included as a base line.

One major finding in all four states was that if skippers wore a PFD, passengers were more likely to be wearing a PFD. When the skipper was wearing a PFD, the wear rate amongst passengers in each state ranged from 50% to 94%. In contrast, the wear rate amongst passengers of skippers who were not wearing PFDs ranged from 4% to 17%.

NMSC Chair, Neil Aplin, announced that the report had influenced a new education campaign for 2007/08, "Lifejackets — Skippers Take the Lead" with cricketer Matthew Hayden, which motivates skippers to wear lifejackets and asks them to ensure that their passengers do the same.

"This campaign gives me the opportunity to demonstrate that not only do incidents happen, they happen really quickly and you have people's lives at stake," explained Matthew, referring to the day a few years ago when his boat hit a wave, capsized and sank off North Stradbroke Island. He had gone out for a day of fishing with fellow cricketer, Andrew Symonds and friend Trent Butler, when they suddenly found themselves in the water without lifejackets on. It took the trio an hour to swim to shore, battling currents, crashing waves and eventually, shock and exhaustion.

During the study, observers noted information on the site, weather and water conditions and the type and length of boat, boating activity, people on the boat and their PFD wear status. A total of 9537 boaters on 3847 vessels were observed in Qld, NSW, SA and WA over the 2006–07 summer boating season. Study highlights are as follows (individual state statistics not identified):

- The overall PFD wear rate in all states was low, ranging from 6% to 22%.
- PFD wear was higher among children (aged 0-17 years) than adults (20-64%). PFD wear rates were also consistently higher in younger children (aged <10 years) than older children/adolescents (aged 10–17 years). The rate for children aged less than 10 years varied between 33% and 78% and for children aged 10–17 years the rate was between 11% and 57%.
- In all four states, the overall female PFD wear rate was 3% to 6% higher than the male rate.
- In all states except one, the wear rate of seniors (60 years and older) was 2% to 5% lower than the wear rate of adults aged 18-59 years.
- The PFD wear rate on open boats was very low to low, ranging from 3% to 11%.
- The PFD wear rate on cuddy/half-cabin cruisers was very low to low, ranging from 2% to 11%.
- Fishing was the most commonly observed boating activity. The PFD wear rate among fishers was consistently very low from 2% to 8%.
- General boating/pleasure cruising was the second most-common boating activity observed. The PFD wear rate

of persons engaged in general boating activities was very low to low, ranging from 4% to 15%.

- In all four states the PFD wear rate was highest among PWC riders — 78% for one state and above 90% in three states (PFD wear is compulsory for PWC riders in all states and territories except NT.)

The public awareness campaign ran from December 2007–February 2008 and featured magazine and radio advertising, television and radio community service announcements and promotional material for boat shows around the country. The national campaign also complements state-based awareness campaigns such as NSW Maritime's *You're the Skipper, You're Responsible* Campaign.

According to NMSC's Incident Database, 88 people died in Australian waters in 2005–06, and 29 people have perished in marine incidents from 1 January–30 June 2007. In 2005–06, 55% of fatalities resulted from a person falling overboard (33%) and vessel capsizing (22%) while in the first half of this year, 43% of fatalities were as a result of boat capsizing or a person falling overboard.

"What this clearly shows is that most fatalities occur from people ending up in the water — and that's why safety equipment such as PFDs are important," concluded Neil Aplin. "There is a long-standing requirement in most of Australia to carry PFDs on board a recreational craft for each person."

NMSC's Industry Advisory Committee Chair and Managing Director of major boat operator Riverside Marine, Hume Campbell, endorsed both the release of the Personal Flotation Devices Wear Rate Study 2007 and the "Lifejackets — Skippers Take the Lead" 2007–08 summer boating campaign.

"I fully endorse the wearing of lifejackets as a safety precaution," Mr Campbell said. "It doesn't matter how sound the boat is, skippers should always be aware of their own safety and the safety of their crew and passengers".

Another NMSC study, The National Assessment of Boating Fatalities in Australia 1992–98 Report found that people who survived a boating incident were more than two times more likely to have been wearing a PFD compared to those who died.

The NMSC aims to achieve nationally-uniform marine safety practices and is made up of the CEOs of Australia's marine safety agencies.

For further details on the Lifejackets — Skippers Take the Lead campaign or the PFD Wear Rate Study 2007, go to www.nmsc.gov.au or www.safeboating.org.au. Please contact your local marine safety agency for information about personal flotation device laws in your state.

For further information, contact NMSC Communications Officer, Ursula Bishop, on (02) 9247 2124 or NMSC Standards Team Leader, John Henry on (02) 9247 2124.

NMSC Strategic Plan

National Marine Safety Committee and Industry Advisory Committee members joined industry representatives for a strategic-planning session in Sydney in December as the first step towards developing a 2008–12 Strategic Plan.

NMSC's CEO, Maurene Horder, explained that the NMSC

was close to completing the key priorities contained in its 2003–08 Strategic Plan. “It is vital that we develop our strategic priorities for the next five years, and I would like to thank all participants for their valuable and insightful feedback.”

Time was spent reviewing the context in which the NMSC operates as well as its capabilities. Aspirations and strategic priorities for the next five years were discussed. These will be submitted to all Ministers for endorsement.

NMSC IAC Member Changes

Outgoing members of NMSC’s Industry Advisory Committee, Ian McAndrew (Australian Marina Management), Bob Pennington (Australian Seafood Industry Council) and Capt. Richard Teo (Seafood and Maritime Industries Training), have been appointed as IAC Alumni to ensure their continued involvement in marine safety initiatives.

NMSC’s CEO, Maurene Horder, explained that the IAC Alumni Association was formed to retain the expertise of past members as an important resource and sounding board. “Ian, Bob and Richard have provided vital contributions to the NMSC, from giving advice on projects on behalf of their industry sectors to participating on sub-committees

and reference groups. I would also like to thank former IAC Chair, Marcus Blackmore, who has also agreed to be an alumnus.

“As alumni, they will be able to continue to be ambassadors for the work of the NMSC and will be invited to sit on the NMSC’s Technical Advisory Panel to advise on technical issues and marine safety standards.”

Ms Horder welcomed some new appointments to the IAC “who would provide valuable feedback on the work of the NMSC”, including:

- Mark Bradley, CEO, Club Marine
- Sherry Donaldson, CEO, Australian Marine Industries Federation
- Greg Hodge, CEO, Defence Maritime Services
- John McKeddie, Managing Director, Peninsula Searoad Transport
- Eddie Seymour, National Training and Development Officer, Maritime Union of Australia
- Rob Tulk, Senior Naval Architect, One2Three Naval Architects
- Tony Briggs, Managing Director, Coral Princess Cruises

INDUSTRY NEWS

Wärtsilä wins Contract for Powering UK’s Future Aircraft Carriers

Wärtsilä has been awarded a contract worth approximately €30 million for the manufacture and supply of the main diesel generating sets and their auxiliary and support systems for the Royal Navy’s Future Aircraft Carriers (CVF) by Thales Naval Division on behalf of the Aircraft Carrier Alliance. The contract award was marked by a ceremony held on HMS *Victory* at Portsmouth Naval Base, UK, on 30 November 2007.

The Wärtsilä engines were selected for their durability, reliability, economy, long periods between maintenance and full compliance with today’s and foreseen emissions regulations. For survivability the main diesel generating sets will be installed in two separate machinery spaces.

The main diesel generating sets will form part of the Integrated Electric Propulsion (IEP) system. The selected prime movers for the generating sets are two 12-cylinder and two 16-cylinder Wärtsilä 38 engines for each ship and will supply 40 MW of the total installed power of over 100 MW, the remainder coming from two gas-turbine alternators. They will be the largest diesel engines ever supplied to the Royal Navy. The first ship set of diesel generators will be delivered in 2009, with the equipment for the second ship following in 2011.

The carriers, HMS *Queen Elizabeth* and HMS *Prince of Wales*, will have a displacement of around 65 000 t and a length of 284 m. They will be the largest and most powerful warships ever built in the United Kingdom. The hulls are being planned for a 50-year service life and the ships will be built in modules by selected naval shipbuilding yards around the UK, with final assembly in Rosyth. Each ship will have a complement of around 1450 including aircrew, and will support around 40 aircraft including the F35 and airborne



An impression of the new Royal Navy carriers
(BAE Systems image)

early-warning aircraft.

This is the latest of a series of highly significant contracts for Wärtsilä for equipment supply and support to the Royal Navy. Earlier contracts include the main generator engines for the IEP system of the Albion-class landing platform dock vessels (LPD) and the diesel generating sets in the IEP installation of the Type 45 destroyers, which will provide the air-defence support to the aircraft carriers and their carrier task groups.

More than 500 Wärtsilä RT-flex Common-rail Engines Sold

Orders for Wärtsilä RT-flex electronically-controlled common-rail marine engines have passed the 500-engine mark since the RT-flex common rail system was introduced in 1998. Although many of these are of the most powerful RT-flex96C type, progress has been achieved with the smallest, the RT-flex50, which has a rapidly growing order book. The new RT-flex82C and RT-flex82T engine types have also made a good start with orders being booked by Hyundai Heavy Industries Co. Ltd and Doosan Engine Co. Ltd, both in Korea.

The RT-flex common-rail system was introduced by Wärtsilä in 1998 when it was first applied in a research engine. The first production engine then went into service in September 2001. It was a major landmark in diesel-engine development, being the largest diesel engine ever built with electronically-controlled common-rail fuel injection and valve operation. Since then RT-flex engines of all sizes from 500 mm bore up to the largest 14-cylinder RT-flex96C with a power output of 80 080 kW have entered service.

So far, orders for Wärtsilä RT-flex engines have been booked for installation in newbuildings at 42 shipyards for 65 shipowners. The engines are being built by 12 engine builders under licence from Wärtsilä. Indeed, it is particularly thanks to the licensed engine builders that the new RT-flex engine technology has been so successfully established in the marine engine market.

Regarding the most powerful of these marine engines — the RT-flex96C type — Wärtsilä's licensed engine builders have booked a number of significant orders in recent months.

Eight RT-flex96C engines have been ordered for a series of large container ships contracted by the French shipowner CMA CGM in Korea. The eight ships will be delivered in 2009 and 2010, with the engines being built by Doosan Engine Co. Ltd.

Eight 13 100 TEU container ships contracted by the Rickmers Group will each be powered by a 12-cylinder Wärtsilä RT-flex96C engine. The ships, which will all be time chartered by a major containership operator, will be built by Hyundai Heavy Industries Co. Ltd, Korea, at its Ulsan shipyard for delivery in 2010 and 2011. The engines, each having a maximum continuous power of 68 640 kW at 102 rpm, will be built by Hyundai's Engine and Machinery Division (EMD).

Another Hamburg shipowner, Hamburg Südamerikanische Dampfschiffahrts-Gesellschaft KG (Hamburg Süd), recently decided to switch from mechanically-controlled RTA96C engines to RT-flex96C common-rail engines for six 7100 TEU containerships ordered earlier this year from Daewoo-Mangalia Heavy Industries SA in Romania. The ships are due for delivery in 2010. Each vessel will be powered by an eight-cylinder RT-flex96C engine of 45 760 kW output. The engines will be built by Doosan Engine Co. Ltd.



The Wärtsilä stand at Pacific 2008
(Photo John Jeremy)

Wärtsilä Engine achieves Emissions Certification in the USA

Wärtsilä has achieved Tier 2 marine certification under the emissions control legislation of the US EPA (United States Environmental Protection Agency) for the Wärtsilä 26, in-line marine diesel engine type. This is the latest step in Wärtsilä's continuing, proactive development of its engines for lower exhaust emissions and reduced environmental impact.

The Wärtsilä 26 engine is a four-stroke heavy-duty marine engine of 260 mm cylinder bore by 320 mm piston stroke, built in in-line and Vee-form configurations. It covers a power range of 1950–5440 kW, and is popular in a wide range of marine applications. More than 800 engines have been delivered since the introduction in 1996, and there are engines with more than 60 000 running hours. With a swept volume of 17 litres per cylinder, the Wärtsilä 26 is classified by the EPA as a category 2 engine. Since 1 January 2007, US-flagged vessels powered by category 2 engines are required to meet the Tier 2 requirements.

For in-line engines, the US EPA Tier 2, Category 2, required emission levels for total hydrocarbons and nitrogen oxides (NOx) are less than 8.7 g/kWh. This is a reduction of NOx emissions of more than 30% compared with the IMO limit in Annex VI of the MARPOL 73/78 convention. In addition, the US EPA legislations set limits for carbon monoxide (CO) of 5.0 g/kWh and particulate matter (PM) of 0.5 g/kWh.

The emission levels have been lowered largely by reducing the maximum combustion temperatures. This has involved a combination of measures: Miller timing, optimisation of the combustion chamber, and optimisation of the fuel injection equipment. In this way, the emissions been reduced with a marginal decrease in efficiency.

Wärtsilä and V.Ships Agreement

In November Wärtsilä and V.Ships, the world's leading ship manager, agreed to cooperate on the provision of a broad spectrum of marine technical services to third parties in the marine market.

Drawing on Wärtsilä's strengths as a supplier of highly-rated ship machinery and systems, and V.Ships' proven success at recruiting and training senior officers and technicians, the partners plan to offer an integrated portfolio of services which encompasses the full life-cycle of ship's machineries at competitive cost.

The new partnership offering of Ship and Technical Management Services embrace technical supervision, machinery maintenance planning, condition-based maintenance and planning, software updates, training programs, spare parts and labour, logistics and accounting for technical management.

The shortage of skilled labour and the increasing complexity of ship's machinery represent a challenge for the marine industry. Wärtsilä and V.Ships' partnership is a strong alliance of expertise which will provide skilled labour —continuously trained and supported by state-of-the-art logistic and management organisation.

“Our alliance with Wärtsilä is another good example of how we are realising one of our core strategies: to work closely with key business partners to develop innovative

service offerings for existing clients and to attract new customers. After many years of managing ships powered by its equipment, we know Wärtsilä well. Our two companies are highly compatible and well-suited for collaboration. This follows closely our announcement in October of V.Funds, our strategic ship-finance partnership with Merrill Lynch,” commented Donald Anderson, CEO of V.Group, parent of V.Ships.

“Capitalising on its expertise in several areas and strengths in advance monitoring and management methods, Wärtsilä ensures the highest quality of technical services and crew training to the latest technologies and standards. The partnership with V.Ships will guarantee the best technical and economical performances of the ship equipment, and peace of mind for customers,” said Mr Tage Klockars, Director Wärtsilä Operations and Management Services.

Wärtsilä signs Major Ship Overhaul Contract in Norway

Wärtsilä signed in December a €9.5 million contract with Norwegian ferry operator, New Kystlink AS, for an overhaul project of Kystlink’s ferry, *Pride of Telemark*. This contract emphasizes Wärtsilä’s strength to be the total service provider.

The scope of the project includes a complete electrical system installation, the removal and major overhauling of five of the ship’s auxiliary engines, the onboard overhauling of two more main engines, as well as the renewal of 31 cabin interiors. The work is scheduled to last for 18 working weeks and is expected to be completed during the spring of 2008.

“The wide scope of this contract is testament to our ability to be a total service provider to our marine customers. We will be utilising a wide range of services, including automation services, engine testing and repairs, general ship repairs, as well as overall project management, says Bo Lindy Jensen, Sales Manager of Wärtsilä.

“Having overall responsibility for the entire project, we are able to provide the shipowner with added value through better quality control and efficiency management during this large-scale renovation,” he continues.

Pride of Telemark was built in 1983 and acquired by New Kystlink AS in 2005. The ferry sails between Norway, Denmark and Sweden, and carries 2000 passengers plus cars and trailers.

MEMBERSHIP

Australian Division Council Meeting

The Australian Division Council met for its final meeting of the year on Thursday 6 December 2007. The meeting was, as usual, conducted as a teleconference with those members in Sydney for the SMIX Bash on the same day gathering at the Australian National Maritime Museum.

The following matters, among others, were discussed by Council:

NMSC Reference Group — RINA Membership

It was reported that Ms Jennifer Knox of Lightning Naval Architects had agreed to act as the RINA representative and had attended the July meeting of the Reference Group.

Pacific 2008 International Maritime Conference

Mr Jeremy, Chairman of the Organising Committee, reported that arrangements for the conference were proceeding satisfactorily and, at the time of the Council meeting, over 90 registrations to attend had been received. There had been a

small number of requests, at additional cost to the registrant, for hard copies of papers.

As reported in the last issue of *The Australian Naval Architect*, a Careers and Skills Showcase will be held during the later stages of the Exposition, and Council agreed to provide funding for the printing of a coloured two-page leaflet *Careers in Naval Architecture* for use during the visit of invited teachers and senior students to the Showcase.

The Australian Naval Architect

In his report to Council, the Editor-in-Chief reminded members of the ongoing need for contributions from Sections and members, so that all members of the Australian Division might benefit from the opinions and experiences of individuals.

The next meeting of the Council of the Australian Division is scheduled for March 2008.

Keith Adams
Secretary



Members of the Australian Division Council meeting at the Australian National Maritime Museum in Sydney on 6 December 2007. From left to right: Rob Gehling, Martin Renilson, Stuart Cannon, Allan Soars, Craig Boulton, Giles Thomas, Keith Adams, John Jeremy and Werner Bundschuh
(Photo John Jeremy)

VALE BOB HERD

It is with sadness that *The ANA* records the passing of Robert John Herd OAM, Honorary Fellow of the Royal Institution of Naval Architects, who passed away on 28 December 2007. Bob Herd was a towering figure in Australian naval architecture and will be greatly missed by his friends and colleagues.

Bob Herd was born in Gympie, Queensland, on 7 February 1924. He left home at 15 to move to Brisbane and a cadetship with the Queensland Main Roads Commission, completing his early education in the evenings. He started a degree in Civil Engineering at Queensland University but World War II intervened and Bob left to join the navy at the age of eighteen. After basic training he was appointed to the Bathurst-class minesweeper, HMAS *Ballarat*, where he was soon in action as the communications number and sight setter on the ship's 4-inch gun. He later transferred to a Fairmile motor launch and left the navy in 1946 to return to his studies in Brisbane.



Bob Herd ca 1943
(Photo courtesy Herd family)

Having become interested in ships during his time in the navy, Bob applied for and was awarded a scholarship at Glasgow University to study naval architecture. Before he left Australia, he had met Dulcie Fitton at a sailing-club function in Brisbane and she followed him to Britain where they were married on 6 May 1950.

After graduating BSc in engineering with honours in naval architecture, Bob worked with Alexander Stevens in Glasgow, Saunders Roe on the Isle of Wight and at Götaverken at Göteborg, in Sweden, before returning to Australia. He spent two years with Walkers Limited in

Maryborough before moving in 1957, first to Sydney and then Melbourne, with the Australian National Line. As naval architect with the ANL, Bob was responsible for the preliminary design of new ships, development of conversion plans for existing ships, and technical support for the fleet.



Bob Herd in his University days
(Photo courtesy Herd family)

In 1963 he moved to the Commonwealth Department of Transport, Marine Standards Division, as Head of the Ship Structures Safety Branch, and it was there that Bob's influence was to be felt most. His duties included administration of legislation and policy advice on ship safety and ship construction. Bob's particular expertise lay with ship stability, and few naval architects from Australian shipbuilders had stability booklets and calculations returned approved without some red marks by Bob Herd. He also gave advice to Parliamentary drafters preparing maritime legislation and gave technical assistance to courts of marine enquiry. In particular, he made a significant contribution to the inquiries into the loss of HMAS *Voyager*, the dredger *W. D. Atlas* and the offshore supply vessel *Sedco Helen*. He also found time to help draft the Uniform Shipping Laws Code, still a central document in the regulation of commercial vessels in Australia, and attend many overseas conferences and meetings, including the International Maritime Consultative Organisation (now the IMO).

Bob decided to retire from the Department in 1982 when it moved to Canberra, and he set up his own consultancy business through which he continued to make a major contribution to Australia's maritime industries until 2007.

In his spare time, Bob spent some forty years helping with the restoration of the 1884 barque *Polly Woodside*, including chairing the ship committee for the last twenty years. He had many other interests, ranging from theology and astronomy to maritime history, and could read technical French, Russian, Swedish and German. His great interest

in forensic naval architecture was reflected in the series of articles he wrote for *The Australian Naval Architect*. He also found time to pass on his knowledge of ships and naval architecture as a part-time lecturer at the Royal Melbourne Institute of Technology for seventeen years.

Bob Herd was a member of the Council of the Australian Branch/Division of the Royal Institution of Naval Architects for nearly a quarter of a century and was Australian Division President for two years. In 2001 he was elected as an Honorary Fellow of the Royal Institution of Naval Architects, one of only 86 since the foundation of the Institution in 1860. In 2003 he was awarded the Order of Australia Medal for services to naval architecture, ship safety and the community through his work on *Polly Woodside*.

We are honoured to have known Bob Herd. We will miss his wisdom and dry wit — but his outstanding contribution to the profession in Australia will live on.

John Jeremy

Bryan Chapman



Bob Herd with Victorian Governor John Landy
(Photo courtesy Herd family)

NAVAL ARCHITECTS ON THE MOVE

The recent moves of which we are aware are as follows:
Sam Abbott has moved on within Austal Ships and has taken up the position of Structural Design Manager.

Ross Burchill has moved on from Gibbs & Cox and has taken up a position as Senior Naval Architect with G.A. Glanville and Co. in Cairns.

John Colquhoun has moved on within the Department of Defence and has taken up the position of Director Navy Platform Systems in Navy Systems Branch in Canberra.

Chris da Roza has moved on from Austal Ships and has taken up the position of Naval Design Project Manager at Thales Australia, Garden Island in Sydney.

Garry Duck has moved on within the Department of Defence and has taken up the position of Assistant Director — Submarine Systems in the Directorate of Navy Platform Systems in Canberra.

Ray Duggan has moved on within the Department of Defence and has taken up the position of Chief of Staff for Director-General Submarines in the Defence Materiel Organisation in Canberra.

Brenden Egan has moved on and has taken up a position as a Design Engineer with Gurit Australia in Sydney.

David Firth has moved on within the Gurit organisation, and has moved to the Newport, Isle of Wight, UK, office as a Design Engineer.

Peter Gawan-Taylor has moved on from Gibbs & Cox Inc. and has taken up the position of General Manager of Avenger Yachts in Fremantle. Avenger Yachts is a newly-formed subsidiary of the Strategic Marine group, focussing on the design and construction of 30–60 m luxury yachts.

Derek Gill has moved on within Austal Ships and has taken up the position of Manager Advanced Shipbuilding Team.

Daal Jaffers continues consulting at Southport, Qld., having modified the name of his consultancy slightly to DaalBuoy Marine Design.

Frank Jarosek moved on within the Department of

Transport WA some time ago and spent two years as Legal Officer. He is now on secondment as a Project Officer with the National Marine Safety Committee in Fremantle.

Judith Kennedy has moved on within the Department of Defence, and has taken up a position with Navantia in Spain for two years on the air-warfare destroyer project.

Dougal Loadman has moved on and has taken up a position serving in the Royal Navy and based at HMS *Sultan*, Gosport, UK, in the RN's School of Marine Engineering.

Dave Magill has retired from the position of Assistant Director — Submarine Systems in the Directorate of Navy Platform Systems, Department of Defence, in Canberra.

Bruce McRae has moved on from Murray, Burns and Dovell, did a six-month stint as a naval architect with Incat Crowther in Sydney, and has now taken up the position of Design Co-ordinator for Azzura Marine at their factory in Nowra, NSW.

Michael Mechanicos is on leave from the Department of Defence and has taken up a position with Germanischer Lloyd in Sydney.

Simon Orr has moved on from Thales Australia and has taken up a position as a naval architect with VT Shipbuilding in Portsmouth, UK. He is currently working on the design of a 90 m patrol boat, and learning to drive Tribon.

Kris Rettke, a graduand of the University of New South Wales, has taken up a position as a naval architect with McAlpine Marine Design in Fremantle.

Sam Shephed, a graduand of the University of New South Wales, has taken up a position as a naval architect with One2three Naval Architects in Sydney.

Evan Spong has taken leave from Team New Zealand for the duration of the postponement of the America's Cup program, and has taken up a position as a naval architect with One2three Naval Architects in Sydney.

Matthew Stevens, a graduand of the University of New South Wales, has taken up a position as a naval architect with One2three Naval Architects in Sydney.

Robert (Bert) Thomson has retired from the position of Assistant Director — Platform Performance in the Directorate of Navy Platform Systems, Department of Defence, in Canberra.

Daniel Wong, a graduand of the University of New South Wales, has taken up a position as a Director and Project Manager of the Fulsail shipyard in Sibul, Malaysia. He is currently involved in managing the restoration and overhaul of a coastguard patrol vessel.

This column is intended to keep everyone (and, in particular,

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

Phil Helmore

Martin Grimm

Pods and Cats

Hugh Hyland

Podded propulsion systems and catamaran hulls have become common in the commercial sector recently but many may not realise that both have been around in the Royal Australian Navy for many years.

Pods

A form of pod, with the propellers within nozzle rings (for protection and efficiency), was integrated with the twin rudders of the Ton-class minehunters in the 1960s to 1980s, called active rudders. Transits at relatively fast speed were made using the conventional propellers, but slow-speed on-station searching for mines utilised the active rudders. This configuration also gave these craft very high manoeuvrability and they were able to turn in their own length (which we ascertained on trials in Sydney Harbour).

Another form of pod is fitted to each end of the current navy water/fuel lighters, built in Williamstown in the 1980s. Diesel engines on deck drive through gearing and long vertical drive-shafts to propellers, which can azimuth in any direction giving particularly good manoeuvring capabilities. These can be removed and refitted without the need to drydock the lighter.

The Adelaide-class guided-missile frigates, which were built in America and Australia in the 1970s to 1990s, are fitted with two auxiliary propulsion units, on either side of the keel forward. Each of the Collins-class submarines, built in the last ten years in Australia, has an auxiliary propulsion unit fitted forward. In both examples, when required, the pods can be lowered from within the hull. They have propellers within nozzle rings (for protection and efficiency), which can azimuth all round, and can be used as emergency propulsion and to assist in berthing.

Catamarans

The old monohull battle targets were replaced in the 1960s by the lighter and faster steel catamaran gunnery targets. These in turn were replaced in the 1970s by lightweight GRP catamaran gunnery targets which were faster still (over 20 knots) and remain in service (the idea is not to hit the target, but to “throw off” by a certain distance). These were all built at Garden Island Dockyard.

In 1967 an aircraft-water lighter was built by Cockatoo Dockyard in Sydney (it must have been the world’s smallest aircraft carrier!) AWL 304 was a steel catamaran which could carry the A4 Skyhawk jet fighters between the aircraft carrier HMAS *Melbourne* and the wharf at Jervis Bay (using cranes at each end). The aircraft were then carried by road to the Naval Air Station, HMAS *Albatross*. AWL 304 could



AWL 304 in November 1967 with a rather large trials crew on board

(Photo J C Jeremy collection)

also carry fresh water to top up ships’ tanks while at anchor. She was driven by a conventional propulsion train in each hull. A very low wheelhouse just poked out from the deck to starboard.



Crane-stores lighter CSL 01 being launched by the floating crane *Titan* on 12 July 1972. Since re-named *Wattle*, she is now based in Darwin

(Photo J C Jeremy collection)

The catamaran hull of this lighter was used as the basis for three crane-stores lighters built in the early 1970s, also by Cockatoo Dockyard. These lighters have a crane forward and a two-deck aluminium wheelhouse aft, with the cargo deck between.



CSL 02 (now *Boronia*) on trials in September 1972
(Photo J C Jeremy collection)

Two fibreglass catamaran minehunters were commissioned in 1986 and 1987. Built by Carrington Slipways at Tomago in NSW, HMA Ships *Rushcutter* and *Shoalwater* had a displacement of 178 t, were 30.9 m long and 9 m in beam, and had a range of 1500 n miles at 10 kn. They had a Schottel hydraulic transmission and steering system aft on each hull.

Four catamaran survey vessels were commissioned in 1989 and 1990. Built by Eglo in South Australia, HMA Ships *Paluma*, *Mermaid*, *Shepparton* and *Benalla* have a displacement of 360 t, are 36.6 m long and 13.8 m in beam, with a range of 3500 n miles at 11 kn. They have steel hulls with aluminium superstructures.

Perhaps the most high-profile catamaran in RAN service was HMAS *Jervis Bay*. Built by Incat Tasmania she was



HMAS *Rushcutter*
(Photo John Jeremy)



HMAS *Benalla* in Darling Harbour for Pacific 2008
(Photo John Jeremy)

in service with the RAN for a period from 1999. With a displacement of 1250 t, a length of 86.6 m and a range of 1000 miles at 40 kn she proved invaluable in support of operations in East Timor. Indeed, her role in this operation was the catalyst for worldwide development of large, fast military catamarans.

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FROM THE ARCHIVES

OLD SHIPBUILDING LINK RESTORED

John Jeremy

The announcement that Tenix Defence is to be acquired by BAE Systems Australia restores a corporate link between an Australian shipbuilder and a famous British shipyard after a break of several decades.

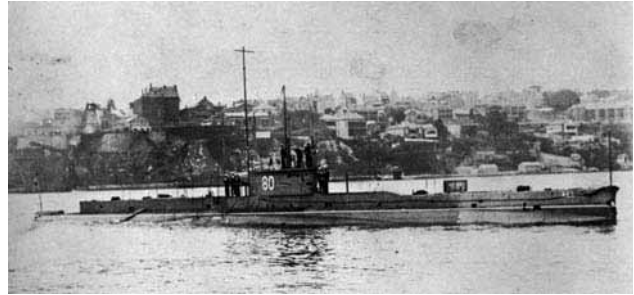
The British shipyard is at Barrow in Furness in Cumbria, England which has a long history stretching back to 1871. Now owned and operated by BAE Systems as BAE Systems Submarine Solutions, the Barrow shipyard was, for many years, part of the Vickers Limited Group and it was through that company that the corporate link to Australia was established.

The Barrow shipyard was set up on Barrow Island on the eastern shore of the Walney Channel after the completion of Barrow's docks — the Buccleuch and Devonshire Docks. The first orders from the Barrow Shipbuilding Company were for four steamers, but the first ship launched was actually a steam yacht, launched on 12 May 1873.

Barrow built its first submarine in 1886. The association with European submarine designer, Thorsten Nordenfeldt, resulted in the formation in 1888 of the Naval Construction and Armament Company. The new company did well and, in 1898, the association with Vickers began as interests from Vickers, Maxim and Nordenfeldt combined to form Vickers Sons and Maxim Limited. The company became Vickers Limited in 1911.

Vickers' grasp of the British submarine business (not broken until World War I) stemmed from a licence granted to Vickers on 27 October 1900 by the Electric Boat Company of the United States, which held the Holland patents. The first submarine for the Royal Navy, *Holland 1*, was launched at Barrow on 2 November 1901. Since then the Barrow shipyard has built 309 of the 575 submarines operated by the Royal Navy. The first British nuclear submarine, HMS *Dreadnought*, was launched there on 21 October 1960 and since then most RN nuclear boats, including Polaris and Trident ballistic-missile submarines, have been built at Barrow. The shipyard also built many naval surface ships for the Royal Navy and others, including battleships and aircraft carriers.

Australia's first submarines, *AE1* and *AE2*, were built at Barrow, and the link between the Barrow shipyard and Australia continued during the war when a number



The Australian submarine *AE1* was completed at Barrow in Furness in 1914
(Photo J C Jeremy Collection)



Launched at Barrow as HMS *Majestic* in 1945, HMAS *Melbourne* was completed for the RAN in 1955
(Photo John Jeremy)



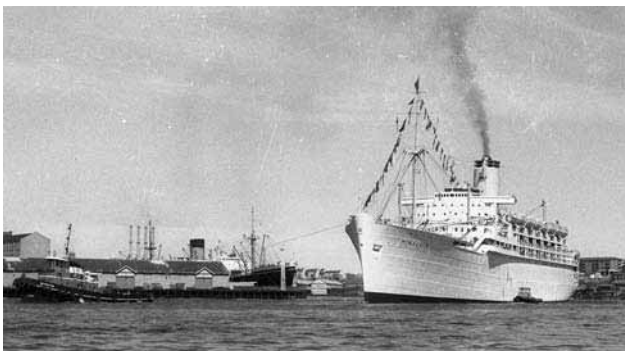
Nuclear submarine construction at Barrow in 1967 — the Polaris ballistic-missile submarine HMS *Repulse* and the attack submarine HMS *Churchill* on the slipway. The tide is out in the Walney Channel
(Photo J C Jeremy Collection)



HMS *Dreadnought* entering the Walney Channel after naming by the Queen on Trafalgar Day 1960
(Photo J C Jeremy Collection)

of people from the Commonwealth Naval Dockyard in Sydney travelled there for training. The next submarines built specifically for the RAN, HMA submarines *Oxley* and *Otway*, were also built there in the late 1920s.

The connection with Australia was not limited to naval ships. Three of the Bay-class cargo-passenger ships were built there for the Australian Commonwealth Government Line of Steamers — *Moreton Bay*, *Hobsons Bay* and the famous *Jervis Bay*. Many passenger ships for the P&O and Orient Lines entered the water from the Barrow slipways, the largest and the last being the well-known *Oriana*. Completed in 1960, *Oriana* was 41 923 tons gross and achieved 30.64 kn on trials.



Orcades and *Himalaya* (above) were the first liners built at Barrow for the Australian run after World War II
(Photo John Jeremy)

The corporate link with Australia began in the late 1930s when Vickers acquired an interest in Cockatoo Docks & Engineering Company in Sydney. Vickers bought the company outright in 1947. Cockatoo was a useful link to service the many Barrow-built liners when in Sydney, and was a base for the expansion of Vickers interests in Australia. For Cockatoo, Barrow provided training opportunities and technical assistance which was very helpful as Cockatoo Dockyard prepared for the refit of the RAN's Oberon-class submarines. The Vickers interest in Cockatoo continued until 1986.

In 1977 the Vickers Limited Shipbuilding Group was nationalised, with Barrow becoming part of British Shipbuilders. The corporate link with Australian shipbuilding ended, although W. R. (Bill) Richardson, Chairman of the Shipbuilding Group and later of British Shipbuilders, served on the board of Cockatoo Dockyard Pty Limited from 1977 to 1984.

February 2008



Oriana in Auckland in the 1970s
(Photo John Jeremy)

The Vickers name at Barrow survived in the nationalised Vickers Shipbuilding and Engineering Limited (VSEL) and caused much confusion as a result. VSEL was privatised in 1986 and acquired by GEC Marconi in 1995. In 1998 GEC's Marconi Electronic Systems business was merged with British Aerospace (which owned the remains of Vickers' aircraft business) to form BAE Systems.

Cockatoo Dockyard closed in 1992 and, in 1999, Vickers was bought by Rolls Royce, apart from the Vickers Defence Systems division which sold to Alvis.

Today, the Barrow shipyard remains one of Britain's leading shipbuilders, constructing the Astute-class nuclear submarines for the Royal Navy and will participate in the construction of the RN's new aircraft carriers.



Built by filling in part of the dock, the Devonshire Dock building hall is 260 m long, 58 m wide and 51 m clear height. The ship lift has a capacity of 16 200 t
(Photo BAE Systems)



Nuclear submarine construction at Barrow in the 21st century — Astute-class submarines in the building hall
(Photo BAE Systems)



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