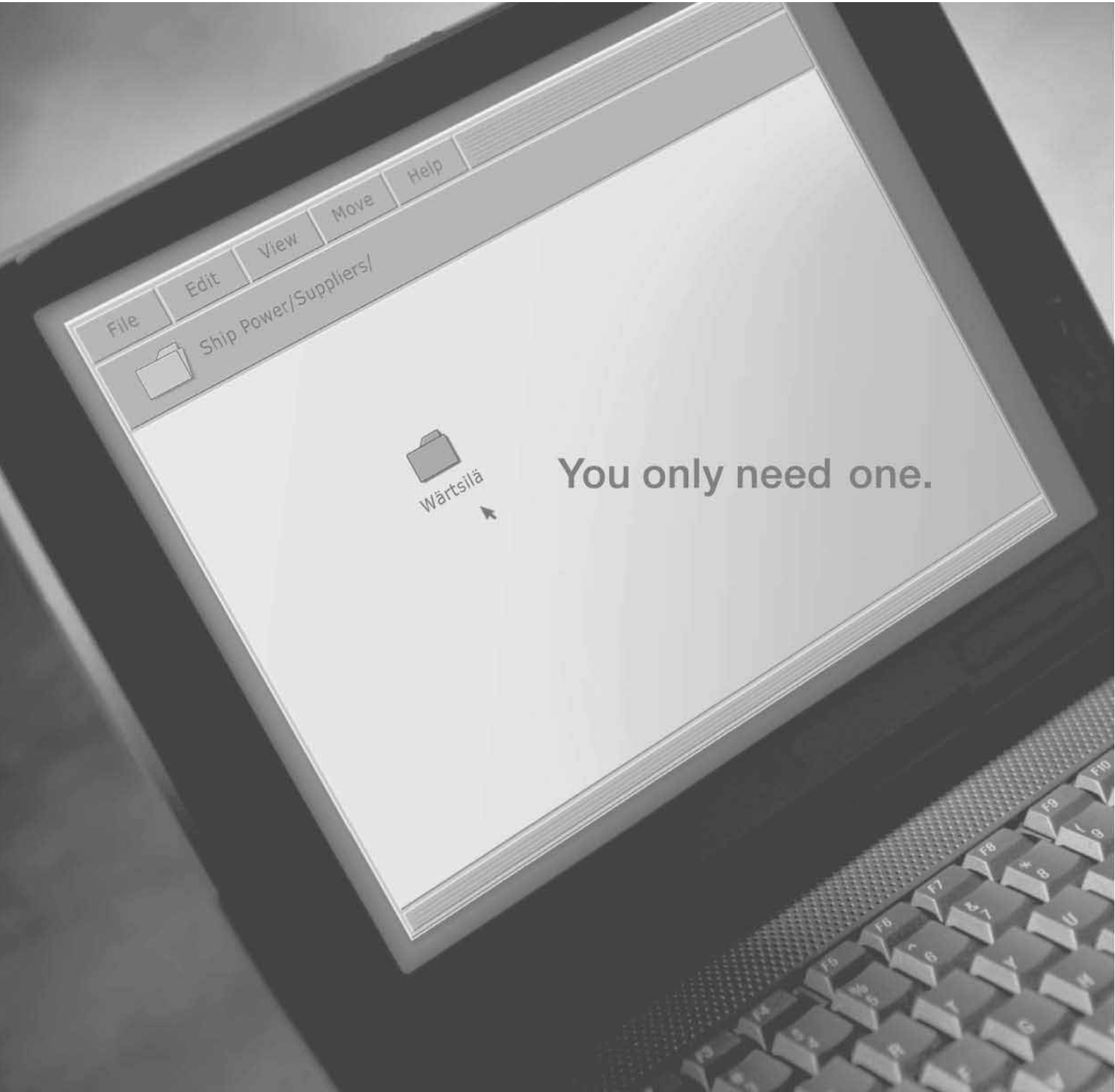


THE AUSTRALIAN NAVAL ARCHITECT



**Volume 11 Number 1
February 2007**



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THE AUSTRALIAN NAVAL ARCHITECT

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Cover Photo:

James Craig and Young Endeavour during the Tall Ships' race on Sydney Harbour on Australia Day 2007 (Photo John Jeremy)

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From the Division President

As has become practice, this column constitutes my report on the calendar year 2006 to the Annual General Meeting which is scheduled to be held in Melbourne on 14 March 2007.

It is also my last report to you as President of the Australian Division, as Dr Stuart Cannon was elected as my successor by the Division Council in December and will have assumed the Presidency before the next edition of this, my favourite journal.

The year was one of further consolidation of our role within the engineering profession, within the Institution and of our interaction with the Australian community. As a primary indicator of this consolidation, at year's end agreement was reached with Engineers Australia on the text of a new and permanent agreement, providing mutual recognition of qualifications and recognising both institutions' respective status as the internationally pre-eminent institution in naval architecture and the peak professional body for Australian engineers. Our Chief Executive and I are scheduled to formally sign the new agreement, which replaces our previous Heads of Agreement, during his visit to Australia within the next month.

Conclusion of the new agreement has been the culmination of some concentrated work by the Joint Board under the firm leadership of Bryan Chapman, the Division's immediate-past President. Another worthwhile outcome achieved by the Joint Board has been the finalisation, after several years of endeavour, of a naval architecture area of practice within the National Professional Engineers Register.

The Australian members of the Institution's Council have been active in the meetings of our governing body, encouraging it to take an outward focus and progress the tasks of not only directing the Institution but also making it more truly international in terms of organisation as well as membership. Bryan Chapman, John Jeremy and I have participated in these Council meetings by teleconference.

Divisional nominees have also been active on the RINA's specialist committees on safety, small craft and high-speed vessels. It is through these committees that the Institution seeks to improve national and international standards in these specialist areas. It is particularly satisfying for me, as a regulator involved in this area, to note the increasing involvement and acceptance of the Institution's input in the formulation and improvement of international safety requirements for shipping.

The Division's own safety group had a somewhat less hectic year than in the past, although its previous work resulted in my being invited to participate in a panel discussion of the proposed new national standard for construction of commercial vessels at the National Marine Safety Committee conference on the Gold Coast during September. The Division continues to have good relations with the NMSC and has indicated a willingness to provide constructive input to standards being developed by the NMSC, with a view to ensuring the viability of those standards for implementation by our members.

It was particularly pleasing to be able to attend a meeting of the Queensland Section which occurred during my Gold Coast visit.

The Australian Naval Architect

A major achievement during the year was the technical and financial success of our major biennial event, the Pacific 2006 International Maritime Conference held in January and February in conjunction with EA and IMarEST. Congratulations and thanks are due to John Jeremy (chairman) and Keith Adams as our representatives on the organising committee. Flushed with the success of their efforts in 2006, they have reported to Divisional Council that arrangements are already well in hand for the Pacific 2008 conference.

As reported last year the Division received an invitation to make a submission to the Senate inquiry into naval shipbuilding. This submission was made and resulted in John Jeremy and me appearing before the Senate Committee in late June. The Committee has since issued their final report.

The Australian Naval Architect continued to be an important and effective part of the Division's activities during the year. It continues to develop as a journal of high standard of which the Division is rightly proud and is well supported by the Division membership and a respectable international readership. Achievement of this support has been largely due to the efforts of the Editor-in-Chief, John Jeremy, and Technical Editor, Phil Helmore, together with the journal's advertisers and sponsors.

Our Sections have continued in their activities as reported in *The Australian Naval Architect*. Sections also have web pages which are accessible through the Institution's website, and which they are encouraged to keep updated and use to the fullest practicable extent. In this regard, members should note that the RINA website was upgraded during 2006 to be more accessible and informative from a user's perspective and more readily updated from the perspective of the Division and Sections. Members are encouraged to regularly visit and contribute to its forums covering various areas of professional interest.

The Division has continued to provide prizes for students in naval architecture at both the Australian Maritime College and the University of New South Wales. I congratulate the students who have been awarded these prizes. The Division is also particularly indebted to Austal Ships for their continued support of the joint RINA/Austal prizes at both of these institutions.

Progress made by the Division is due to the collective efforts of its members and I would like to express my thanks to members for their continued support, not only during the year in review but throughout my time as President. In particular, I could not have completed my four years as President without the support of our Secretary, Keith Adams, who secures the smooth functioning of the Division by ensuring that issues are dealt with properly and promptly. Thanks are also due to our Treasurer, Allan Soars, for taking care of the Division's finances which enable us to continue our activities, and to the other members of Division Council for their contributions and support to me in the management of the Division. Prime among these are Bryan Chapman and Jim Black, who are retiring from Council, at least for the time being, having reached their maximum permitted term, and Mark Smallwood who has also decided not to seek another term.

I should also acknowledge the generous support extended to me by my employer, the Australian Maritime Safety Authority, during my term as Australian Division President.

Finally, my best wishes go to Stuart Cannon for his Presidential term, during which I will endeavour to provide him with similar support as I have received from both him as Vice-President and Bryan Chapman as my predecessor.

Rob Gehling

Editorial

Last December the Senate Standing Committee on Foreign Affairs, Defence and Trade tabled its final report on naval shipbuilding and repair. The committee completed the 356 page report after considering a large number of submissions from industry and the public, evidence from individuals at hearings and overseas visits to a number of shipbuilders and other industries.

The report supports the continued development of an efficient naval shipbuilding industry in Australia, building on the notable achievements of recent years. The government is urged to make a public commitment to maintain the industry and, in particular, to provide it with continuity of work through long-term planning of the workload. The committee justifies these findings in terms which will be familiar to many who have worked in the industry and have been saying much the same thing to past governments for many years. The main findings of the report are reproduced on Page 48 of this edition of *The ANA*.

Governments set policy, not Senate committees, yet it is pleasing to see such a favourable report from a joint committee with representatives from both sides of the House. Australia needs a bi-partisan approach to the development of defence industry policy if long-term benefit is to be gained from the considerable investment by governments and industry in the facilities and people to build and support the ships of the RAN in Australia.

On a completely different note, one often hears complaints that Australians have forgotten that we are a maritime nation and that interest in ships and the sea, upon which our exports (and imports) depend, has sadly declined. On a recent February day in Sydney the opposite appeared true, at least for a while. At first light the Cunard liner, *Queen Mary 2*, arrived in Sydney for the first time, to be met later in the day by her older 'sister', *Queen Elizabeth 2*. Cruise liners are regular visitors to our shores and rarely rate a second glance from many, yet Sydney turned on an outstanding Australian welcome for these two ships, with hundreds of boats escorting them to their berths and thousands of spectators crowding the many vantage points around the harbour. The level of interest took authorities by surprise with a consequent massive disruption to the normal workings of the city, but they provided a magnificent spectacle for those who were lucky enough to be there. It was a day on the water to rival a Sydney-Hobart yacht race start or Australia Day.

If only we could bottle that interest and spirit and feed it to new generations of Australians, we might no longer feel the need to grumble about the lack of interest in maritime matters!

John Jeremy

February 2007

Letters to the Editor

Dear Sir,

I began in the marine industry five years ago in Queensland as an apprentice boatbuilder, but quickly took a keen interest in the design aspect of boats. This interest has led me to move to Sydney to study naval architecture at UNSW.

During my time as an apprentice, it was interesting to note that there was no mention of naval architecture, nor did many of the companies which I encountered employ naval architects. If it were not for me studying the university entrants' guide, I would never have learnt of the career. Even with this, I only discovered the course at the Australian Maritime College, where I subsequently spent my first year of study. The reason behind this was that the AMC publicises this specialty course Australia-wide, Whereas UNSW only advertises within NSW. It wasn't until a conversation with a classmate that I discovered the possibility of studying the course at UNSW.

Before branching out to specialise in naval architecture in the third year of the degree at UNSW, one must first complete two years of the general mechanical engineering program. Moving from second to third year studies has seen my classes diminish in size from over two hundred to just nine.

So my question is this: with the growing nature of the Australian marine industry, why are universities not doing more to promote this profession? As house builders need architects to first design homes, do not boat builders also need naval architects to first design the boats which they are going to build, meaning that there is an increasing need for qualified professionals in this field?

For this reason I think that there should be wider promotion of what we do and how we contribute to society. UNSW, being one of only three universities in Australia to offer this unique degree, should be doing much more to inform the general public of its availability.

At UNSW there are hundreds of architecture students, commercial, landscape, interior, town planning and others — there simply must be more than nine people per year within these hundreds who would be interested in the marine industry. I believe that if the degree were more widely publicised, then there would be many more students studying to be naval architects.

Joshua Bolin

UNSW Student

Dear Sir,

I recently read a fascinating article concerning a new concept ship developed by Wallenius Wilhelmsen Logistics, ES (environmental ship) *Orcelle*, a ship which the company envisages as the future for an environmentally-friendly ocean-transport industry.

The ship is a futuristic-looking pentamaran car carrier, capable of transporting around 10 000 cars, at a service speed of 15 kn. It utilises a combination of solar and wind power, similar to that used by the Solar Sailor on Sydney Harbour, and incorporates fins on the underside of the vessel which harness wave energy. Fuel cells powering a pod propulsion system are the main source of energy, with the electricity generated from the wave fins, and solar cells being used to

obtain more hydrogen from the ocean on the run. The hull design is such that no ballast water is required which, according to the WWF, is one of the four major threats to the world's oceans, as it picks up potentially fragile or harmful organisms, and dumps them in an alien environment.

The result is a ship which has zero emissions, capable of performing competitively against traditional fuel-powered ships, and becoming more feasible as oil prices unavoidably rise. The ship's designers concede that *ES Orcelle* will almost-certainly never exist in its entirety, but they hope that the ideas it presents will start to become commonplace in new ships in the years ahead. A design like this leads one to think about what the future holds for the shipping industry.

Our treatment of the environment is a controversial topic and, with the rising price of oil and ideas like the carbon credit system under development, it will only become more so. As future or current designers, it is impossible now to ignore environmental conservation and, indeed, I think that it will be an area which will soon be one of the major factors influencing design and the success of tenders. As new technologies develop and improve, the shipping industry must be at the forefront in harnessing those technologies to improve efficiency, reduce cost, and preserve our environment. As a naval architect-in-training, I look forward to meeting the challenges of designing in a changing world, and hope to see ships like *ES Orcelle* plying our waters before too long.

Rowan Curtis
UNSW Student

Dear Sir,

My decision to study naval architecture at UNSW was not a difficult decision to make. Ever since primary school I have been fascinated by innovations. Nowadays my favourite television program is "Beyond", as it gives insight into the future for an innovative country. For me, this is exciting stuff, except that I find that almost all the best stories are filmed overseas. So why is that?

The Australian government seems to think that we are innovative. The Department of Foreign Affairs has published on their website that "Australians have an international reputation for producing creative ideas and practical technologies that have shaped world progress" [1]. However, it was

New Zealand who played host to the "Beyond Tomorrow" report about *Earthrace*, the wave-piercing trimaran which is powered by bio-diesel and is preparing to set the record for the fastest circumnavigation of the world in a powerboat. This idea has the potential to shape the future of open-sea transportation of both passengers and freight.

Could that not be an Australian company going for the world title? While Australia is the current leader in high-speed catamaran design, scaling up our ideas from the 80s will not hold our pole position for long.

In 1997, the Australian Bureau of Statistics recorded that a mere 0.1% of international freight tonnage was carried by air [2]. Until we connect our continent to Asia by road or rail, we will rely heavily upon shipping. So, for the long-foreseeable future, I can safely state that Australia is going to depend on shipping! However, somehow, Australia has missed that. Australia has "No large ship building capacity, no major ship repair capacity, no large shipping companies. A diminishing maritime skills base with not enough incentive to train people to supply maritime skills for the future" [3]. We are losing out on major investment opportunities to export our own produce, not to mention the countless jobs that could be created by such an industry.

So, as I approach the end of my degree and look for employment, I am presented with very few opportunities to design the large ships necessary for trade, and my 'innovative government' is not showing any interest in the development of the next generation of marine transportation. Sure, Australians may be innovative and creative but, without the financial backing and community support of our ideas, they are wasted. With prospects such as these, my sights are set on foreign industries.

[1] www.dfat.gov.au/facts/innovative_australia.html, accessed 16/08/2006.

[2] www.abs.gov.au/AUSSTATS/abs@.nsf/Products-byTopic/AA49CB6419140096CA2568A90013935F?OpenDocument, accessed 16/08/2006.

[3] www.asa.com.au/news.asp?all=true#topic77, accessed 16/08/2006.

Kristofer Rettke
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.

Many people use Microsoft Word, but illustrations should not be incorporated in the document.

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

New South Wales

Committee Meetings

The NSW Section Committee met on 14 November and, other than routine matters, discussed:

- SMIX Bash 2006: Sponsorship has increased, and will be directed to improved catering, increased recognition of sponsors through audio-visual display, and improved lighting of 'tween-deck displays. Bookings are proceeding and are expected to be full before the date for SMIX Bash.
- TM Program for 2007: Five papers for presentation to be checked.
- TM Venue for 2007: Concern expressed at drop in attendance numbers since EA move to Chatswood; decided to see how numbers go in 2007; Laurie Prandolini subsequently advised that meetings in 2007 will be on the first Wednesday of the month.
- Dinner Proposal: The suggestion was made that we could join IMarEST and the Company of Master Mariners for a monthly dinner in the city; this was considered not to be of interest to many members.
- Finance: We currently have \$10 832 in the bank, made up of \$10 544 in the Social Account (including SMIX Bash monies), and the Section Account \$288 in the red; i.e. the social account is keeping the section account afloat. However, we have invoiced the Division \$495 for venue hire, and this will put the Section Account \$207 into the black.
- "Thank You" Wine for 2007: It was decided to continue the practice of giving a "thank you" bottle of wine to our presenters, and our cellar-master was given the go-ahead to purchase a new case of wine for 2007.

The NSW Section Committee also met on 6 February and, other than routine matters, discussed:

- SMIX Bash 2006: All sponsorships received; silent auction of Bill Bollard's model of *Rani* raised \$650 which will be donated to the Sydney Heritage Fleet; letters of thanks and certificates mailed to sponsors.
- TM Program for 2007: Program has firmed up, with one presentation to be confirmed for October (see the *Coming Events* column in this issue).
- Committee Positions for 2007: Positions and portfolios on the NSW Section Committee for the coming year were canvassed.
- Visit of Chief Executive: Possible meetings with CE discussed.
- Finance: Budget for 2007 has been forwarded to the Australian Division; we currently have \$8295 in the bank, made up of \$8109 in the Social Account (including SMIX Bash monies), and \$186 in the Section Account; Section accounts for 2006 to be audited for forwarding to the Australian Division.

SMIX Bash

The seventh SMIX (Sydney Marine Industry Christmas) Bash was held on Thursday 7 December aboard the

beautifully-restored *James Craig* alongside Wharf 7, Darling Harbour, from 1730 to 2130. The Bash was organised jointly by RINA (NSW Section) and IMarEST (Sydney Branch).

196 guests came from the full spectrum of the marine industry, including naval architects, marine engineers, drafters, boatbuilders, machinery and equipment suppliers, regulators, classification societies, 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 and interstate visitors in the throng, including Glenn Cobb from Lloyd's Register Asia in Melbourne, Gregor Macfarlane, Giles Thomas and Jon Duffy from the AMC in Launceston, Chris Norman, Jim Black and Chris da Roza from Austal Ships and Phil Christensen from Formation Design Systems in Western Australia, and international visitors Phil Brodie and Dave Hopkins from Hamilton Jets in New Zealand.

Sydney turned on a beautiful evening and many partners in attendance enjoyed the view of Darling Harbour and the city skyline from the decks of *James Craig*. Drinks (beer, champagne, wine and soft drinks) were provided, and a delicious buffet dinner was served in the 'tween decks.

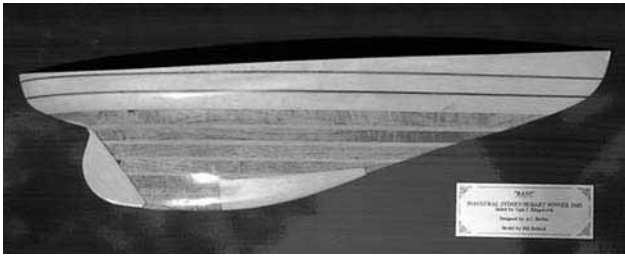


Some of the crowd enjoying drinks on board *James Craig*
(Photo courtesy Graham Taylor)

This year we continued "early bird" pricing and credit-card facilities for "early bird" payments, and this turned out to be equally successful as last year, and all tickets were sold before the event.

Formalities were limited to a short speech by the Chair of the NSW Section, Phil Helmore, who welcomed the guests and thanked the organising committee and the industry sponsors.

Bill Bollard had built a magnificent half-block waterline model of the first winner of the Sydney-Hobart yacht race in 1944, *Rani*, and this was put up for silent auction. Neil Halvorsen of MAN B&W submitted the winning bid and the model was presented to him by Mrs Anne O'Connor for him to hang on his wall. Our thanks to Bill for his expertise in building and generosity in donating this model.



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



Anne O'Connor presenting *Rani* to Neil Halvorsen
(Photo courtesy Bill Bollard)

RINA NSW would like to thank all our wonderful sponsors, without whom SMIX Bash could not happen:

Platinum Sponsors:

- Wartsila Australia
- MTU Detroit Diesel Australia

Gold sponsors:

- ABS Pacific
- Akzo Nobel (International Paints)
- Det Norske Veritas
- Energy Power Systems (Caterpillar)
- Formation Design Systems
- Lloyd's Register Asia
- Thales Australia (Naval)
- ZF Australia

Silver sponsors:

- Adsteam Marine
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- DIAB Australia
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- Hamilton Jet
- MAN B&W Diesel
- Polaris Marine
- Rolls Royce Marine Australia

Bronze sponsors:

- Ceiling Works
- EMP Composites (Nuplex)
- Jotun Australia
- Shearforce Maritime Services
- Twin Disc (Pacific)

Our thanks to them for their generosity and support of SMIX Bash 2006.

Port Botany Expansion

Colin Rudd, General Manager Projects for Sydney Ports Corporation, gave a presentation on *Port Botany Expansion* to a joint meeting with the IMarEST attended by fifteen on 7 February in the Harricks Auditorium at Engineers Australia, Chatswood.

Introduction

Colin began his presentation with an outline of the project to expand the capability of the port. The average growth of container traffic between 1970 and 2000 has been 7.4% per annum. The forecast growth is 5–6% p.a. for the long term. This means that container throughput will triple in the next 20 years. Port Botany will therefore need to be able to handle upwards of 4 million TEU (twenty-foot equivalent units) by 2025–30. This is a big increase, and it is this which is driving the expansion over the long term.

Colin then showed a bird's-eye view of the current facility and the proposed expansion. There are currently two container terminals (separated by the Brotherson Dock), each with about 1 km of berth and 40 ha of land. The proposal is for a new terminal with 2 km of berth (able to handle 8000 TEU vessels), an additional 60 ha of land, and improved road and rail links. The new terminal will be sited between the existing terminals and the third runway (which projects into Botany Bay) at Sydney Airport.

The project is now in the delivery phase, with all major planning and environmental approvals in place. State Cabinet approved the design and construction and funding strategy in May 2006 and the project team is in place, including Maunsell, Evans and Peck, Clayton Utz and Bovis Lend Lease.

Two consortia have been short-listed as tenderers through the ROI process: Boulderstone Hornibrook/Jan de Nul Joint Venture and Leighton Contractors/van Oord Joint Venture. The request for design-and-construct tenders will go out in March 2007. Interface agreements with stakeholders, such as Sydney Airport Corporation, the RTA and local councils, are now being finalised. The initial geotechnical investigation has been completed by Douglas Partners, and further testing is in progress.

Infrastructure Components

The development has two main components:

- The preliminary infrastructure, including dredged channels, the terminal platform, road and rail links, and environmental and community works (to be funded and delivered by Sydney Ports Corporation).
- Superstructure works, including container-handling equipment, paving and road works, buildings, service reticulations, etc. (to be funded, maintained and operated by the terminal operator, Patricks, Toll, and others have expressed interest).

The new terminal will be competing with the two existing terminals at Port Botany, and so the playing field must be level so they are all on the same footing. The economic life of the new terminal is expected to be 50 years or more, and so the planning is for low maintenance of the primary infrastructure. Efficient road and rail links are as important as the berths in determining the terminal capacity, and are absolutely essential to its efficiency.

Berth Structure

Colin then showed a slide of the geotechnical profile of the berth area, consisting of sand and mostly good materials compared to the Fisherman's Island site in Brisbane where the riverine environment adds to the complexity. However, there is some concern with a layer of organic clays which are now being surveyed using a jack-up barge.

Three types of berthing structures have been considered:

- A piled structure with concrete deck; there are many successful examples, such as Fisherman's Island in Brisbane, and in Malaysia and Thailand. However, this type of structure is not very economical due to steel prices which have been rising over the last 3–4 years, and a lot of the construction work takes place over water so the OH&S safeguards become more complex and expensive.
- A gravity structure, possibly precast (as was the Brotherson Dock). However, the clay layer is a problem for this method. The clay layer needs to be removed to control settlement, and so adds to the cost.
- A bulkhead structure, with a row of piles clutched together, and backfilled with tie-backs to the land.

All methods are different, with different pros and cons. The three types will be put to the market, and SPC are happy to receive quotes for cost on the alternatives.

Dredging and Reclamation

Colin then showed a slide of the proposed dredging works. All channels and berthing areas will be dredged to a depth of 17 m, which will easily cater for the 8000 TEU container vessels expected, with metres of under-keel clearance. Fortunately, Port Botany is not constrained by draft as is the Port of Melbourne.

The Penrhyn Estuary and associated foreshore beach corridor (created by the Brotherson Dock) is the last remaining refuge for some migratory birds on Botany Bay, and so must be retained and improved. The community will lose some foreshore with the new terminal, but the trade-off will be to improve the foreshore elsewhere, by moving the boat ramp, increasing the availability of car parking to 130 spaces, etc., and there has been high community involvement, including the vocal recreational fishers.

Berthing will be provided for an additional three tugs, and
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more could be accommodated relatively easily if required.

At the Mill Stream lookout a groyne will be provided to contain the movement of sand across the Mill Stream.

Design and Construction Objectives

The primary objective is to optimise the value for money. In order to achieve this, the following principles apply:

- there must be scope for innovation subject, of course, to the mandatory requirements;
- there must be sensible allocation of risk;
- there must be a sensible program of work;
- tendered rates apply for unquantifiable risks or items; and
- the project must be attractive to the market.

The request-for-tender documentation for the project is, understandably, extensive and currently stands about one metre high!

Consultation and Stakeholder Liaison

SPC have been in Port Botany for thirty years, and they are now building for the next fifty, so they are there for the long haul. This is not a hit-and-run project, and SPC's core long-term business is the port. Community and stakeholder engagement is therefore particularly important. They must be respectful to and honest with all stakeholders, and they expect the same in return.

There is a significant number of stakeholders, including Sydney Airport Corporation, boating clubs, recreational fishers, local residents, existing port tenants, local councils and government agencies.

SPC is a state-owned corporation. Everything is politically sensitive, and there are high expectations.

Conclusion

In summary, Sydney Ports Corporation is expanding the capability of Port Botany to cope with the expected increase in container traffic for the next fifty years. The project is on track, and all the major planning and environmental approvals have been obtained. Community involvement has been high. Tenders are due to be called soon, for award of contract at the end of 2007, work to commence in mid 2008, and completion in 2011.

Questions

Question time elicited some further interesting points.

The existing terminals, with 1 km of berth each, can handle about three ships each simultaneously. The new terminal, with 2 km of berth (1500 m and 550 m in an L-shape) can therefore handle a further six ships simultaneously.

Facilities for seafarers coming ashore have not been provided for specifically at the new terminal, but SPC is looking at the port as a whole, and is not aware of any specific problems at the existing terminals.

Modelling of the wave movements and the changes which will be caused by the new terminal has been carried out by Cardno, Lawson and Treloar.

SPC has been working with RailCorp and the RTA on the upgrades to the road and rail lines, and everyone's understanding of the issues has increased enormously. In particular, there is a need to increase the share of freight handled by rail (23% aiming for 40%) to decrease the stress on the roads. The M4 motorway is expected to extend to the

airport and, eventually to Port Botany. RailCorp is expected to duplicate the rail line from Port Botany to Cook's River when demand requires. There will also be an intermodal facility, for transfer of containers from train to truck and vice-versa.

Security is an unfortunate fact of life, and there has been a huge push in the last three or four years. Normal operations are at Level 1 security. Any risk, or threats, and the port goes to Level 2, and then the port closes at Level 3. There has been huge investment in the provision of TV cameras, monitoring, etc. However, container ships are not generally regarded as a high risk. Much higher risks are assigned to passenger ships (loss of life) and tankers (explosion), for example.

Automation is coming, and it is a question of when not if. Fisherman's Island is automated, but is not yet producing the productivity levels achieved manually. That will come, and then it will come to Sydney. The stevedores will provide a level of technology appropriate to the case. Patricks already have a plan to automate their terminal at Port Botany when appropriate.

The ports of Melbourne, Sydney and Brisbane do not really compete, except for trade about halfway between. However, since 80% of their trade is within 40 km of each port, peripheral trade is minor.

Bunkering remains at the head of Brotherson Dock, with delivery by barge.

The vote of thanks was proposed, and the "thank you" bottle of wine presented, by Tarran Peh.

Phil Helmore

Queensland

Since the last issue of *The ANA* the Queensland Section committee has met once, on 27 October 2006, and a technical meeting was held on 14 November 2006. The subject of the technical presentation, by Glenn Wyatt, was *Aluminium Weld Design, Weld Problems, and Welder Qualifications*. The meeting was well attended and a short write up on the presentation can be obtained from the Section secretary.

Forty RINA members, their guests and sponsors attended the RINA Queensland Section Christmas Social Night on 13 December. This year the event was an evening cruise on the Brisbane River, with a BBQ dinner. The event was generously sponsored by Lloyd's Register, MTU and Polyflex. The cruise, on what was a perfect, balmy Brisbane evening, was much enjoyed by all, with members appearing happy to wind down and socialise after another busy year!

Brian Robson

COMING EVENTS

Australian Division AGM

The Annual General Meeting of the Australian Division of RINA will be held on Wednesday 14 March at 1730 for an 1800 start in the Theatre at Sinclair Knight Merz, 590 Or-rong Road, Armadale, Melbourne; see separate notice mailed to members.

NSW Section AGM

The Annual General Meeting of the NSW Section of RINA will be held on Wednesday 7 March immediately following the scheduled technical meeting of RINA (NSW Section) and IMarEST (Sydney Branch) at 1800 for 1830 at Engineers Australia, 8 Thomas St, Chatswood; see separate notice mailed to members.

NSW Section Technical Meetings

Technical meetings are generally combined with the Sydney Branch of the IMarEST and held on the first Wednesday of each month at Engineers Australia, 8 Thomas St, Chatswood, starting at 1800 for 1830 and finishing by 2000.

Please note the new time of start, which has been put back by half an hour to help enable travel to Chatswood for those coming from afar, and the parking areas and streets are free after 1800.

The program of meetings for 2007 (with exceptions noted) is as follows:

- 7 March David Firth and Valerio Corniani, Gurit Australia
Yachts, Canting Keels and High-tech FRP Construction
RINA (NSW Section) Annual General Meeting
- 4 April Luke Halliday
Use of Biodiesel in Tugs

The Australian Naval Architect

- 2 May Jonathan Branch, Lloyd's Register
Emergency Response Services Requirements under MARPOL
- 6 June Jeff Moloney, MAN B&W Diesel Australia
Condition Monitoring
- 4 July Steve Quigley and Rob Tulk, One2three Design
Design and Construction of Cutting-edge Vessels
- 1 August Neil Edwards, Adsteam Marine
Building New Tugs
- 5 Sept Craig Hughes, ABS Pacific
ABS Offshore Racing Yacht Rule Update
- 3 Oct TBA
- 6 Dec SMIX Bash 2007

Queensland

The next technical meeting of the Queensland Section will be held on Tuesday, 6 March 2007 in conjunction with the Section Annual General Meeting. MTU will provide a technical presentation at their premises at Coomera on the Gold Coast.

EA Presentation on *Queen Mary 2*

John Jeremy will make a presentation to Engineers Australia on *The 21st Century Passenger Ship Queen Mary 2* on Wednesday 28 February at 1730 for an 1800 start at Chatswood RSL Club Auditorium, 446 Victoria Ave or 1 Thomas St, Chatswood. The meeting has been jointly organized by the Maritime Panel and the joint electrical institutions, IEEE and IET, which are all branches of Engineers Australia.

With Australia's dependence on the sea for transport of people for most of the last two centuries, it is not surprising that the country has been visited by some of the largest pas-

senger ships ever built in peace or war. These have included ships of the famous Cunard Line, including trans-Atlantic liners *Queen Mary* and *Queen Elizabeth* which were converted to troop transports during World War II.

The rapid development of transport after World War II led to the demise of traditional liner services but, in recent decades, rapid growth in the popularity of cruising has resulted in the design and construction of even larger ships.

Visiting Sydney for the first time on 20 February 2007, Cunard Line's newest ship *Queen Mary 2* is no longer the largest but is frequently described as the grandest liner in the world. Built for trans-Atlantic liner service and world-wide cruising, she has a gross tonnage of about 150 000, an overall length of 345 m, a speed of nearly 30 kn and can carry about 2600 passengers. The ship's four propellers are each driven by synchronous electric motors in four understern pods providing total propulsion power of 86 MW from four Wartsila 16.8 MW diesel engines and two GE 25 MW gas turbines driving alternators.

She is a stark contrast to the liner *Orient*, built for Australian service in 1879 and then the largest passenger ship in service at 5386 gross tons, 139 m long and carrying 550 passengers at 15 kn.

This fascinating presentation will describe the design and construction of *Queen Mary 2*, and contrast the propulsion and hotel systems of this modern cruise liner with her famous predecessors, and provide a glimpse of even larger ships which have recently entered service or are planned.

All welcome, no charge. RSVP by email to rsvp@engineer-saustralia.org.au. For further information, contact George Fox on 9449 8536

Pacific 2008

The Pacific 2008 International Maritime Exposition and Congress will be held at the Sydney Convention and Exhibition Centre, Darling Harbour, Sydney, from 29 January to 1 February 2008. It will include:

- The Pacific 2008 International Maritime and Naval Exposition, organised by Maritime Australia Ltd.
- The Royal Australian Navy Sea Power Conference 2008, organized by the Royal Australian Navy and the Sea Power Centre Australia. Further information on the conference can be obtained from the conference website www.seapower2008.com.
- The International Maritime Conference is being organised by the Royal Institution of Naval Architects, the Institute of Marine Engineering, Science and Technology and Engineers Australia on the theme *Meeting the Maritime Challenges*. Further information on the conference can be obtained from the conference website www.pacific2008imc.com or by contacting the conference organisers, Tour Hosts Conference & Exhibition Organisers, GPO Box 128, Sydney NSW 2001, phone (02) 9265 0700, fax 9267 5443 or email pacific2008imc@tourhosts.com.au. Further details of the conference are available on the website www.pacific2008imc.com.

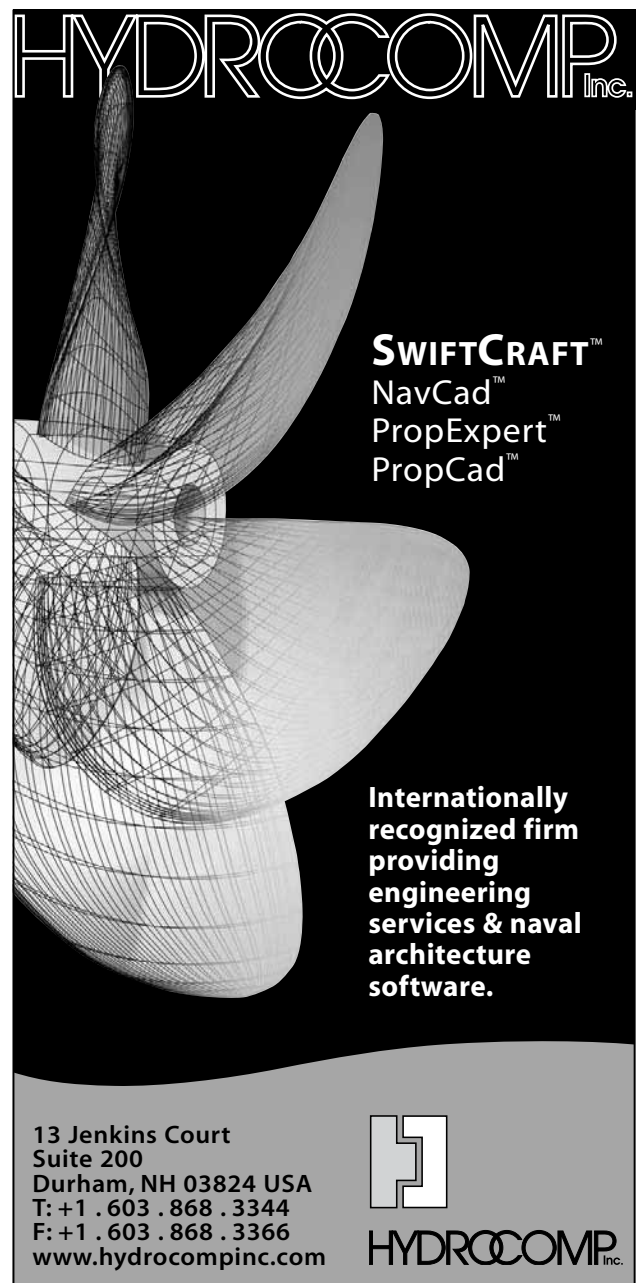
The call for papers for the Pacific 2008 IMC is out, and the deadlines are as follows:

Receipt of Abstracts	3 May 2007
Authors notified of acceptance	13 June 2007
Receipt of refereed papers	27 September 2007
Receipt of non-refereed papers	31 October 2007
Presenter registration	14 November 2007

Twenty-Seventh Symposium on Naval Hydrodynamics in 2008

The Symposia on Naval Hydrodynamics are run under the auspices of the Office of Naval Research (ONR) in Washington and are held every two years. The 27th Symposium on Naval Hydrodynamics will be held in Sydney on 17–22 August 2008, which will make it the first time that the symposium has been held in the southern hemisphere. The conference is being organised jointly by ONR, the University of New South Wales, Engineers Australia and Tour Hosts. It is expected that a website will be operating in the near future.

Meantime, for further details, contact Prof. Lawry Doctors, who is on the International Organising Committee, on (02) 9385 4098 or L.Doctors@unsw.edu.au.



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FROM THE CROW'S NEST

Australian Register of Historic Vessels

The Australian Register of Historic Vessels is an internet-based register which presents information about surviving vessels of significance to Australia's maritime heritage. It aims to build a national picture of historic vessels, to promote awareness of their connections with their communities, past and present, and to encourage their preservation and use. The AHRV features information on designers, builders, owners, and the social, community and geographical context in which vessels have existed. The register may be viewed at www.anmm.gov.au/arhv.

The register was officially launched on Thursday 1 February with a ceremony on board the Sydney Heritage Fleet's *James Craig* at her berth at Wharf 7, Darling Harbour. The ceremony was compered by the Director of the Australian National Maritime Museum, Mary-Louise Williams, who paid tribute to the many people involved in the development of the register over the last ten years, from concept to reality. The ceremony was attended by Senator the Hon. Rod Kemp, Minister for the Arts and Sport, Mark Bethwaite, Chairman of the ANMM, Alan Edenborough and Hugh Lander from the SHF, and special guest Sir James Hardy, OBE, whose family yacht, *Nerida*, is included in the register. A warm speech by Sir James, who declared the register open, was followed by a parade of some vessels which are included on the register: *Lady Hopetoun*, *John Louis*, *Valiant Star*, *Bareki*, *Ku-ring-gai*, *Nerida*, *Harman*, *Cale Ain*, *Jenny Wren* and *Krait*.

The parade, which took place on a beautiful, sunny day was followed by a demonstration of the register below in the 'tween decks by David Payne, the project Officer. David has been intimately involved with the development of the register and can talk knowledgeably and at length about every vessel therein.

Other guests included many of the Payne family, and Kingsley Haskett, all the way from Searle's Boat Yard in Adelaide, and familiar with many of the vessels on the register and many more which should be on it.

At present the register focuses on vessels built prior to 1965; i.e. prior to the era of mass production. Some boats built after 1965 will be included. Vessels of all types and lengths are included, from dinghies and small indigenous craft to sea-going ships, such as *Stephen Brown*, the last of the sixty-milers, now moored in Launceston and operated as a training ship by the Australian Maritime College. The register does not include wrecks or replicas.

To be included, the vessel should be intact, or relatively complete, and have some significance, such as being associated with people or events which have shaped Australia's maritime history, being a rare or important example of its type/designer/builder/class/construction/period, being able to teach us about some aspect of maritime history or technology, or having special value to its community or group. Full details for nomination of a vessel can be found on the website.

Phil Helmore



Sir James Hardy's magnificent gaff cutter *Nerida*
(Photo John Jeremy)

PACIFIC 2008 INTERNATIONAL MARITIME CONFERENCE

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**DEADLINE FOR RECEIPT OF ABSTRACTS:
3 MAY 2007**

The Pacific 2008 Maritime Congress will comprise of both the Pacific 2008 International Maritime Conference and the RAN Sea Power Conference 2008

The Congress is being held in association with the Pacific 2008 International Maritime Exposition Organised by Maritime Australia Ltd.



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GENERAL NEWS

Collins-class CIP Approved

Australia's Collins-class submarines will be significantly enhanced after Government's first-pass approval for the Collins Continuous Improvement Programme.

This project, known as SEA 1439 Phase 5B.2B, will deliver focussed upgrades to the Collins-class submarines to ensure that they maintain their position at the forefront of conventional submarine technology.

The Collins Continuous Improvement Program is designed to build on earlier works to deliver an effective submarine capability through a program of continuous technological improvements. This rolling upgrade concept aims to be more efficient and flexible than a major mid-life upgrade. It has the benefits of lower cost, schedule and technical risks.

Defence will examine with industry a range of improvements to the Collins fleet. These include enhancing Australian industry ability to support combat-system development, the redesign and upgrade of the submarine communications centre, improvements to electronic warfare capability and defences, and options for the improvement of optronic sensors as part of a periscope-system upgrade.

The project is valued at up to \$150 million.

The decision is a boost for Australian industry, and is a further step towards the development of a sustainable submarine industry support capability in this country.

The project is expected to provide a consistent level of work for Australian Submarine Corporation under the existing Through-life Support Agreement with Defence, as well as supporting other contractors.

Austal Patrol Boat Commences Operations with Bermuda Water Police

The sister ship to the recently-delivered six New South Wales Water Police boats officially entered service on 4 December 2006 with the Bermuda Water Police. This follows a delivery trip from the West Australian shipyard which included shipping the 16 m vessel to Savannah, Georgia, USA, before travelling under her own power on a 900 n mile final voyage to the island of Bermuda via Morehead City in South Carolina.

Marking the occasion, the Bermuda Police Service held a press conference outside its Marine Unit offices at Barr's Bay Park in the City of Hamilton to officially launch *Guardian*. Dignitaries present included the Governor, Sir John Vereker, Deputy Commissioner of Police Mrs Roseanda Young, Chief Fire Officer Mr Vincent Hollinsid as well as officials from H M Customs and Marine and Ports.

In his capacity as leader of the Police Service, Governor Sir John Vereker toured the vessel and commented: "Maintaining law and order on the sea is just as important as law and order on the land. This vessel is taking maintenance of law and order to a new level."

Guardian is an all aluminium monohull design which features all the design upgrades included in the current NSW Police Boat fleet that replace the previous seven 16 m police boats delivered by Austal in 2000. *Guardian* has a cruising speed of 20 knots with a 400 n mile range. The vessel is

The Australian Naval Architect

designed to operate up to 200 n miles offshore and comes with an array of communication and navigation equipment to complement the role and capabilities.

After arriving at the island in late September, sea trials and familiarisation exercises were held in local waters for the Police Marine Unit. The vessel will be based in Hamilton for general patrol, search-and-rescue, and dive operations and general assistance to police units and governmental agencies.

Principal Particulars

Length OA	16.0 m
Beam	4.87 m
Draft	1.25 m

Propulsion

Main engines	2 x Caterpillar C12, 492 kW each
Gearboxes	2 x Twin Disc Quickshift MGS 5114A
Maximum speed	28 kn
Cruise speed	20 kn

Survey

Australian Uniform Shipping Laws (USL) Code Class 2B



Guardian in Bermuda
(Photo courtesy Bermuda Water Police Service)

Recognition for *Seafaris*

The luxury Australian superyacht *Seafaris* has been recognised as being among the best in its class on the international stage by being named as a finalist in the 2007 World Superyacht Awards.

The magnificent 41 m catamaran, which was used by Australia's favourite Royals, HRH Crown Princess Mary of Denmark, and her husband, HRH Crown Prince Frederik, when they were in Sydney in December, will be judged alongside five other contenders in the Semi-Displacement Yachts of over 40 m LOA category for the award. The winner will be announced at a gala ceremony in Venice, Italy, in April.

Owned by Newcastle-based property developer Jeff McCloy, *Seafaris* represents a dynamic new approach in the world of supremely-comfortable superyachts.

"Being named as a finalist for this international award recognises the fact that through Australian design and ingenuity we have created a vessel which brings a new dimension to the world of luxury superyachts," Jeff McCloy said. "*Seafaris* evolved from my determination to hold a completely open mind on what size and type of superior charter yacht

would be needed to achieve my goal — to have 10 guests experience new levels of adventure at an exciting destination while traveling in exclusive and supreme comfort.”

Mr McCloy, who managed every stage of the project, said *Seafaris* was a new generation of superyacht. The unique décor and luxurious accommodation have received rave reviews. The entire interior is nothing short of grand — a six-star environment which had been inspired by the sea and the warmth of some of Australia’s most magnificent timbers. The vessel has many special features, some influenced by the fact that the Great Barrier Reef region where she will operate for much of the year is a protected marine park. Everything about *Seafaris* is ecologically friendly, right down to the hull shape generating minimum wash.

Seafaris was built in Newcastle. The partially-completed vessel then travelled under its own power over 400 n miles from Newcastle to Brisbane for the fit-out and finishing.

Rob Mundle



Seafaris in Sydney Harbour
(Photo John Jeremy)

Austal Wins Second Littoral Combat Ship Order

The option for a second Littoral Combat Ship (LCS) was confirmed in December following the order in October 2005 for the first General Dynamics/Austal LCS.

Based on the 127 m advanced Austal trimaran seaframe, which forms the platform for the ship’s operational and combat systems, the new vessel will be built alongside *Independence*, which is currently in an advanced stage of construction at Austal’s Mobile, Alabama, USA shipyard.

Recent US Navy reports have speculated on an expanded acquisition strategy, from 4 to a possible 17, for the Flight 0 fleet of LCSs that also includes an alternate monohull ship design. Commenting in September, Assistant Secretary of the Navy (Research, Development, and Acquisition), Dr Delores Etter, told Reuters “The U.S. Navy hopes to finalise its acquisition strategy for a new class of shore-hugging combat ships by mid-December.

“The Navy has not yet announced whether it will choose one or both designs for full production of some 55 ships over the next decade — or who would build them.

“By the end of fall, we will have a pretty good idea of where we want to go with this. Both ships are really exciting. Both ships are doing great.”

Etter said she was “really optimistic” that LCS would become an example of a new way of building ships, with a

February 2007

focus on making them more affordable and building them quickly.

In addition, the prospect of foreign military sales of the LCS is also gaining increased interest and US Navy emphasis as the first-of-fleet vessels nears completion. A reported 26 potential buyers exist worldwide for the ship and its companion equipment, with two near-term contenders and four others that have expressed active interest.

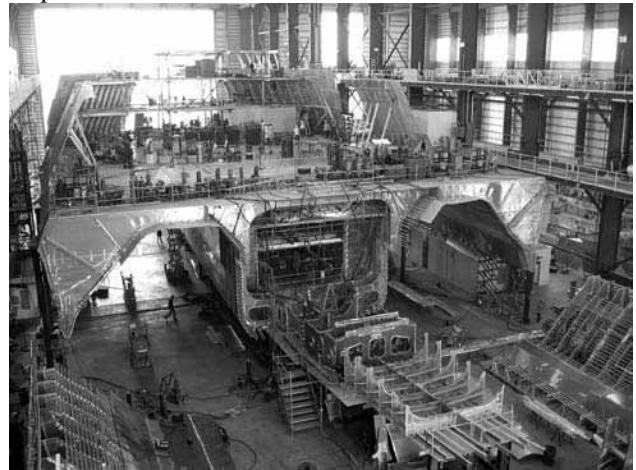
Austal’s revolutionary trimaran LCS design offers superior seakeeping with its long, slender central hull which, combined with smaller side hulls, allows unequalled beam ,creating a voluminous internal mission deck with a high payload-carrying capacity. Above this is an enormous flight deck capable of handling dual H-60 helicopter operations, a feature not available on similar-sized naval vessels.

In Washington for the announcement, Austal Executive Chairman John Rothwell commented:

“My congratulations again go to the dedicated Austal LCS project team which has worked closely with the US Navy since the original concept design to today, where we have the first trimaran LCS in an advanced stage of construction. The best is yet to come as we look forward to *Independence* demonstrating in operation the advanced capabilities of the trimaran design and the benefits this will bring to naval operations.”

Austal USA Chief Operating Officer, Dan Spiegel, added:

“With this second LCS order, Austal USA is aiming to grow our workforce to 1200 employees by the end of 2007. We are committed through our training programmes to recruiting and developing the most highly-skilled group of aluminium shipbuilders in the USA.”



Construction progress at October 2006 of *Independence*,
scheduled for launch in December 2007
(Photo courtesy Austal Ships)

ASC MME

On 20 November 2006, Senator Cory Bernardi, representing the Minister Assisting the Minister for Defence, Bruce Billson, officially launched the Skilling Australia’s Defence Industry (SADI) Agreement between Australian Submarine Corporation (ASC) and Defence which will establish a newly-developed Master of Marine Engineering degree in Adelaide.

“I congratulate ASC for having the foresight to introduce this much-needed course which will provide access for the Naval Defence community and the wider general

marine engineering community to a set of comprehensive courses which are comparable to international degrees such as the prestigious University College London and MIT degrees”, Senator Bernardi said.

The SADI Program and ASC will invest up to \$10.69 million over the next five years in a program which directly focuses on the critical high-technology skills shortage in marine engineering. The course was developed by ASC in conjunction with the University of Adelaide and with support from the Government’s SADI Program.

The SADI Agreement with ASC will accelerate the development of qualified engineers through the establishment and delivery of the master’s program in marine engineering for submarines and naval ships in an area where there are skills shortages. The program is open to other interested parties and will be listed publicly in the University Calendar.

“This initiative will play a vital role in ensuring that Australia has the highly-skilled engineers capable of leading engineering outputs in the critical skill sets of submarine and naval ship engineering. The investment by ASC and the SADI program will increase the skills base not only of ASC but also industry and the wider community generally” said Senator Bernardi.

Through the SADI Program, the Australian Government will invest up to \$215 million over ten years to assist defence industry generate additional skilled positions, up-skill existing employees and improve the quality and quantity of skills training.

SKM joins Defence Skilling Program

The Minister Assisting the Minister for Defence, Bruce Billson, announced on 21 November that Sinclair Knight Merz (SKM) has joined the Skilling Australia’s Defence Industry (SADI) Program.

Over the next three years, SKM will receive up to \$0.581million from the SADI Program to help train and develop its workforce across all operating divisions.

In the same period, SKM will invest over \$3.271million on workforce development demonstrating the company’s ongoing commitment to supporting the Australian Defence Force.

SKM is a major contributor to the skills base supporting the Hobart-class Air Warfare Destroyer Program (SEA4000). In recognition of this, SKM is a core part of the shipbuilder team as one of two key Strategic Capability Agreement Partners to ASC.

Mr Billson said, that with support from the SADI program, SKM will grow and supplement its existing training programs in the three key areas of project management, naval platform design and 3D computer-aided design.

“The SKM proposal has resulted in a high-quality program which supports all the goals of the Government’s SADI program and enables SKM to upskill and build on its already capable workforce,” he said.

“Highly skilled people are the key to ensuring that the ADF has the capability it needs to successfully meet challenges in Australia and around the world.

“The Australian Government is committed to supporting

our troops with world-class equipment and creating a robust local defence industry with a strong and evolving skills base.”

Over the next 10 years, the Australian Government will invest up to \$215 million to help defence industry generate additional skilled positions, upskill existing employees and improve the quality and quantity of skills training.

Defence takes Key Role in New International Project Management College

On 13 February 2007, the Minister Assisting the Minister for Defence, Bruce Billson, participated in an historic gathering of the world’s leading practitioners in the management of complex projects.

Senior leaders from defence and industry participated in the inaugural meeting in Canberra of the Fellows and Officers of a new international management institution, the College of Complex Project Managers. The aim of the college is to improve the success rate of complex projects around the world.

Mr Billson said that establishment of the college reflects growing concern about a global shortage of trained complex project managers.

“In Australia the Department of Defence is taking a leading role in addressing the demand for complex project managers,” Mr Billson said.

“The department is developing a competency standard for complex project managers and is supporting the establishment of the College of Complex Project Managers.”

Mr Billson said that Defence Materiel Organisation (DMO) representatives recently completed consultations with international counterpart agencies and the defence industry to interview prospective fellows for the college, and to share details of the development of the Australian Defence competency standard for complex project managers.

“We hope that this competency standard will lead the world in accreditation and development of complex project management,” Mr Billson said.

“No other agencies or corporations have approaches as advanced as DMO’s methods of codifying complex project management competencies.

“All parties visited have expressed interest in engaging with DMO in this area of work and are keen to contribute to the development of a global community of complex project managers through the college.

“Today’s first meeting of the college has focused on the development of a constitution and a list of priorities for the fellows to focus on over the next year.”

Mr Billson said that improving the competency standards of complex project managers has significant potential over time to improve the performance of Australian Government Defence projects.

Australia-France Defence Cooperation Agreement

The Australia-France defence relationship will be further enhanced through the signing of a Defence Cooperation Agreement (DCA) in Paris. On 15 December the Minister for Defence, the Hon. Brendan Nelson, signed the DCA

during a meeting with the French Minister for Defence, Michele Alliot-Marie.

The DCA between Australia and France is Australia's first DCA with a European country. The DCA will provide a framework for further cooperation across a broad range of military and defence civilian areas such as materiel and capability planning.

Australia and France share concerns over global threats to security, as well as a commitment to assist the Pacific region in its own stability and security. France, in cooperation primarily with Australia and New Zealand, actively contributes to maritime surveillance, humanitarian and disaster relief assistance, and support to regional defence and police forces in the Pacific and Southern Oceans.

France is an important part of the European defence industry and there is an increasingly significant level of materiel activity between Australia and France.

Leadership Changes at Tenix

Tenix founder and Chairman, the respected business leader, Carlo Salteri AC, 86, has announced his retirement as Chairman of the Board of Tenix. Stepping into the Chairman's role is his son and current Group Managing Director, Paul Salteri.

"Having led Tenix as Group Managing Director since the company was founded in 1997, I believe, with the support of my family and fellow board members, that the time is now right to take up the non-executive role of Chairman", said Mr Salteri.

"I look forward to this new challenge and my continuing involvement with the company."

Moving into the role of Group Managing Director and CEO is Greg Hayes. Mr Hayes currently holds the position of Executive Director Finance and Corporate Development based at the Tenix Group head office in North Sydney. He was appointed to that position in November 2006. He was previously Chief Financial Officer of AGL and has held senior management positions at Westfield and Southcorp.

"It is an honour to be chosen to lead an organisation with such a proud history and a portfolio of quality assets," said Mr Hayes. "I look forward to working with the Board and management as Tenix enters this new phase and to lead the company to continued success."

Further to these changes, current Executive Director and Tenix Defence CEO, Robert Salteri will join Paul Salteri and Carlo Salteri as a Non-Executive Director. The changes at Tenix take effect from 12 February 2007.

Navy Presence in Westernport and Sydney Assured

In December the Minister for Defence, the Hon. Brendan Nelson, announced that, following a detailed review of Navy's future training infrastructure requirements, HMAS *Cerberus* in Victoria and the Navy's four key Sydney bases will be retained in their present locations.

Conducted as a component of the Defence Force Disposition Program, the review assessed the potential implications of relocating the training functions conducted at HMAS *Cerberus* to the Sydney area. This included possible

advantages in rationalising Navy's existing Sydney training bases.

Analysis of the implications of closing HMAS *Cerberus* and relocating those functions elsewhere showed that there would be no measurable advantage to Navy personnel or to the Defence operating cost budget from such a proposal.

This decision now provides a firm basis for Navy's long-term infrastructure planning in support of both training and operations.

HMAS *Cerberus* provides well-established training facilities, well suited to training sailors and officers in a location which remains a key part of the Royal Australian Navy's long and proud history.

Associated with the decision to retain HMAS *Cerberus*, the review also recommended the retention of Navy's key Sydney bases at HMAS *Kuttabul* (the primary support base for Fleet Base East), plus training and operational support bases at HMAS *Watson* (Watson's Bay), HMAS *Waterhen* (Waverton) and HMAS *Penguin* (Mosman).

The decision to retain these bases provides a firm foundation and clearer way forward for planning future Navy training and support functions in the Sydney area.

ASC Investment for Submarine Maintenance in WA

Plans have been unveiled for construction of a \$35 million submarine maintenance and upgrade facility at the Australian Marine Complex (AMC), Western Australia.

The facility, which includes office accommodation for 185 people, is being built by Collins-class submarine builder, designer and maintainer, ASC Pty Ltd.

According to Ross Milton, ASC's Deputy Chief Executive Officer, the new submarine facility will consolidate all WA submarine maintenance and upgrade activities, and commit ASC to undertake work in the state indefinitely. "ASC will benefit from the WA Government's commitment to additional infrastructure, which includes a floating dock, as part of the Common User Facility (CUF). It will incorporate land transfer capability enabling ASC to move submarines into the new facility," said Mr Milton.

"With the construction of a large maintenance hall for under-cover submarine work, use of the floating dock and access to the CUF's eastern wharf extensions, we will be able to carry out maintenance on as many as three submarines at any one time.

"It is through the generous support of the WA Government that ASC will soon deliver Collins-class submarine maintenance services to the Royal Australian Navy far more efficiently and for that we're very appreciative."

During 2006-07, \$49 million of submarine work will be undertaken in Western Australia, with 65% of this amount spent with local contractors.

Tenders were called for ASC's facility in July 2006, with construction expected to take around 14 months to complete.

ASC will undertake its first submarine maintenance docking at the AMC in 2008.

Swift move to Trinidad and Tobago

The former US Army Theatre Support Vessel, *Spearhead*, (Incat Hull 060) has been purchased from its Delaware, United States-based owners, Bollinger/Incat LLC. The four-year-old fast ferry, to be renamed *T&T Spirit*, is currently being refitted for passenger service after a well-documented career with the US Army. When she emerges from her refit at Incat's Hobart shipyard, *T&T Spirit* will be sporting a new white hull along with the Trinidad & Tobago national colours of red, white and black on its sides.

Recently, the Port Authority of Trinidad and Tobago (PATT) purchased the Incat 91 m wave-piercing catamaran *The Lynx* in a \$US21 million deal with Australian owner Allco Finance Group. Renamed *T&T Express*, the ferry, which was once well known for its eye-catching black Devil Cat livery, has also been painted with the national colours of Trinidad & Tobago.

Works and Transport Minister, Colm Imbert, said that Cabinet had decided to purchase the two fast ferries instead of leasing them, resulting in projected savings over a ten-year period of \$TT200 million on *T&T Express* and \$TT100 million on *T&T Spirit*.

Incat Chairman, Robert Clifford, commented "Almost five years ago the Port Authority and the Government of the Republic of Trinidad and Tobago started to develop a vision for a national seabridge based on identifying and then implementing world's best practice in the ferry industry. From the outset, demanding benchmarks for proven year-round in-service reliability, high levels of passenger comfort, low operating costs and the ability to carry heavy freight were established.

"With the permanent acquisition of *T&T Express* and *T&T Spirit*, these benchmarks have been exceeded and, let there be no doubt, the Port Authority of Trinidad and Tobago has emerged as a significant player in the global ferry market, offering a world-class fast-ferry service," Mr Clifford said.

Incat's wave-piercing catamaran technology revolutionised the Trinidad & Tobago seabridge in January 2005 when, after three years of investigating tonnage options, the PATT chartered Bay Ferries' Incat 98 m *The Cat* (Hull 059). This vessel entered commercial service on the 85 n mile route between Port of Spain and Scarborough and, since then, by operating in the Caribbean during the off peak season of its core Canadian operation, *The Cat* has been instrumental in demonstrating the suitability of Incat wave-piercing catamarans on this demanding service.

Immediately upon entering service, *The Cat*, operating at speeds of approximately 40 kn, slashed crossing times in half, to two hours and fifteen minutes, and, for the first time, the nation's seabridge became a reliable and predictable transportation alternative to air travel. The craft quickly became the transport of choice and, with capacity for 900 persons and up to 267 cars, she successfully responded to the major challenge of catering for 10 000 passengers over the carnival period.

T&T Express is currently operating along with *The Cat*, which remains on seasonal charter on the crossing until April and, as a result, doubles the passenger and vehicle capacity on the seabridge. Both ferries make their return voyage in the late afternoon, giving travellers a full day in either island.

***T&T Spirit* Principal Particulars**

Length OA	97.22 m
Length WL	92.00 m
Beam OA	26.60 m
Beam of hulls	4.50 m
Draught	3.43 m loaded
Speed	approx 38 kn at 700 t dwt approx 42 kn at 350 t dwt

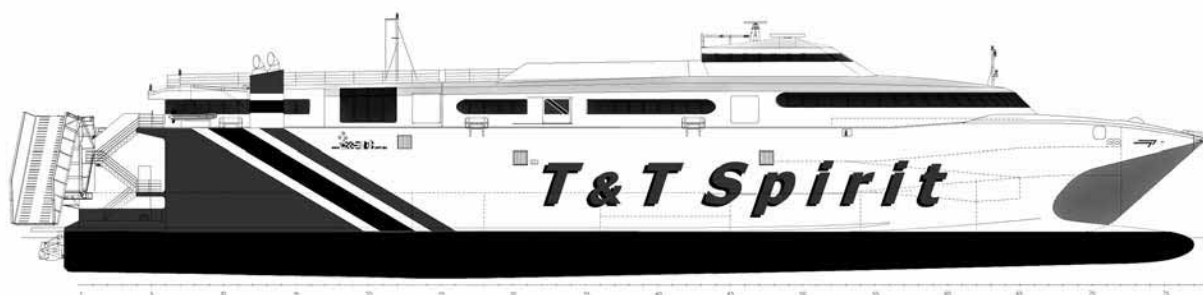
Capacities

Deadweight	approx 700 t
Total persons	900
Vehicle Deck Axle Loads	
Transom to Frame 49	max 10 t per single axle
Forward of Frame 49	
Ramp A to D	0.8 t per axle

Fuel	190 080 L
Fresh Water	2 x 5000 L
Sewage	2 x 4500 L
Lube Oil	2 x 1500 L
Oily Water/Waste Oil	2 x 1600 L

Machinery

Main Engines	4 x Ruston 20RK270 diesels, each 7080 kW at 29/35 °C. Vertical dry exhaust system discharging outboard at portal top.
Water Jets	4 x Lips 120E waterjets config- ured for steering and reverse.
Transmission	4 x Reintjes or ZF gearboxes
Alternators	4 x Cummins N14 265 kW
Ride Control	Maritime Dynamics active ride-control system



T&T Spirit profile
(Image courtesy Incat Tasmania)

Tenix Launches First New Zealand OPV

The first of two Offshore Patrol Vessels being built by Tenix Defence for the Royal New Zealand Navy was launched on 18 November 2006 at Williamstown, Victoria, by a former New Zealand Governor-General, Dame Silvia Cartwright.

Otago is one of seven ships being built for the RNZN by Tenix Defence under Project Protector.

As well as the OPVs, four Inshore Patrol Vessels are being built at Tenix's Whangarei (NZ) facility, and the 8500 t Multi-Role Vessel, *Canterbury*, is in final fitout at Williamstown.

Guests at the launch included the New Zealand Defence Minister, the Hon. Phil Goff MP, the Chief of the New Zealand Navy, Rear Admiral David Ledson ONZM, the Australian Minister Assisting the Minister for Defence, the Hon. Bruce Billson MP, and the Victorian Minister for Manufacturing and Export, the Hon. Andre Haermeyer MP.

Tenix Defence Chief Executive Officer, Robert Salteri, said the launch continued the highly successful trans-Tasman industrial co-operation established for the ANZAC Ship Project, under which Tenix constructed eight frigates for Australia and two for New Zealand.

"Tenix Defence's naval shipbuilding program provides jobs for about 1000 people in both our countries, and involves another 2000 small-to-medium enterprises as sub-contractors and suppliers," Mr Salteri said.

"Over the past 20 years, we have built 120 ships and exported 60% of them.

"This is a business which both provides a significant economic input and, at the same time, a vital support to the navies of both our countries.

"Tenix was very proud to win Project Protector against international competition and is equally proud to launch this ship today," Mr Salteri added.

"We look forward to delivering all seven ships to the RNZN."

Warship to be Sunk off NSW Central Coast

On 7 February 2007, the Minister for Defence, the Hon. Brendan Nelson, announced that he had selected New South Wales to be given the RAN Guided Missile Frigate HMAS *Adelaide* for sinking as a dive wreck.

The New South Wales Government has indicated that the preferred location for HMAS *Adelaide* is off the New South Wales Central Coast, near Terrigal.

HMAS *Adelaide* will decommission late in 2007 at her home port in Rockingham, Western Australia, with handover to the New South Wales Government expected in early-to-mid 2008.

In addition to the warship, the Commonwealth Government will contribute up to \$3 million in funding toward the costs of preparing the ship for sinking.

HMAS *Adelaide* was built in the United States and commissioned in the Royal Australian Navy on 15 November 1980, and is the second ship to carry this name. HMAS *Adelaide* was the first guided missile frigate to be home ported in Western Australia.

Tourism projects which have previously used former RAN warships to establish dive wrecks have reportedly accrued annual revenues ranging from \$2.4 million to \$23 million to the significant benefit of local communities.

Austal Launches First of two Vehicle-passenger Ferries for Turkey

The first of two Auto Express 88 fast car ferries, *Osman Gazi*, was launched at the Austal shipyard on 11 December 2006. The 88 m aluminium catamaran is the ninth fast ferry which Austal has built for Istanbul Deniz Otobusleri (IDO).

The new Austal ferries are designated to operate on a 39 n mile reciprocal service across the Marmara Sea between Yenikapi (Istanbul) and a new port development in Mudanya, servicing the city of Bursa. *Osman Gazi* is scheduled to enter service in April 2007, the same month in which the second ferry will be launched.



HMAS *Darwin* entering the Captain Cook Dock at Garden Island in Sydney on 18 December 2006. Her modernisation by Thales Australia was due to commence in early 2007. HMAS *Melbourne*, in the later stages of her modernisation, is on the left with HMAS *Manoora* on the right
(Photo John Jeremy)

The ferries have the capacity to carry 1200 passengers and 225 cars and will be capable of an operational speed of 36 kn when loaded. The catamaran's propulsion consists of four MTU 20 cylinder 8000 series diesel engines driving a Lips propulsion system through four Reintjes gearboxes.

Incat K-class for English Channel

The New Channel Islands operator, HD Ferries, has chosen the Incat K-class catamaran, *Incat K3*, to launch a new link to France. Established by the family-owned 2Morrow Group, HD Ferries intends to launch the new service between the French port of Saint Malo and the Channel Islands of Jersey and Guernsey from 15 March 2007. The vessel will offer six crossings per day, providing travellers with a wide range of additional options to complement existing ferry services.

Following the cessation of the Eméraude Lines ferry service in 2005, the States of Jersey, Guernsey and the French region of Brittany sought an additional operator to meet the demand for ferry travel between the Channel Islands and France.

The 2Morrow Group was one of the companies approached and, after nine months of investigation, HD Ferries has been established to meet the requirement for a regular and reliable ferry service for cars, freight and passengers between Jersey, Guernsey and France.

Continuing the low-cost trend currently sweeping the ferry industry, HD Ferries uses the internet, www.hdferrries.com, and its innovative and well-established WebRes reservation system to deliver value-for-money travel based on demand-driven pricing. The service and pricing has been designed to provide a high-speed, no-frills, value-for-money service for both passenger and freight traffic.

HD Ferries Director, Mr Chris Howe-Davies, comments "We aim to capture the market which has been lost by the closure of Eméraude Lines, while at the same time bringing affordable ferry travel to residents and visitors of the Channel Islands from France."

The 2Morrow Group is not a complete newcomer to the ferry trade although the Channel Islands venture is its first in ship operation. Specialising in travel and transport services, it is already present in the ferry sector through its online booking service www.AFerry.to, and has a port agency business in Portsmouth. It is also active in the 2morrow Group in internet travel technology and distribution, air freight and other services with such names as The Travel Gateway, Entee, Gobelynx and BAC Express.

Built in 1998, *Incat K3*, to be renamed *HD1*, delivers speeds of up to 50 kn lightship and 46 kn fully loaded at 167 t deadweight. The vessel provides capacity for up to 400 persons

and 89 cars. An open deck area aft will allow HD Ferries to offer some truck capacity, which should prove attractive to shippers of French produce.

HD1 is scheduled to enter dry dock in Gibraltar on 30 January for pre-service maintenance work and livery application. When complete, the vessel will sail to the UK to have vehicle ramps fitted, crew training and berthing trials.

General Particulars

Length OA	80.10 m
Length WL	72.30 m
Beam	19.00 m
Beam of Hulls	5.00 m
Draft	2.16 m approx.
Speed	46.0 kn at 167 t dwt 50.0 kn light
Max Deadweight	167 t
Total persons	400 persons
Vehicle Capacity	89 cars at 4.5 m x 2.3 m

Queensland Industry News

North Queensland Region

The holiday period saw no let-up in refit activities at Tropical Reef Shipyard, with the 83 m cargo ship *Newcastle Bay* and the US Army's *Great Bridge* refits completed in early January. Current major work includes the slipping of the 87 m *Papuan Coast* and the wharf-side refit of the 105 m *Naii Ailan Coast*, with work including off-ship repairs of the roller-hatch covers, replacement of most of the hydraulic system and rewinding of electrical motors.

AIMTEK has taken on a new naval architect for general marine work as well as to undertake further design developments of their River Runner® range of ultra-low wash ferries. Six River Runner® 200s are currently under construction at BSC's leased Shipworks facilities on the Brisbane River. AIMTEK has also won the on-going support contract for the RAN hydrographic ships.

Viking's Marine Manager, Joe Akacich, has appointed a new manager at Cairns Slipways, Jim Johnson, who has extensive slipway experience in both Cairns and PNG. Other positions, including dockmaster, are being advertised.

Refits are steadily increasing with Seaswift's Torres Strait servicing fleet — the RAN's hydrographic ship *Melville*, *Quicksilver V* and others are underway.

In the luxury yacht area, the 43 m *Grand Finale* has been hauled over Cook Street into the undercover facility for a complete repaint, and servicing of shaft train, rudders and stabilisers to be completed by the end of the northern wet season.



HD1 in her new livery
(Image courtesy Incat Tasmania)



The ship to be named *Shiraz* (ex-HMAS *Westralia*) leaves HMAS *Stirling* for the last time, from Diamantina Pier. The AGR Group, a Norway-based oil technology and services group and Helix Energy Solutions Group, Inc., a Houston-based energy services company, have jointly acquired the vessel from the Australian Government. The former HMAS *Westralia* was acquired for the purpose of converting it into a Floating Production, Storage and Offloading vessel (FPSO) (RAN Photo)

Other motor yachts booked for refits later in the year include the regular Cairns visitor, *Lionwind*, with planned Lloyd's five-year inspection, W5 on MTU main engines, new exhaust system and full repaint. The Cairns Super Yacht Group and the Cairns Marlin Marina are actively promoting the region and are currently negotiating a visit by a Dockwise Yacht Transport ship for later in the year.

The prolific small aluminium boat builder, Marcel Maujean's Cairns Custom Craft is as busy as ever building private fishing boats, two 12 m vessels for Torres Pilots and a traditional 11 m Jay Benford (USA)-designed Florida Bay Coaster for a client in Southport, Queensland. This is the first time this design has been built in aluminium.



The Jay Benford coaster
(Photo courtesy Cairns Custom Craft)

Gold Coast Region

After a well-deserved Christmas break the Gold Coast marine industry is preparing for another busy year ahead.

February 2007

Local design and consulting companies, Oceanic Yacht Design and Sea Transport Solutions, are currently busy with a large variety of work. Oceanic is currently involved in project managing and surveying five luxury vessels to obtain Queensland survey status; these vessels range in length from 15.25 m up to 30.5 m. Other works include the design of two 12 m houseboats, two 12 m power catamarans and a 15 m cruiser. Sister company Sea Transport Solutions has recently been awarded a number of design contracts including six hydrographic survey vessels for India, a 64 m ro-pax ferry for Scotland, two 49 m ro-pax ferries for Brazil and a 61 m ro-pax Ferry for South Australia. A 47 m all-aluminium ro-pax Catamaran is currently being built in the Philippines, with delivery to South Australia expected in February

Gold Coast-based Sunrunner Sport Cruisers has embarked on a major "re-launch" of the Sunrunner range of vessels overseas. Recently, a Sunrunner 3300 and a Sunrunner 3700LE arrived in China and were displayed at the 1000 Island Lake and Guangzhou Luxury Exhibitions. Sunrunner GM, Andrew Scott, attended both shows and reported excellent results from distributor/dealer LT International. Two new orders have resulted and Sunrunner is currently manufacturing a new 3300 and 3700LE for the Shanghai Show in April 2007.

Dubai continues to show strong interest in the Australian-built range of vessels; several parties have letters of intent for the dealership and are negotiating several vessels in the 3300 and 3700 series. Other international letters-of-appointment include Italy, Singapore and the UK. Sunrunner is negotiating vessels in each location.

Additionally, Sunrunner continues to expand its markets within Australia, having held an official launch of the Sunrunner range of vessels in Airlie Beach, North Queensland.

Mustang Marine has officially launched its much-anticipated range of sports flybridge models on the Gold Coast. Floating in the lagoon pool of the Hyatt hotel, the M37 and M43 sports flybridge vessels were the centrepiece of the largest and most-anticipated launch in the company's history. Mustang CEO Paul Scanlon presented the new range to more than 300 VIP guests and a host of sporting and television identities including Australian rugby union captain George Gregan, Olympic volleyball gold medallists Natalie Cook (Australia) and Kerry Walsh (USA), former Wallaby captain Phil Kearns, and several Australian television personalities. The new vessels are now available from Mustang Marine dealers around the world, although order books have filled more rapidly than expected with orders coming in from the USA, New Zealand, and dealers around Australia.

Custom boatbuilder Azzura Marine at Coomera has successfully launched a 25 m luxury game boat. Designed by New Zealand-based Warwick Yacht Design, the vessel has been built to Class 2B Qld survey. The vessel is powered by two Caterpillar C30 1156 kW engines and reaches a maximum speed of just over 30 knots. A unique feature of the vessel is that it has been specifically designed to be wheel-chair friendly.

Brisbane Region

New Wave Catamarans has very recently launched *Black Gold*, a 20 m catamaran designed by Sea Speed Design of Brisbane. This craft is unique in that it reprocesses its own used oil. For more details of this craft, visit the website www.newwavecats.com.au/boats/oil_reprocessing_cat.html.

Brian Robson

New South Wales Industry News

Incat Crowther 27 m Catamarans

Incat Crowther has been selected to provide a full design and aluminium plate and extrusion kit for three 27 m catamaran ferries for a Mexican operator in Cancun.

Ultramar operates a fleet of vessels from two docks along the Cancun hotel strip. One of these docks is for their Aqua World Park, which facilitates many marine activities in a sheltered lagoon. The other provides direct access to the offshore island of Isla Mujeres where the new vessels will operate. Isla Mujeres is a fishing village and, although it is now discovered by tourists, it still retains its charm and tranquil atmosphere.

The vessels will be high-speed catamaran ferries, capable of carrying 249 passengers at 28 kn. The main cabin contains seating for 125 passengers, with further seating for 124 passengers on the open upper deck. The main cabin has been arranged with a small kiosk at the forward end and a toilet block aft. Full-height windows allow excellent viewing of the beautiful Caribbean waters. The aft deck has been arranged to take a series of luggage carts for overnight travellers to the island.

Powered by twin Caterpillar 3412E main engines, each producing 895 kW, the vessel will have a service speed of 28 knots at full load.

The vessels will be built by Louisiana-based Midship Marine

The Australian Naval Architect



M37 and M43 Sports Flybridge vessels at the official launch at the Hyatt Hotel

(Photo courtesy Mustang Marine)



Black Gold

(Photo courtesy Sea Speed Design)

on the USA's Gulf Coast, utilising an Incat Crowther kitboat package. Along with the full design of the vessel, Incat Crowther will provide all the aluminium, with pre-cut plate and extrusions delivered to the shipyard. The first vessel will be Incat Crowther's sixth complete kitboat package.

Principal particulars of the vessels are as follows:

Length OA	27.80 m
Length WL	23.40 m
Beam	7.75 m
Draft hull	1.20 m
Fuel	2000 L
Fresh water	500 L
Service speed	28 kn
Passenger capacity	249
Deadweight	23.98 t
Main engines	2 × Caterpillar 3412E each 895 kW
Propulsion system	Propellers
Survey	USCG Sub Chapter K
Construction	Marine-grade aluminium



Rendering of Incat Crowther's 27 m Catamaran for Mexico
(Image courtesy Incat Crowther)

Incat Crowther 50 m Catamaran Crewboat

Incat Crowther has been selected to design a 165 ft (50 m) catamaran crewboat for worldwide operator, SEACOR Marine. Managing Director of Incat Crowther, Brett Crowther, believes that the success of this vessel will open a whole new industry for the catamaran. "The speed and stability which the catamaran offers to the crewboat market will enable them to provide a higher level of service, which today has only been available via expensive aviation options".

The vessel, to be called *SEACOR Cheetah*, will be a 165 ft high-speed catamaran crewboat capable of carrying 150 passengers at speeds between 36 and 42 kn with up to 152 t deadweight. The main cabin contains seating for 150 passengers in high-class seating with toilets, kiosk and flat-panel entertainment screens. Crew accommodation is positioned on the middle deck with cabins, heads, galley, mess and laundry facilities to support up to 10 crew. The upper deck contains a large fully-equipped wheelhouse, offering full 360° vision including direct visibility of the aft deck. The vessel will be capable of carrying 152 t of deck cargo on a 2700 ft² (250 m²) deck including 13 150 US gal (50 000 L) of cargo fuel.

SEACOR Cheetah will also be built to meet the strict DPS2 guidelines for dynamic positioning in accordance with ABS rules. To aid in these requirements, the vessel has been fitted with 4 × MTU 16V4000s driving 4 × Hamilton HM811s. Two 150 kW retractable azimuthing bow thrusters have also been incorporated forward in each hull.

The vessel will be built locally within Louisiana by Gulf Craft Inc., and is expected to be in service in the later stages of this year. This will be the fourth Incat Crowther vessel that Gulf Craft have built within the last three years.



Rendering of Incat Crowther's *SEACOR Cheetah*
(Image courtesy Incat Crowther)

Founded in 1989, SEACOR is a diversified multi-national company which owns and operates marine and aviation assets, primarily servicing the oil and gas industry worldwide.

February 2007

SEACOR Marine offers customers a comprehensive suite of support services including crew transportation, platform supply, offshore accommodation, maintenance support, standby safety services, and anchor handling and mooring capabilities in both shallow and deepwater environments. This new vessel is expected to join the SEACOR operation in the Gulf of Mexico.

Principal particulars of the vessel are as follows:

Length OA	50.29 m
Length WL	43.89 m
Beam	11.58 m
Draft hull	2.13 m
Fuel	52 314 L
Fresh water	14 000 L
Service speed	41.5 kn
Passengers	150
Deadweight	50 t
Cargo deadweight	152 t
Main engines	4 × MTU 16V 4000 M71 each 2460 kW
Waterjets	4 × Hamilton HM811
Survey	USCG Sub Chapter 'T' Ocean Service ABS ✱A1 HSC Crewboat ✱AMS ✱DPS2
Construction	Marine-grade aluminium

Ben Hercus

Cruising

After the usual quiet winter period, with *Pacific Sun* the only regular visitor on 7–14 day voyages and a visit by *The World* in September, the new cruise season started to pick up in November with visits to Sydney by *Pacific Princess*, *Statendam* and *Seven Seas Mariner*. These vessels all cruised from Sydney through December, January and February, and were joined from December by *Orion*, and from January by *Silver Cloud* and *Sapphire Princess*. Single visits were also made in February by *Christopher Columbus*, *Pacific Venus*, *Amsterdam*, *Astor*, *Oriana*, *van Gogh*, *Maxim Gorkiy* and, on the same day, *Queen Elizabeth 2* (on her annual circumnavigation) and *Queen Mary 2*! Their famous predecessors, *Queen Elizabeth* and *Queen Mary*, visited Sydney Harbour several times during World War II, but were never berthed in port together. Engineers Australia have arranged a presentation on *Queen Mary 2* by John Jeremy on 28 February (see *Coming Events*).

Phil Helmore



The cruise ship *Orion* secured in Athol Bight in Sydney
(Photo John Jeremy)



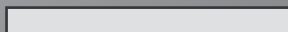
After entering Sydney Harbour at first light on 20 February escorted by hundreds of small craft and eleven helicopters, *Queen Mary 2* rounded Fort Denison and backed-up to a position north of the Opera House for a photo opportunity as the sun rose over the harbour. She then berthed at Fleet Base East in Woolloomooloo
(Photo John Jeremy)



Accompanied by another large fleet of spectator boats, *Queen Elizabeth 2* arrived towards sunset on 20 February for a salute to her younger sister (left background)
(Photo John Jeremy)

The Complete Shipbuilding Software Solution

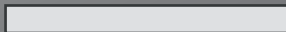
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STABILITY



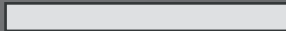
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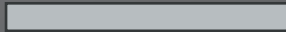
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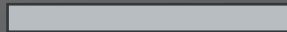
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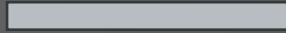
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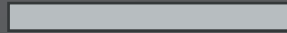
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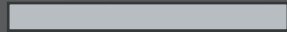
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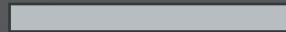
EQUIPMENT



NESTING



CUTTING



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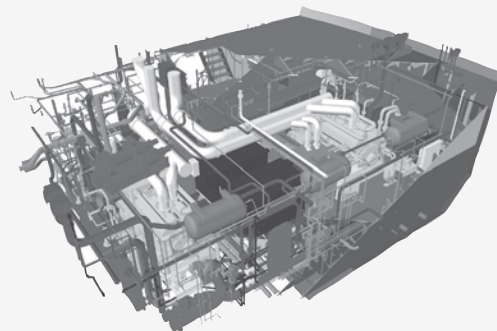
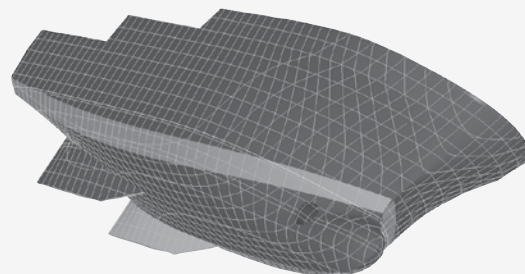
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The Influence of Demihull Beam, Demihull Separation and Water Depth on the Wave Generation of Catamarans

Lawrence J. Doctors
University of New South Wales

Richard Young
Gregor J. Macfarlane
Australian Maritime College

Summary

An elaborate set of towing-tank experiments on the wave generation of three geosim catamaran models was conducted in a towing tank in order to investigate the predictive accuracy of linearized wave-generation theory in both deep water and water of finite depth. The models were representative of high-speed catamarans. It was shown that for these models, the wave pattern was very accurately predicted by the theory, except in the region very close to the critical depth Froude number. In addition to the wave elevation itself, summary plots are also presented. These show the variation of the overall wave height in a selected and critical part of the wave field as a function of the model configuration and the Froude number of interest.

1 Introduction

The matter of wave generation of vessels is of great importance when considering operation on rivers, because of the concern of damage to the shores. There is now a considerable body of literature on this subject which has been produced over the last 18 years. A very early example was the work of Renilson and Lenz (1989). This was followed by the research of Doctors, Renilson, Parker, and Hornsby (1991) in which a total of ten candidate vessels, both catamarans and trimarans, was studied for operation on the Parramatta River, leading into Sydney Harbor in Australia. It was demonstrated experimentally that increasing the spacing between the two demihulls of a catamaran would reduce the height of the generated waves. This outcome correlated well with theoretical predictions of the wave resistance, using the traditional thin-ship theory based on Michell (1898) and modified for the case of a laterally-restricted waterway by Sretensky (1936).

Doctors and Day (2001) performed theoretical work on high-speed vessels and demonstrated that catamarans produce a wave system of a lower characteristic height than that from the equivalent monohull (possessing the same length and displacement). On the other hand, the rate of decay of the wave system, for points in the wave field progressively further from the track of the vessel, could be less. Thus, it is always necessary to undertake a careful analysis of any specific vessel design before drawing conclusions. The work of Doctors, Phillips, and Day (2001) was characterised by a specific study of the behavior of the diverging wave system generated by river ferries. The logic behind this work was that the transverse wave system would do potentially much less harm to the river shore. To this end, it can be stated that the study of erosion of river banks by ship waves is sorely deficient in that almost little work of scientific value on the erosion process itself has been published in the open literature.

Doctors (2003) carried out an experimental investigation on a model catamaran, in which longitudinal wave profiles were measured and compared with the predictions of inviscid theory. Generally, excellent correlation between the experiments and the predictions for the wave profiles was achieved. Similarly, comparisons of the root-mean-square elevation were equally promising. The influence of viscosity was also included, in an approximate manner, following the approach of Tuck, Scullen, and Lazauskas (2000).

This work was later extended by Doctors and Zilman (2004), who also incorporated the effect of surface tension and elasticity of surfactants at the free surface. It was shown that the presence of these additional physical properties, while relatively small, had a measurable effect on small ship models towed at the lower end of the Froude-number range.

The above theoretical work was based on the principle of a so-called linearized approach, which greatly reduces the computation effort and time in comparison with fully non-linear methods, such as that of Raven (2000). While such non-linear calculations are likely to eventually lead to more accurate predictions in the future, they currently appear not to do so, probably because of the difficulty in coding the associated computer software to converge accurately. Due to the computational burden, one is also limited to a rather small area in the neighborhood of the vessel; consequently, predictions of the wave field far down stream or far to either side of the vessel are not feasible.

Another practical approach to the analysis of wave generation is to test a large number of vessels in a towing tank or an ocean basin and to perform a statistical analysis of the resulting wave systems. Two successful examples of such work were those by Macfarlane and Renilson (1999 and 2000).

Of course, the wave field is completely specified by means of a large quantity of numeric data. In order to extract some engineering value from such information, it is necessary to devise metrics which characterise the wave system. Such metrics include the root-mean-square wave elevation or the maximum wave height, together with a measure of the corresponding wave period and the rate of decay of the wave system away from the vessel. These parameters can vary greatly with the Froude number at which the vessel is operated.

Finally, the results of several studies on the environmental aspects of fast ferries have been made available. These include the full-scale investigations of Kofoed-Hansen and Mikkelsen (1997). Similarly, an example of optimization of hull shapes was published by Leer-Andersen and Larsson (1999).

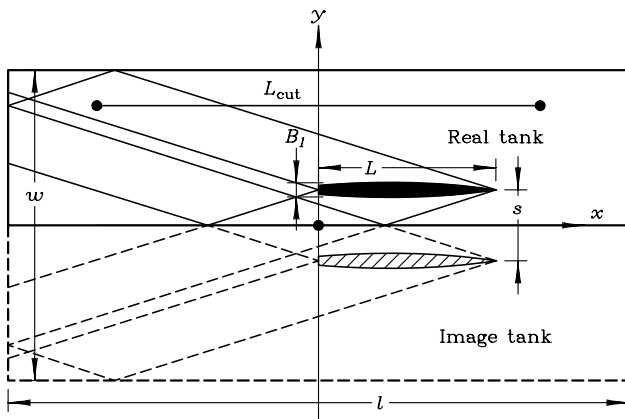


Figure 1 (a): Definition of the Problem
Experimental Setup

Item	Symbol	Value
Displacement mass	Δ	3.745 kg
Waterline length	L	1.500 m
Waterline beam	B_1	0.111 m
Draft	T	0.0462 m
Waterplane-area coefficient	C_{WP}	0.7866
Maximum section coefficient	C_M	0.7292
Block coefficient	C_B	0.4860
Prismatic coefficient	C_P	0.6665
Slenderness coefficient	$L/\nabla^{1/3}$	9.654

Table 1: 80%-Beam Series 64* Demihull

2 Linearity in Wave-generation Theory

The traditional theories referred to above are linear in that the wave elevation at a specific location in the wave field is predicted to be proportional to the beam of the vessel — on the assumption that the considered vessels are all geosims (affine transformations) of each other. With this in mind, it was thought that it would be an instructive exercise to directly test this hypothesis by measuring the wave pattern generated by three similar models, which differed only in their beams.

To this end, three available models in the Australian Maritime Hydrodynamics Research Centre at the Australian Maritime College were chosen. These models are modified versions of the Series 64 hull defined by Yeh (1965). The hull is characterised by its high-speed form possessing round bilges and a transom stern. The hull is relatively thin and slender. The models are referred to as the 80%-beam model, the 100%-beam model, and the 120%-beam model.

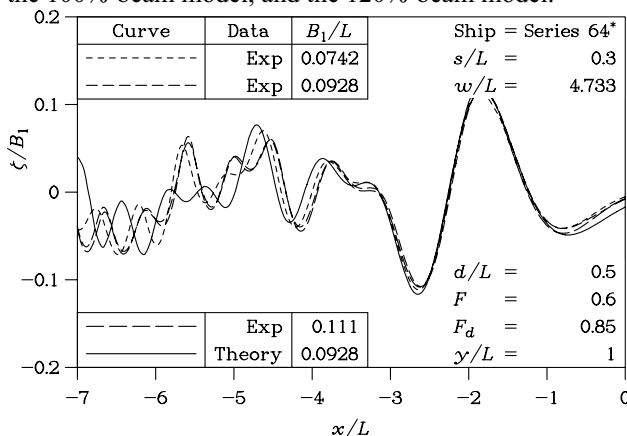


Figure 2 (a): Similarity of Wave Profiles
 $d/L = 0.5$, $F = 0.6$ and $y/L = 1$

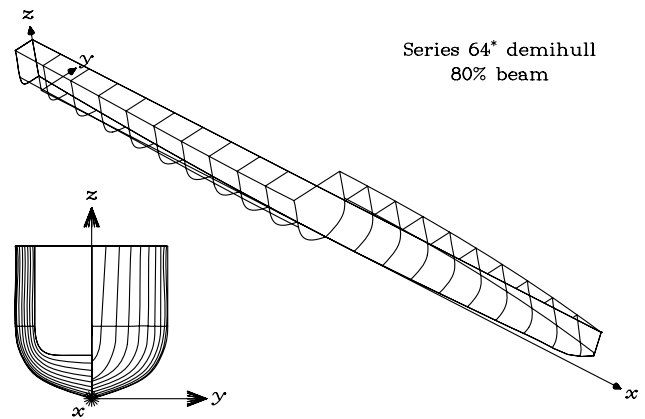


Figure 1 (b): Definition of the Problem
Demihull with 80% Beam

There was a particular interest in catamarans, so these models were towed at selected offsets from one side of the Towing Tank. According to the reflection principle, the experiments simulated an equivalent set of tests on a catamaran, whose demihull separation is double this offset. The equivalent towing tank has twice the actual width. These statements are true, assuming that one can ignore the very weak wave-induced boundary layer on the reflection wall of the towing tank.

3 Experiments in Towing Tank

The two parts of Figure 1 provide a schematic of the towing tank setup as well as a pictorial view of the thinnest model, referred to as the 80%-beam model. The models were tested at three offsets from the side wall of the towing tank. The geometric data pertaining to this vessel is presented in Table 1.

In addition, a 100%-beam version and a 120%-beam version of the vessel were tested. The test conditions and experimental matrix were as follows: effective demihull spacing: $s = 0.300$ (0.150) 0.600 m, lateral offsets of wave probes: $y = 1.000$ (0.5000) 3.000 m, effective tank width: $w = 7.100$ m, water depth: $d = 0.750$ m and 1.500 m, and Froude number: $F = 0.2$ to 1.0.

Thus, a total of 18 conditions was considered. The models were tested at approximately 22 Froude numbers, leading to a test matrix with approximately 400 towing-tank runs.

4 Wave-Elevation Curves

Figure 2(a) and Figure 2(b) are plots of the wave elevation on longitudinal cuts at two different lateral offsets, respec-

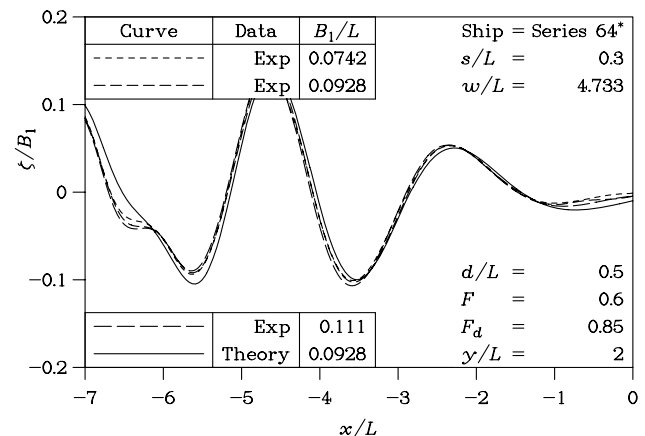


Figure 2 (b): Similarity of Wave Profiles
 $d/L = 0.5$, $F = 0.6$ and $y/L = 2$

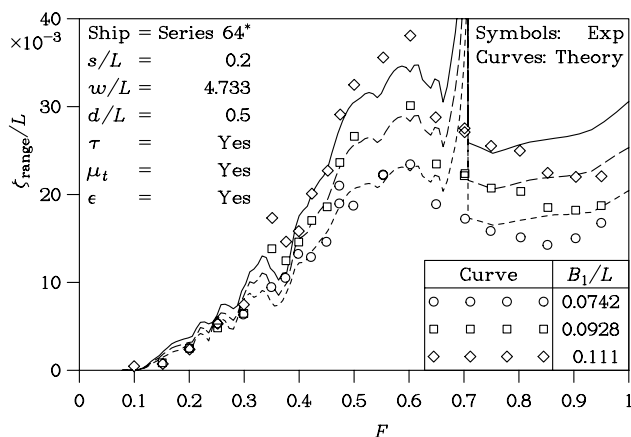


Figure 3 (a): Range of Wave Elevation
 $d/L = 0.5$ and $s/L = 0.2$

tively. The data corresponds to the intermediate demihull spacing ($s/L = 0.3$), the smaller depth ($d/L = 0.5$) and a Froude number F of 0.6.

The wave elevation ζ is rendered dimensionless against the demihull beam B_1 so that, according to linear theory, the three experimental curves corresponding to the three different demihull beams should collapse together. This is seen to be very nearly the case, particularly for the greater offset of $y/L = 2$ in Figure 2(b), where the nonlinear effects are likely to be less. It is difficult to state whether the agreement with the theory from Doctors and Zilman (2004) is better when the demihull beam is smaller, as one would anticipate.

In the theoretical calculations, the following water properties were used: turbulent kinematic viscosity: $\nu = 2 \times 10^{-5} \text{ m}^2/\text{s}$, surface tension: $\tau = 0.0735 \text{ N/m}$, and surface elasticity: $\epsilon = 0.0050 \text{ N/m}$. The reader is directed to the publication by Doctors and Zilman (2004) for a full explanation of the theory and, in particular, how the influence of these physical properties was incorporated into the calculations.

5 Wave Height

As a metric or measure of the overall wave-generation characteristics of the catamarans, we now turn to Figure 3. This is a pair of plots of the dimensionless wave range ζ_{range}/L against the Froude number F for the smallest demihull spacing $s/L = 0.2$. This was calculated by utilizing the highest and the lowest elevations in the wave field in the considered wave field. That is, we used points corresponding to the five longitudinal wave cuts noted above and extending 7 model lengths downstream of the vessel transoms. To be specific,

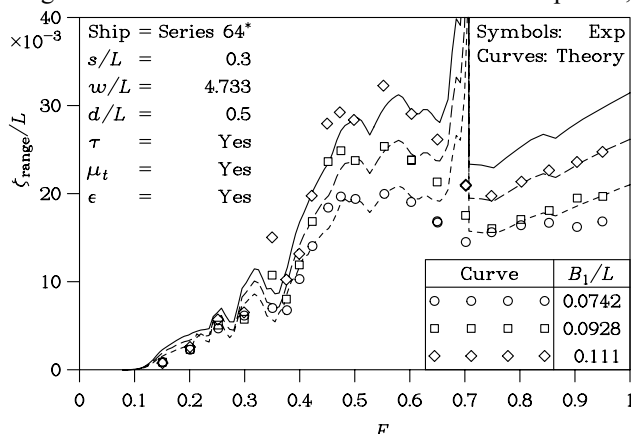


Figure 4 (a): Range of Wave Elevation
 $d/L = 0.5$ and $s/L = 0.3$

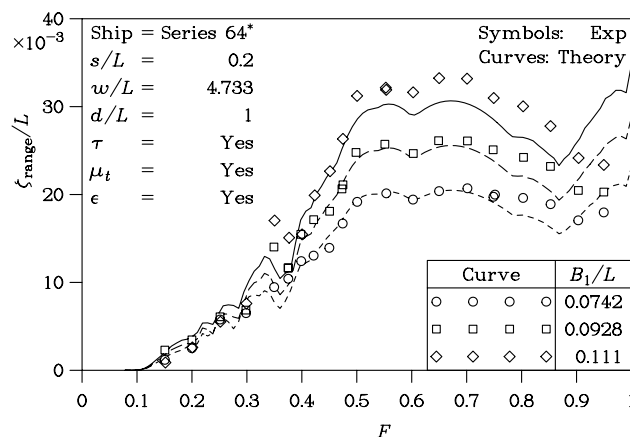


Figure 3 (b): Range of Wave Elevation
 $d/L = 1.0$ and $s/L = 0.2$

the plotted data represents the difference between the highest and the lowest wave elevation for all five wave cuts in a wave field whose length is 7 model lengths.

The shallower case of $d/L = 0.5$ in Figure 3(a) shows the excellent agreement between the theory and the experiment for all three model demibeams. The linear theory, of course, breaks down near the critical depth Froude number $F_d = 1$ and is less reliable at supercritical depth-Froude numbers $F_d > 1$. It is also likely that care would be needed when using the theory for shallower water, when the critical Froude number will be lower.

In the same conditions, it is likely that the experimental data may also be influenced, because of the difficulty in achieving a steady-state condition in the towing tank. This problem stems from the low rate at which the transverse wave component establishes itself in the tank, as its length becomes very great near the critical speed. The agreement between the theory and the experiment is best for the lower beams, as one would anticipate. This is observed particularly for the higher Froude numbers.

The deeper case of $d/L = 1$ is shown in Figure 3(b). In this case, the critical depth Froude number occurs at the right-hand side of the graph. Again, the correlation between theory and experiment is very pleasing, except for the problematic critical region.

It should be added that the oscillations in the theoretical curves are genuine. They are a result of using a fixed length of wave field for the analysis, independent of the Froude number. Slightly different curves would result from analysis-

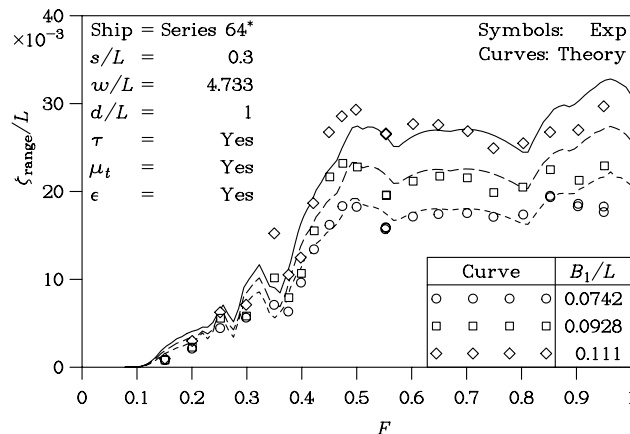


Figure 4 (b): Range of Wave Elevation
 $d/L = 1.0$ and $s/L = 0.3$

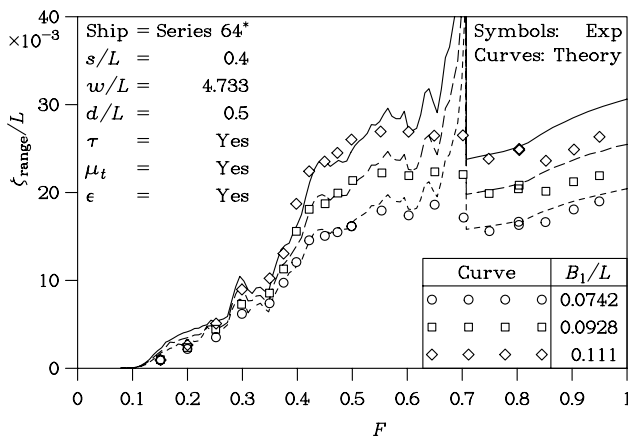


Figure 5 (a): Range of Wave Elevation

$d/L = 0.5$ and $s/L = 0.4$

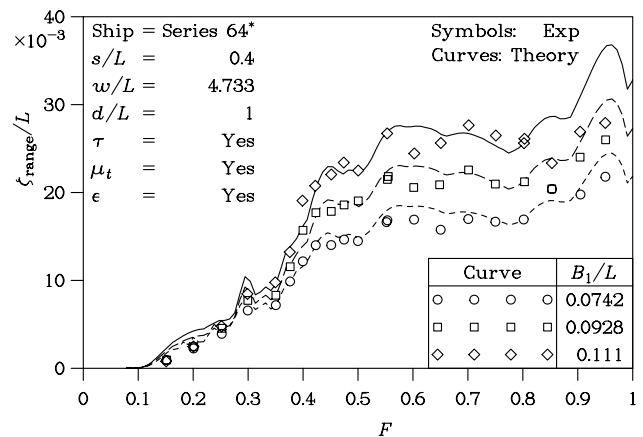


Figure 5 (b): Range of Wave Elevation

(b) $d/L = 1.0$ and $s/L = 0.4$

ing the experimental and theoretical data in another way.

The case of the intermediate demihull spacing is depicted in the two parts of Figure 4. The case of the greatest demihull spacing is presented in the two parts of Figure 5. It can be observed that the good predictive accuracy of the theory is retained for these two greater demihull spacings. Additionally, we see a confirmation of the point made in the Introduction that increasing the demihull spacing results in a lower wave height — at least for the region of the wave field studied in this project. This point can be verified by comparing corresponding curves from Figure 3, Figure 4 and Figure 5.

6 Conclusions

The extensive experiments have confirmed that linear wave theory can be applied to the case of practical marine vessels, even those with a relatively high beam-to-length ratio. The theory can be used for an extensive range of geometries, but not in the immediate neighborhood of the critical speed. Care also needs to be taken when applying the theory to vessels travelling at supercritical speeds.

An interesting future extension of this work could involve further increasing the beam to test the ultimate useful limit of linear theory. Another challenging extension of the research would be to improve the accuracy of the predictions in the critical region by incorporating unsteady effects into the theory.

It is also necessary to add that the matter of the wave period has not been studied here. It is known that this, too, is an important parameter because of its influence on the erosive capacity of the wave system. The theoretical aspects of this topic will also be reported on in a future publication.

7 Acknowledgments

The tests were performed in the Towing Tank at the Australian Maritime College under the supervision of Mr Richard Young and Mr Liam Honeychurch. The numerical calculations were performed by Professor Lawrence Doctors. The authors acknowledge the assistance of the Australian Research Council Discovery-Projects Grant Scheme (via Grant Number DP0209656). Infrastructure support was provided by the University of New South Wales.

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THE INTERNET

Baird Online

Baird Publications has launched its new website, Baird Online, using much of Baird Publications’ existing database material. The new portal provides a truly global maritime market place, and is significantly different from previous attempts at such activities. Fully supported and cross-promoted by all the other components of Baird Publications, the site now offers the following:

- Ship and boat sale and purchase market: a web-based, international classified listing of ships and boats and their equipment for sale or wanted. An all encompassing, global market for brokers, individuals, governments and companies.
- Maritime employment market: similar to the above but focusing on maritime employment, work wanted and work available.
- MARINFO: a web-based, international directory of ship and boat owners and suppliers of goods or services to them. This incorporates many aspects of the existing MARINFO databases.
- On-line maritime news: a constantly-updated, web-based news service covering all aspects of the global marine and maritime industries.
- Archive reviews of ships and profiles of companies, people and products from previous issues of Baird’s various publications. Available to be incorporated into any or all of the above.

More details can be seen on the Baird Online website, www.baird.com.au. Baird Online has become a truly “one-stop shop” for all information about the global marine and maritime industry.

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Distance so far 10.3 km, Time 15:04 (following a start time of 14:30).

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Phil Helmore



Sydney’s growing fleet of historic 18-foot skiffs made a fine sight as they crossed the starting line during the 171st Australia Day Regatta (Photo John Jeremy)

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STANDOUT 6604 11/06

Heeling Trials, Tilt Tests and Inclining Experiments

Hugh Hyland

Unless a naval architect has worked a while with Defence, he or she may not have come across all three of these trials or tests, and may think they are related in some way, which they are not, so here is a brief explanation.

Heeling Trials

Naval vessels have to be able to operate for extended periods in a damaged condition. One of these conditions requires the vessel to be able to continue operating all equipment when heeled 15 degrees to port or to starboard. For example, the lubrication of machinery must be maintained, suction must still be immersed, etc.

In order to test this, the vessel is brought to full operating condition, with everything running, and is heeled 15 degrees first one way, and held for a while, and is then heeled the other way and held for a while, before being returned to upright. During this whole time, all equipment is closely monitored for any malfunctions, heating of bearings, etc.

Occasionally, when only some new or modified systems need to be trialled, the ship is heeled alongside the wharf. This requires special fendering — and of course, any proximity to the general public can result in a string of concerned phone calls.

Heeling is accomplished by the transfer of ballast water, not solid weights. Additional tanks may be placed on the upper decks, subject to satisfactory stability.

As an example of some difficulties that can be encountered, in 1969 during the heeling trial of a hydrographic ship, pumping started around 0830 and the vessel proceeded to steam (or rather diesel electric) around Sydney Harbour.



Heeling Trials for HMAS *Success* during construction. Heeling a tanker to 15 degrees is, of course, relatively easy
(Photo John Jeremy)

As she was not a warship with large pumping capacity, heeling was much slower than expected, so by lunchtime we had swung out the two survey boats on the low side to help to increase the list, notwithstanding the normal ban on movements of solids as we reasoned we could perfectly control or remove these. This gave us a few more degrees, however we still had only reached 14 degrees by 1600. In the meantime, many people on small craft were approaching to ask what had happened to us — the remainder of the trial was postponed! The lesson learned was to have sufficient tanks and pumps.

Fifteen degrees feels like two or three times this amount! Movement around and between decks is difficult, and opening and closing heavy doors is particularly hard.

Tilt Tests

These are a standard part of weapon alignments. Simply put, every weapon and every radar or director needs to be aligned so that they point at the same very-distant spots for every bearing and elevation (for the ship in the average operating condition in ideal conditions). There is a plate, the ship's master datum level, built into the machinery bilges. At build, the planes of every roller path of every weapon, radar and director should be parallel to this plate. There are generally slight discrepancies (tilt), as well as local undulations in the roller paths. However larger errors are introduced after the ship has been in service a while, from relief of stresses, repairs and modifications. In order for the directors and their allocated weapons to accurately aim at the same points every time in ideal conditions, all of these deviations have to be measured under ideal conditions, and entered into the weapon's computers. To achieve this, the equipment on each roller path is rotated a few degrees at a time through 360 degrees, and the elevations around the plane are compared to the master datum plane, using very accurate (and expensive) comparative electronic levels, (marketed under the name of "Electrolevel", later to become "Tilt"). These deviations are then loaded into the weapon's computers for future automatic corrections.

To complete the explanation of alignment, in brief, the remainder of the static battery alignment involves checking the bearings and elevations of each piece of equipment, using borescopes and theodolites sighting to scribed master training datums which were accurately located and welded to the decks and superstructure at build, and checking and correcting using distant objects.

The relative horizontal and vertical differences between the sensors and weapons also have to be entered into the computers. Of course, the computers factor in the convergence between the sensors and weapons as the distance to the target varies.

As mentioned, alignments are conducted in the ship's average operating condition, in ideal conditions, after the effects of the sun on the ship's external structure have dissipated but before the cold early morning air has cooled the ship's external structure much below the internal temperature. Generally, alignments take two to three nights

to complete. These give accurately the mid-ground for the in-service swings of the actual bearings and elevations of the sensors and weapons. As you can imagine, warships flex significantly in service due to loading, sea states, and sun. The above relates to static alignments. From time to time these are followed by dynamic alignments, which are undertaken on special ranges.

In the 1980s, in order to determine how much a ship moved due to solar considerations, full-length vertical and horizontal breakage readings were conducted, over a 24 hour period, on a Type 12 frigate afloat. In the extreme case, with a theodolite “fixed” at the bow, which moved relative to the ship as a whole, and sighting to a target at the transom (through other transit theodolites), the target was found to be moving as much as 160 mm relative to the “fixed” line of sight of the theodolite.

The following is an example of the movement experienced in ship structures, which can significantly affect the tilt of a mounting. In 1990, while installing additional weapons on a warship, the planing machine for one of the foundations was set up early one day. The machining started after the sun had set. However by 2200 it was apparent that the four corners of the rig were not in the same plane. We were called in,

the levels were re-established, the low corner was identified and analysed, and a new plane set up, (to within minutes of arc accuracy, at 0200 on a rainy morning). Fortunately there was just sufficient metal left in the foundations to be within thickness specification and also to be parallel within tolerance to the master datum. Apparently the problem had been caused due to some welding of the aluminium superstructure below the deck supporting the foundations between the time the machine had been set up and the time it was used. The lesson learned was to ensure that all welding in the vicinity is complete before final machining or alignments are undertaken.

Inclining Experiments

These are conducted in order to find the centre of gravity of vessels, and hence the stability. Much has been written on this in past issues of *The ANA*, and all naval architects should be very familiar with these, so I won't go into the details. However it is worth noting that in the 1980s, Garden Island Dockyard in Sydney used the “Electrolevel” comparative electronic levels to accurately conduct all inclining experiments of warships, with a single pendulum as a check.

HIPER'06 at AMC

HIPER (High Performance Marine Vehicles) conferences have been held every two years since the inaugural conference in Zevenwacht, South Africa, in 1999. Subsequent conferences have been held in Hamburg in 2001, Bergen in 2002, and Rome in 2004. Prof. Volker Bertram of ENSIETA in France has been the chief organiser of these conferences.

The 5th International Conference, HIPER'06, presented a unique opportunity to discuss developments in design, construction and operation of high-performance marine vehicles in the island state of Tasmania, which is also home to the first-ever high-speed wave-piercing catamaran built in Australia. As in previous years, this forum provided a platform to present and discuss research findings in several areas of interest to academics, scholars, practising naval architects, and high-speed craft builders as well as transporters.

HIPER'06 was convened by Dr Prasanta Sahoo of the Australian Maritime College and Mr Peter May of Engineers Australia. The conference was held at the Australian Maritime College, Launceston, from Wednesday 8 to Friday 10 November 2006. The conference website can be viewed at www.amc.edu.au/hiper06.

HIPER'06 was the first to be organised in the Asia-Pacific region of the world, and attracted the full spectrum of academic, professional and commercial interests of the maritime sector.

Research topics dealt with at the symposium found relevance in fields such as the economics of fast sea transport, design and production technologies, hydrodynamics (resistance, seakeeping and manoeuvring), safety (regulations and comfort), structures (loads, strength and materials), propulsion

(engine, propellers, water-jets, noise and vibration), automation and control systems, and ecological and environmental aspects.

An international scientific committee reviewed the abstracts and papers prior to publication in the bound proceedings. The research papers were published in the form of bound proceedings as well as a CD-ROM. Anyone interested in obtaining copies of the bound proceedings or the CD-ROM may contact the convenor.

The conference was attended by over 80 delegates from around the world with 36 high-quality papers presented at the conference. The Australian delegates comprised those mainly from DSTO, DMO, DoD, the marine safety authorities of various states, and research students from UTas and AMC. The delegates were overwhelmed with the success of the conference and expressed their keen appreciation of the experimental facilities at AMC. The conference boasted two conference dinners, along with a cruise down the Tamar River, culminating with an Aussie barbecue at AMC's Willow Court on the final day of the conference.

The next HIPER conferences will be held in Naples, Italy, on 10–12 September in 2008, and Chennai, India, in 2010. For further details of forthcoming conferences in this series, contact Dr Carlo Bertorello at bertorel@unina.it, or Dr Prasanta Sahoo on (03) 6335 4822 or email p.sahoo@mte.amc.edu.au.

Prasanta Sahoo

EDUCATION NEWS

Australian Maritime College

AMC Hosts HIPER 06 Conference

The 5th International Conference on High-performance Marine Vehicles, HIPER'06, was hosted by AMC in Launceston in November 2006. A report is given elsewhere in this edition.

AMC Hosts Maritime Transport Industry Forum

AMC hosted an industry forum for invited representatives of a broad cross section of the Australian Maritime Transport Industry on 5 February 2007. AMC recognises the need for it to strengthen its relationships and lines of communication with industry, in order to better meet the education, training and research needs of an industry that is continually evolving and one that is facing enormous challenges.

These challenges include a shortfall in qualified seafarers and young professionals entering and staying in the industry, and the costs associated with retaining skilled people and educating and training new entrants.

AMC itself shares many of the same challenges facing the industry generally. It is undergoing major changes, including a merger with the University of Tasmania, and the appointment of a new President/Principal. Therefore, AMC considered it timely to host the Maritime Transport Industry Forum as a step forward in its aim to strengthen its relationship with industry and ensure that its product and services meet industry needs.

AMC hopes that the Forum has facilitated a broader understanding of the challenges facing the maritime transport industry, through the attendance of senior Australian Government representatives.

ITTC Worldwide Series for Identifying Facility Biases

AMC played a role in the International Towing Tank Conference (ITTC) Worldwide Series for Identifying Facility Biases research project during November and December 2006. The aim of this project is to investigate the precision and bias errors for individual towing tanks by determining reference values from the results of a large number of different facilities. This project involves the conduct of an identical experimental test program on the same ship model within approximately 25 different towing tanks around the world. Prior to AMC the ship model had already been tested at facilities in Spain, Greece, Korea, China and Malaysia. The model is now in transit to Argentina and will continue onto facilities in the USA, UK, Belgium, France, Turkey and Italy before returning to Spain. The ship model represents a modern naval combatant that is widely used internationally to validate computational fluid dynamics codes and experimental fluid dynamics uncertainty. AMC has also constructed its own model of this ship so that benchmark experiments can be carried out at regular intervals.

Wave-wake Research

Two research projects investigating the prediction of wave-wake characteristics for vessels operating in finite water depths are presently active. The first project is funded by AMC and IGS and the chief investigator is Gregor Macfarlane. A large series of scale model experiments was con-

ducted within the Model Test Basin between November 2006 and early January 2007. Susan Keough, an undergraduate student studying Ocean and Naval Architectural Engineering at Memorial University in Newfoundland, Canada, spent a three month work term at AMC during which time she assisted with the conduct of these experiments.

The second wave-wake related research project also involved the conduct of a series of experiments within the model test basin in January. This work was conducted by Alex Robbins, an AMC PhD candidate whose thesis is titled *Trans-critical Wave Wake: Prediction and Vessel Identification*. Alex is a part-time postgraduate PhD student who works full time for BMT Seatech in Southampton, England.

Gregor Macfarlane

University of New South Wales

Undergraduate News

Engineers Australia Accreditation

All the degree programs in the Faculty of Engineering came up for re-accreditation by Engineers Australia in 2006. New program structures in Engineering commenced rollout with Year 1 in 2006, and documentation of the structure was submitted to EA, with the visit to the university by the Accreditation Panel on 29 and 30 August. The Accreditation Panel included Mr Mark Smallwood, nominated by the Royal Institution of Naval Architects.

The EA panel was able, on the basis of the documentation and interviews, to provide full accreditation for all of the current degree programs in the Faculty. The draft report from EA was received by the Faculty in early December, with a number of items in each of the schools marked for attention.

Sailing at End of Exams

The Year 4 naval architecture students completed their exams on the morning of 14 November and, with theses already handed in at end of session, they celebrated by hiring a yacht from Sail Australia and inviting the available staff for the afternoon out on Sydney Harbour. A quick stop on the way for chicken, chips, and something to drink, and we cast off. The afternoon turned out pretty breezy, with over twenty-five knots but, with the jib and only one-quarter of the main out, it was fast but comfortable. However, heading back towards the bridge, the wrong rope was somehow hauled and, instead of one-quarter of the main out, we had the whole lot out, and it got pretty exciting for five minutes until Captain Richard reefed the main again and brought things back under control! Following the afternoon on the harbour, the crew adjourned to an Italian restaurant in Blues Point Road for a celebratory bite to eat.

Launching of OPV1

Tenix Marine was a generous host to our final-year students, accompanied by lecturer Mr Phil Helmore in November. This enabled them to see the launching of the first Offshore Patrol Vessel, HMNZS *Otago*, for the Royal New Zealand Navy at Tenix's construction facility at Williamstown. On Friday, 17 November, the day before the launching, Mr Stewart Hodgson welcomed the naval architecture



Year 4 Naval Architecture Students and Staff
(Photo Phil Helmore)



Sailing on Sydney Harbour
(Photo Phil Helmore)

students and Tenix's corporate graduates to the dockyard, and Mr Steve Manolitsas made the Introduction to Safety presentation. Mr Saeed Roshan-Zamir, Structural Engineering Manager, then gave an illuminating presentation on the launching arrangements and calculations, before leading everyone on a tour of inspection of the ways where preparations for launching were in progress. After lunch provided at Tenix, the party split into two groups which were then led on a tour of the Tenix construction facility with sections for OPV2 in various stages of completion, from initial assemble after cutting plate and stiffeners through to modules in the Module Hall waiting to go onto the building berth on the transporter.

Principal particulars of the OPVs are as follows:

Length OA	85.0 m
Length WL	77.6 m
Beam	14.0 m
Draft	3.6 m
Displacement	1583 t
Complement	
Navy	45
Embarked	4
Additional	30
Speed	
Maximum	22 kn
Economical	12 kn
Loiter	4-10 kn

February 2007

The Multi-role Vessel (MRV), HMNZS *Canterbury*, which was built in The Netherlands for the RNZN's Project Protector, was alongside at Williamstown, where she is being fitted out by Tenix.

The launching of HMNZS *Otago* took place on Saturday 18 November. Dignitaries attending the ceremony included Mr Robert Salteri, CEO of Tenix Defence, VADM Russ Shalders AO CSC, Chief of Navy, RAN, The Hon. Andre Haermeyer MP, Minister for Manufacturing and Export, Victoria, RADM David Ledson ONZM, Chief of Navy, RNZN, The Hon. Phil Goff MP, Minister for Defence, New Zealand, and Principal Chaplain Wayne Toeafoa, RNZN. The RAN Band provided the fanfare for the start of official proceedings, and the beautiful, soaring voice of Able Seaman musician Jennifer Monk rendered the national anthems, *God Defend New Zealand* and *Advance Australia Fair*. The vessel was launched by Dame Silvia Cartwright PCNZM, DBE, QSO. The launching was textbook smooth and a credit to all concerned.

UNSW would like to thank Messrs Graham Cutting, Liam Bathgate and Roger Ramsey for making the visit possible, and Messrs Stewart Hodgson, Steve Manolitsas and Saeed Roshan-Zamir for their parts in making our visit interesting, informative and entertaining.



HMNZS *Otago* ready for launching
(Photo courtesy Declan Helmore)



HMNZS *Otago* kisses the water
(Photo Phil Helmore)



HMNZS *Otago* at stern lift
(Photo Phil Helmore)

Staff Changes

Dr Tracie Barber is on sabbatical leave for Session 1, and is not available to teach hydrodynamics. Em/Prof. Lawry Doctors has therefore agreed to come out of retirement to teach hydrodynamics one more time, fitting the class time in with his research commitments.

Dr Michael Andrewartha has retired from teaching at UNSW, and the teaching of hydrodynamics of high-speed craft has been taken over by Mr Craig Singleton.

Post-graduate and Other News

Emeritus Professor Doctors

The Council of the University of New South Wales has conferred the title of Emeritus Professor on Lawry Doctors in recognition of his distinguished service to academic work, research, and to the development of the School of Mechanical and Manufacturing Engineering.

Name Change

On-the-ball readers will have noticed that *The ANA* has changed from referring to UNSW as “The University of New South Wales” to “the University of New South Wales”. This is because one of the actions of the new Vice-Chancellor, Prof. Fred Hilmer, has been to change the name of the institution to “University of New South Wales”, so that “The” is no longer part of the name.

Engineering Alumni Dinners

The Faculty of Engineering Alumni Anniversary Dinner was held on the evening of Friday 15 September 2006 in the Roundhouse. About 180 alumni of UNSW, together with staff and ex-staff, gathered to celebrate the graduates of 1956, 1966, 1976, 1986 and 1996. Many friendships were renewed, and several were invited to reminisce about their days at the university in a short speech. John Webster recalled the University’s first computer, UTECOM, the punch cards required to operate it, and the sounds it made. James Kirby, having started in the family business manufacturing and wholesaling refrigeration and air-conditioning components and rising to become Director and Senior Executive, moved on to Chief Executive of Hungerford Hill Wines.

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 2006, then you would expect to graduate in April/May 2007, and 2007 would be the year of your graduation.

The Engineering Alumni Anniversary Dinner for 2007 will be held at 1900 on Friday 14 September 2007 for the graduates of 1957, 1967, 1977, 1987 and 1997 (venue TBA). So, if you graduated with Paul O’Oonnor or Jacqui Rovere (1997), David Lyons or Chris Norman (1987), Alan Main or Keir Malpas (1977) or David Hill, John Jeremy or Conan Wu (1967), then you should be dusting off the tux, polishing your shoes and asking your partner to keep the evening of 14 September free. Watch this space for the venue, or check the Engineering website www.eng.unsw.edu.au/news/index.htm.

The latter class (all three of them) is distinguished by being UNSW’s second graduating class of naval architects, the first having been Brian Robson in 1963.

Phil Helmore

HIPER’06

The Fifth International Conference on High-Performance Marine Vehicles, HIPER’06, took place on 8–10 November 2006 at the Australian Maritime College in Launceston. On this occasion, the principal organiser was Dr Prasanta Sahoo, of the Australian Maritime College (AMC). Other sponsors of the event included Engineers Australia and Germanischer Lloyd.

The first conference in the series was held in 1999 in Zevenwacht, South Africa. The series of conferences is intended to promote a scientific approach to the design of high-speed marine craft, an area in which Australia has built a well-deserved reputation for itself. It is therefore encouraging to see a conference devoted to this subject in Australia.

As in the past editions of the HIPER series, the quality of the presentations was high. A positive and distinguishing feature is the fact that only a single session was held (that is, no parallel sessions were run, meaning that the meeting was very cohesive). The International Scientific Committee comprised fifteen persons, including the three Australians, Dr Prasanta Sahoo (AMC), Professor Michael Davis (UTas), and Professor Lawrence Doctors (UNSW). A total of 38 papers was presented during the three-day meeting. All of the papers were reviewed before final acceptance. The particular topics covered included ship resistance, ship motions, propellers, waterjets, maneuvering, structures, materials, regulation, and noise. Types of vessels studied included monohulls, catamarans, trimarans, and air-assisted catamarans. The number of participants in the symposium was 72, who travelled from a total of 14 countries.

Stars of the HIPER conference included:

- Mr David Lavis together with co-authors Brian Forstell and John Purnell of CDI Corporation in Annapolis, Maryland, who presented their research on *Compact Waterjets for High-Speed Ships*. This paper dealt with the matter of reducing the bulk of a waterjet so that it could deliver the required (high) power and yet fit into the confines of a slender subhull.

- Dr Robert Dane of Solar Sailor Holdings, Sydney, together with coauthors Grahame Parker, Manfred Fahr, Craig Thomsen, and Bradley Patten, who presented their paper *Zero Particulate and Toxic Gas Emissions at the Wharf by Commercial Hybrid-Electric Powered Vessels*. Their work centred on the challenges facing the designers of these environmentally-friendly craft, particularly the matter of the storage batteries,

which pose a substantial barrier to performance.

The next conference in the series, namely the Sixth International Conference on High-Performance Marine Vehicles (HIPER'08), is scheduled to take place in Naples on 10–12 September 2008. For more details contact Dr Carlo Bertorello at bertorel@unina.it.

Lawry Doctors

Austal Launches First Hawaii Superferry — The Largest Ever USA-built Aluminium High-speed Vessel

Another important milestone in the development of Austal USA was achieved on 18 January 2007 with the successful launch of Hull 615, a 107 m high-speed vehicle-passenger catamaran for Hawaii Superferry.

The impressive launch process was watched by a large local crowd, given Austal USA's location opposite the city centre in downtown Mobile, Alabama. The day began with a floating drydock being secured to the Austal sea wall on the Mobile River in front of the assembly bay. After ensuring that the drydock was properly aligned and secured, the process of rolling the ferry out onto the drydock began with specialist operators maintaining an even distribution of weight at all times. The drydock was then towed back down river to deeper waters, enabling the sinking and float-off of the ferry allowing her to be returned and tied up alongside Austal USA.

The day also revealed, for the first time, the impressive customised paint scheme developed by Hawaii Superferry that had been kept a closely-guarded secret prior to launch. The ferry will now undergo final commissioning and sea trials before undertaking a delivery voyage to Hawaii where it will commence service.

Austal USA's Chief Operating Officer, Dan Spiegel, commented on the success of the launch by saying "Austal is proud to have designed and constructed this state-of-the-art vessel. It is the first one of its kind in the United States, and we have been looking forward to the launch of this ferry for over two years since we celebrated the start of construction. This event represents Austal's leadership when it comes to high-speed aluminium vessel design and construction."

Since the front wall was recently removed in preparation for the launch, the true scale of the fast ferry was clearly evident given the very tight fit within the enormous assembly bay. Hawaii Superferry's first vessel is the largest aluminium vessel built in the USA to date, a testament to the establishment and investment by Austal since first acquiring the vacant land in 2000 and developing a purpose-built aluminium shipyard dedicated to the recruitment and training of first-class tradespeople for the production of high-speed, high-technology aluminium vessels.

Following on from the prior completion of several smaller ferries up to 58 m, the ability of Austal USA to now build, engineer and launch a 107 m design showcases what is being called a US 'centre of excellence' for high-speed vessel construction. In developing its workforce size over seven years from start-up to numbers now approaching 850, Austal USA is able to leverage off Austal's 19-year experience in Australia where, since 2000, it has led in the advanced design



Hull 615 emerging from the assembly building
(Photo courtesy Austal Ships)

and delivery of over-70 m high-speed vessels by a factor of 2:1 over the nearest global competitor.

In deliveries to follow, the record set by the 107 m Hawaii Superferry catamarans will be further eclipsed with the launch of two 127 m trimaran Littoral Combat Ships also contracted and currently under construction for the US Navy at the Austal USA facility.

Construction began on the first Hawaii Superferry in June 2004 with a visit from a Hawaiian priest, or Kahu, to formally bless the vessel, the assembly bay and everyone who was involved in the project. Full contract funding for this two-vessel project was confirmed in October 2005, enabling work to be completed at an accelerated pace. Construction is advanced on the second ferry, which is scheduled for completion in the first half of 2009 following the launch of the first Littoral Combat Ship.

Hawaii Superferry plans to use Austal fast-ferry technology to establish Hawaii's first high-speed vehicle-passenger service. Each catamaran can carry 866 passengers and up to 282 cars (or a combination of 28 x 12 m trucks and 65 cars) and provide services connecting Honolulu to Maui and Kauai in three hours and from Honolulu to the Big Island in approximately four hours.

With a draft of 3.6 m and beam of 24 m, the ferry will commute between the Hawaiian Islands at speeds up to 35 kn. The vessel is four decks high, including two decks for car and truck loading, one deck for passengers and the bridge deck reserved for the pilot and the crew. The second deck or mezzanine deck is 2/3 hoistable in order to facilitate parking for lighter cars and leave maximum parking space for the larger trucks. The upper deck or passenger deck includes many premier amenities for passengers of all ages

besides comfortable seating. This deck includes a bar and lounge at each end, food counter, gift shop, video game room, children's play area, restrooms, crew mess, purser's office, and first-aid room.

The ferry is powered by four MTU 20V 8000 M70 main engines connected to four ZF 53000 gearboxes. Maneuverability is supplied through four individually-driven KaMeWa 125 S11 waterjets.

Principal Particulars

Length OA	106.5 m
Length WL	92.4 m
Beam moulded	23.8 m
Hull depth moulded	9.4 m
Hull draft	3.65 m (max)
Deadweight	800 t (max)
Passengers	866
Crew	To USCG requirements
Vehicles	282 cars or 28 forty-foot trucks (342 lane metres) with 65 cars

Axle loads

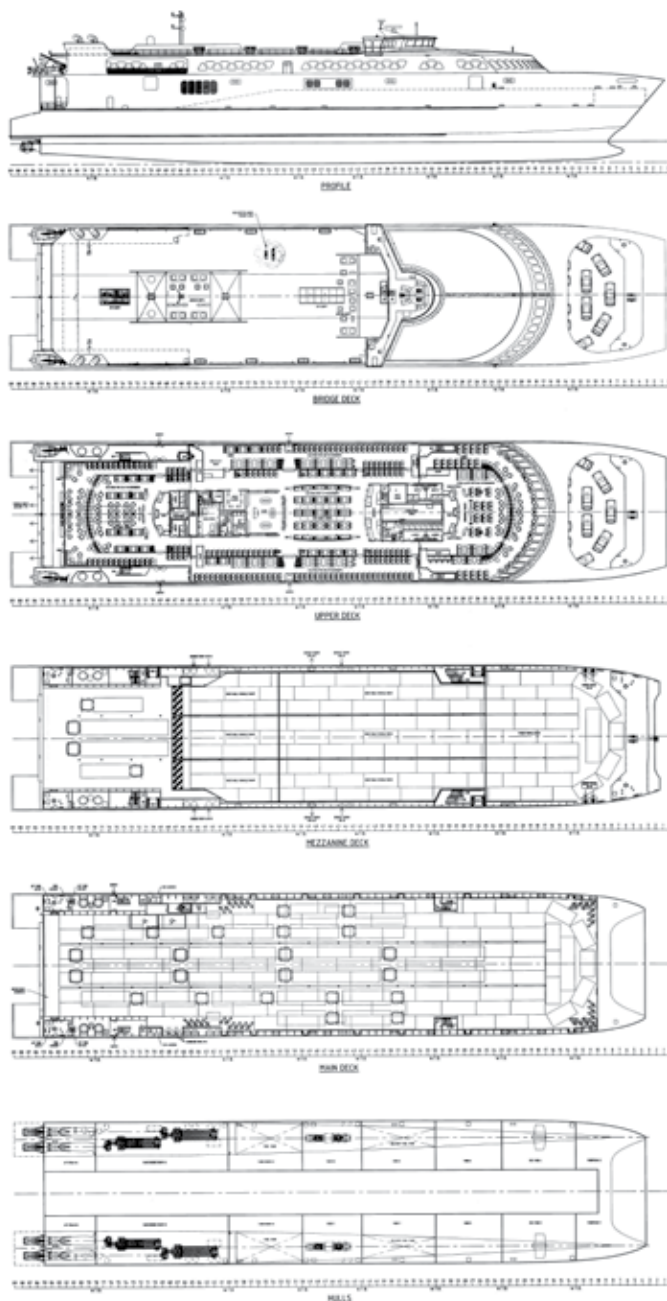
Centre lanes	16.5 t (single axle)/ 13.2 t (dual axle)
Outer lanes	9.9 t (single axle)/ 13.2 t (dual axle)
Vehicle deck clear height	
Mezzanines raised	4.6 – 4.7 m
Mezzanines lowered	2.6 m below/2.2 m above
Fuel (approx)	215 000 L

Propulsion

Main engines	4 x MTU 20V 8000 M70 each 8200 kW
Propulsion	4 x KaMeWa 125 S11
Service speed	35 kn at 90% MCR at 400 tdw

Survey

Classification	Germanischer Lloyd
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General Arrangement of the Hawaii Superferry
(Drawing courtesy Austal Ships)

THE PROFESSION

Nominations Sought for Technical Advisory Panel

Do you have a technical marine background or extensive experience in marine safety — and a wish to be more involved in setting marine safety standards? If so, make sure to get your expression of interest in to the NMSC by 28 February 2007.

The NMSC is establishing a Technical Advisory Panel to assist with the interpretation of all new and revised national marine standards for both commercial and recreational vessels. The primary role of the Technical Advisory Panel, as an advisory body, is to facilitate the consistent application of the NMSC's standards across Australia. As such, the panel will be composed of technical experts in their fields drawn from industry, government, academic institutions and the community.

CEO Maurene Horder said that the panel will advise the NMSC by interpreting standards and it will not act independently of the NMSC. "Panel members will hold formal qualifications within their field of work — or work-related qualifications, expertise or experience in their field," she said. "We welcome nominations from a wide range of skilled marine personnel and from qualified vessel operators and owners. Composition of the Panel will vary each time according to the subject matter under review," Ms Horder added.

Information on how to apply including a nomination form can be obtained by phoning the NMSC Secretariat on (02) 9247 2124 or emailing secretariat@nmisc.gov.au. Alternatively, information and forms can be downloaded from the website www.nmisc.gov.au

Guidance on the Use of Foam Buoyancy

NMSC has released a *Guidance Circular on Foam Buoyancy Material for Use in Commercial Vessels* which responds to changing technology and interpretations for compliance.

When updated in 1993, Section 10 of the USL Code contained a misprint with regard to the units specified in the allowable amount of water uptake, with the result that compliance cannot be demonstrated. In addition, technological advances have allowed different styles of foam to be produced.

The circular provides guidance on equivalent solutions for demonstrating the compliance of foam buoyancy material. In particular, it applies to foam material that is intended for use in accordance with Sections 10 and 5C of the USL Code to provide inherent buoyancy in vessels.

To obtain a copy of the circular, phone NMSC on (02) 9247 2124, email secretariat@nmisc.gov.au or download from the website www.nmisc.gov.au.

Stability Mass per Person

In the draft National Standard for Commercial Vessels, Part C, Section 6A Intact Stability, currently out for public comment, it is proposed to change the USL Code's definition of the average mass per person from 65 kg for sheltered waters and 75 kg for open waters to 80 kg everywhere (see *How Heavy Are You?* on next page).

At this stage, this is a recommendation from the Working Reference Group. Public comment is invited.

NSCV Workshops Take to the Road

During January and February, the NMSC held a series of workshops for stakeholders on sections of Part C of the National Standard for Commercial vessels which are now out for public comment: Section 3 Construction, and Section 6 Stability. Copies of the sections may be obtained from the secretariat on (02) 9247 2124, email secretariat@nmisc.gov.au or downloaded directly from the website www.nmisc.gov.au.

Workshops were held in the following locations:

30 January	Cairns
31 January	Brisbane
1 February	Sydney
9 February	Hobart
14 February	Melbourne
15 February	Perth

The public comment period for both sections closes on 28 February, so you will need to be quick if you wish to make any further comments not made at the meetings.

Safety Lines, January 2007

NMSC Stability Workshop

The NMSC's Stability Workshop was held in Sydney on the afternoon of 1 February. CEO of the National Marine Safety Committee, Maurene Horder, chaired the session and welcomed the 25 participants, then gave the background to the NMSC's travelling roadshow of workshops and industry consultation. She then passed over to Principal Technical Adviser, Mori Flapan, who made a presentation on the stability sections of the NSCV.

Introduction

Mori began by saying that Section 6A Intact Stability had already been out for public comment, the public comment had been assessed by the Stability Reference Group and, as a result, many changes had been made to the first draft. The changes had been sufficiently extensive that the Reference Group had considered it necessary for Section 6A to go out for further public comment, and this is the stage we are up to now. The workshop is intended to gain direct industry input, as well as clarifying the ideas behind the changes which have been made.

It is intended that Section 6A will apply to all vessels other than special vessels in Part F (e.g. fast craft and hire-and-drive vessels). However, 6A may apply to special vessels (with or without modifications) where called up in Part F.

Layout

Chapter 1 Preliminary contains information on the scope, objectives, reference documents, definitions and basic concepts and symbols.

There are two basic approaches in the standard: a set of comprehensive (deemed-to-satisfy) criteria which require reference to a GZ curve and a set of simplified criteria which do not require reference to a GZ curve.

Chapter 2 Intact Stability Outcomes and Solutions is there because of the performance-based approach of the NSCV, which has been (to a certain extent) reverse engineered from the USL Code.

Chapter 3 Determining the Applicable Intact Stability Criteria introduces a new system of naming the criteria, and every criterion is uniquely identified by reference to a particular clause.

The essence is given in Tables 2 and 3, where the applicable comprehensive and simplified criteria are shown against operational area.

Chapter 4 Maximum Displacement and Longitudinal Stability Criteria specify limits which have been based on the USL Code, by bringing together:

- some clauses in the USL Code for longitudinal stability criteria;
- relevant clauses from other sections of the USL Code; and
- requirements implied by not spelled out.

Chapters 5–8 contain the stability criteria:

Chapter 5 Comprehensive Stability Criteria of General Application

Chapter 6 Additional Comprehensive Criteria for Special Operations (e.g. vessels which set sails, multihulls, lifting weights, etc.)

Chapter 7 Simplified Criteria of General Application

Chapter 8 Simplified Criteria for vessels Engaged in Special Operations

Annexes A–K contain the calculations of the various heeling moments for consistency of the document (moved from their previous location in Section 6B).

Flexible Approach

The application of the criteria is intended to be flexible and inclusive, rather than exclusive. Under the USL Code, if a vessel could not meet simplified Category S criteria, then the vessel would be asked to meet comprehensive Category Q criteria. The proposal here is to give the user the choice of criteria, within limits. Mori then gave three examples:

- A 20 m catamaran ferry operating in Class 1 Area D with 150 passengers. Referring to Table 2, a consultant would have a choice of three criteria: Chapters 5A, 5B or 5C.
- A RIB water taxi operating in Class 2 Area E. Referring to Table 2, a consultant would have a choice of criteria in Chapters 5A or 5B, and 7C–D, and possibly 7A.
- A 20 m fishing vessel operating in Class 3 Area A. Referring to Table 2, a consultant would have only one general set of criteria applicable: Chapter 5A. However, the “fishing vessel” implies special operations. If the fishing were trawling, then both the trawling (for operations) and lifting (for cod-end or snagged net/stalled winch conditions) would also be applicable from Table 3.

In particular, it should be noted that the special operations refer to the type of operation rather than the type of vessel. For example, “vessels which set sail” encompasses powered fishing vessels which set steadying sails, not just yachts, and “vessels engaged in towing” encompasses any vessel which

performs a towing operation (such as a police or customs vessel), even if it is not a tug. Lifting operations include those performed by crane barges, salvage lifts and snagged net/stalled winch conditions for trawling.

Improvements to Format

The criteria have been rewritten in tabular format to clarify their status and to facilitate application. Additional diagrams have been provided to clearly illustrate the concepts and reduce the need for interpretation.

Alignment of the Criteria

Under the USL Code, there were simplified criteria for Categories S and T, compared to the comprehensive criteria required for Categories P, Q and R. The simplified criteria had lower passenger heeling levers, lower angles of heel, lower wind pressure and no requirement for combined heeling levers. There was therefore pressure on consultants to apply the simplified criteria to vessels for which they were not really suited.

The performance-based approach of the NSCV requires these differences in outcome between comprehensive and simplified criteria to be eliminated. There were several options available:

- raise the simplified criterion to the comprehensive;
- lower the comprehensive criterion to the simplified; or
- try for a middle ground.

The latter approach was decided on by the Reference Group. The passenger heeling levers were rationalised so that they were the same for the two criteria. The 0.15 m margin on the simplified criterion was removed as per the CFR46 standard from whence it came, and inconsistencies in heel angles were replaced. Allowable angles of heel were shown in a table, the same for both. Inconsistent wind pressures were resolved.

How Heavy Are You?

This, of course, is a very sensitive question! The USL Code uses 75 kg/person for open waters, and 65 kg/person for sheltered waters. The first draft of Section 6A proposed 75 kg/person for all areas, and asked for public comment. The response was impressive, with most saying that 75 kg/person was not enough and that it should be raised to 80 kg/person or even more.

The latest statistics from the Australian Bureau of Census and Statistics shows an average of 75 kg/person for adult. However, that is naked, and voluntary (and so does not catch those who are likely to be overweight!) The FAA uses 79 kg/person for aircraft loadings, so the current proposal is to use 80 kg/person

For additional gear, the proposal is to use 95 kg for divers (to be used in the heeling moment, as that includes the wetsuit and weight-belt), and an additional 15 kg for the tank and other gear (not included in the heeling moment). For overnight stays on board a vessel it is proposed to use 15 kg for personal effects.

These, of course, are minima; no consultant is prevented from using higher figures if he/she considers it appropriate.

Vessels Which Set Sail

This chapter has been reorganised to separate the prerequisites

from the criteria. It includes new criteria for catamarans based on data originally supplied by Lock Crowther, Alan Payne and Mori Flapan. It widens the application of the criteria which were previously only applied to hire-and-drive vessels, and now applies these criteria to crewed vessels too. The large sailing vessel criteria have been updated to comply with CFR46.

Trimarans

These vessels are likely to be considered as equivalent solutions. A powered trimaran would likely apply monohull criteria. However, the criteria for a sailing trimaran are still not well defined. Longitudinal stability under sail is not addressed (or for any vessels, especially catamarans and trimarans).

Lifting

The heeling moments for vessels engaged in lifting are aggregated from the criteria for a wide range of vessels.

Towing

The application of the criterion has been clarified so that the displacement of the towed vessel is greater than twice the displacement of the towing vessel.

Trawling

The heeling moments for vessels engaged in trawling are not applicable to fishing vessels in general, and specific examples of trawling methods are given. A scope: depth ratio of 4:1 should be used, unless this is inconsistent with usual practice.

Section 6B

Mori then gave a short run-down on the revised Section 6B Stability Tests and Information. It now contains the following Chapters:

Chapter 1 Preliminary

Chapter 2 Required Outcomes

Chapter 3 Methods for Estimating and Verifying Lightship Particulars

Chapter 4 Methods for Conducting Simplified Stability Tests

Annexes contain the detail.

The latest changes have clarified the objectives and the application, improved the format, reduced the need for interpretation, and improved the illustrations.

Conclusion

Section 6A has been reworked and is open for public comment until 28 February.

Section 6B is in the process of being reworked, as a result of the public comment and the initial comments of the Reference Group. It is possible that Section 6B may be released for further comment, but this will depend on the opinion of the Reference Group as to the extent of the changes.

The NMSC wants to get the NSCV revisions out as quickly as possible, but they also want to get them right, and there is an obvious trade-off!

NMSC Construction Workshop

The NMSC's Construction Workshop was held in Sydney on the afternoon of 1 February, following the Stability workshop

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with a short break for pit stops, tea and coffee. CEO of the National Marine Safety Committee, Maurene Horder, chaired the session and welcomed the 28 participants, then passed over to the three presenters for the Session: Peter Walsh (Consultant to NMSC, formerly with Standards Australia), Mark Devereaux (Senior Adviser, Marine Safety Queensland) and Glenn Cobb (General Manager Australasia, Lloyd's Register Asia).

Peter Walsh Introduction

Peter began by referring to the issues paper which was sent out in June 2004 and which canvassed four options:

1. Retain and upgrade the USL Code and AS4132. The advantage of this option was that it was familiar; however the disadvantage was that considerable work would be involved in the upgrade.
2. Adopt ISO12215 for small craft hull construction and scantlings. The advantage of this option was its international compatibility; however the disadvantage was that it applied only to recreational vessels of less than 24 m in length, and would therefore require upgrading for the vessels between 24 and 35 m in length.
3. Use classification society rules. The advantage of this option was the international compatibility, and the fact that the classification society would then be responsible for keeping the rules up-to-date; however, the disadvantage was the onerous training and the interpretations required.
4. A combination of the above options.

Twenty-three submissions were received from industry about the options.

Construction Workshop in Brisbane

A workshop on the construction section of the NSCV was held in Brisbane in November 2004. At the workshop, considerable support was expressed for ISO12215/AS1799 for vessels of less than 7.5 m in length, and for ISO12215 for vessels up to 24 m in length. It was considered that vessels of greater than 35 m in length should be in class. Finally, it was considered that the USL Code/AS4132 could be revised by the NMSC or the classification societies.

The Classification Societies

The classification societies were approached last year for expressions of interest in two options:

- revising the USL Code/AS4132; or
- co-operating to use their rules as the sole option.

Three classification societies submitted expressions of interest, and all selected the latter option. After an extensive selection process, Lloyd's Register's submission was chosen as the best package of availability, user friendliness, range of vessels covered, training and maintenance.

It was recognised that Lloyd's Rules did not give the best option for small vessels, and so other options would need to be investigated for these vessels.

Next Steps

These workshops will be held in the major cities, following which a Reference Group will be set up. The major task of the Reference Group will be to work with all the stakeholders and to review the public comment.

Mark Devereaux Introduction

The intention of the Construction Section of the NSCV is to replace the USL Code Section 5, Subsections A, B, G, H, J, K, L and M (timber, hard chine only); i.e. all except C, D and E (the subdivision, etc.) and M (timber, round bilge). It will apply to all domestic vessels except special vessels in Part F, unless Part F states otherwise.

The objective is to state the minimum safety standards for construction of vessels. There are currently five chapters:

Chapter 1 Preliminary (scope, application, definitions, etc.)

Chapter 2 Required Outcomes

Chapter 3 Deemed-to-satisfy Solutions for Determination of Scantlings

Chapter 4 Deemed-to-satisfy Solutions for Materials

Chapter 5 Workmanship and Manufacturing Facilities

Levels of Operations

The current proposal is for two levels of commercial vessel operations:

- robust operations; this is the current level of operations, not an increase; and
- light operations; these are less onerous.

Robust operation considers loads which may be imposed by heavy seas (Areas A and B), heavy loads from cargo or machinery, heavy or frequent impacts, frequent grounding (landing craft, etc.) or large accelerations and slamming (as encountered by thrill-ride vessels).

Light operation considers loads which are relatively light in normal operations in comparison to the above.

Focus

The focus of the section is on vessels which are of less than 35 m in length, and on deemed-to-satisfy solutions.

For vessels which are of 35 m in length or greater, the deemed-to-satisfy solution is that the vessel should be in class with one of the six major classification societies in Australia. An equivalent solution may consider the vessel not in class, but designed to classification society rules, plans approved by the classification society and/or constructed under classification society survey, but without certificates of class.

For vessels of less than 35 m in length, the deemed-to-satisfy solution may be the rules in the standard or rules referenced. An equivalent solution permits all standards subject to the proviso that the standard meets the required outcomes at least as well as the deemed-to-satisfy solution.

The application of the rules is set out in Tables 1–6 in the standard and, as Mark showed in a series of slides, looks reasonably straightforward.

Queries

Mark finished with two questions for public comment:

1. Should Lloyd's Register be used exclusively for vessels of less than 7.5 m in length for robust operations, or should ISO12215/AS1779 also be used?
2. Parts of ISO12215 are not yet complete. Is it premature to include the whole standard, given that there is, as yet, no experience with the application of these incomplete parts?

The Australian Naval Architect

Comments are welcome until 28 February.

Glenn Cobb Introduction

Glenn began his presentation by saying that LR's rules for construction of ferro-cement craft have been withdrawn, and these vessels are no longer covered. They also receive very few requests for construction of wooden vessels.

The Special Service Craft (SSC) Rules are a comprehensive set of rules which were developed ten years ago, firstly for FRP construction but extended to wood, steel and aluminium. The rules have calculations software and a Windows interface, improving its user-friendliness.

The rules are continuously supported by an extensive research-and-development program.

Types of Craft

The SSC Rules are applicable to monohulls and multihulls, and have been applied to SESs, ACVs and RIBs. They have been applied to the 7.5 m tenders on the Armidale-class patrol boats and to 4.5 m tenders on yachts.

Service Area Restrictions

The service area restrictions built into the SSC Rules are as follows:

- | | |
|----|--|
| G1 | Range to refuge of 5 n miles or less |
| G2 | Range to refuge of 20 n miles |
| G3 | Range to refuge of 150 n miles |
| G4 | Range to refuge of 250 n miles |
| G5 | Range to refuge of more than 250 n miles |
| G6 | Range to refuge unrestricted for yachts |

These do not correspond to the USL Code areas, but are more graded.

Different functional roles are assigned, such as passenger vessels, yachts (i.e. motor yachts), workboats, navy patrol vessels (inshore or offshore patrol).

SSC Software

The SSC software is a powerful design tool, providing rapid analysis of construction arrangements, a systematic approach, report printing, online help and the rule book, all on a Windows operating system. One of the advantages is that checking the input reduces the workload for the regulator.

NMSC, among others, is finding the cost of maintaining their own rules prohibitive, and now rely on the classification societies to keep rules up to date and vessels in survey. The classification societies themselves are trying to align their rules, e.g. the unified rules for tankers.

Contract

LR has offered to provide training and interpretations, hopefully via the NMSC as the one point of contact, and they would create a website for frequently-asked questions.

Initially they would provide a three-day course on the SSC Rules for steel, aluminium and composite analysis (one day each). The ship rules may apply to tugs, trawlers and barges, rather than the SSC Rules.

Panel Session

Following the presentation, the meeting then went to a panel session with the three presenters at the front, and questions and comments fielded from the other participants. Several points of clarification were made.

The issue of cost to consultants for LR's SSC Rules was discussed at length. The usual cost for a licence is £500, or about \$1200 at current rates of exchange. Large consultancies may already have the SSC software, but this is a significant cost for a one-person-band operation. However, there are other considerations; the consultant obtains a calculation system, and can immediately point to savings in calculation

time, and the regulator saves on assessment time. A useful suggestion from the floor was that the rules (hard copy or on CD) be available freely, but that the calculation software may attract a cost. The NMSC was asked to keep cost in mind and to keep the overall cost to consultants down.

Phil Helmore

INDUSTRY NEWS

Wärtsilä acquires German Ship Design Company Schiffko

In December 2006, Wärtsilä Corporation signed an agreement to acquire the German ship design company group, Schiffko. Schiffko is privately-owned and today has annual net sales totalling approximately €4 million and some 25 employees.

Schiffko specializes in the planning and design of ships, especially in the container, research and offshore vessel segments. It also provides consultancy, including project management and all kinds of supervisory work for shipowners and shipyards utilizing Schiffko's extended global maritime network of partners and experts. The company has a strong reputation and market position in these segments. Schiffko is located in Hamburg, Germany, but operates globally.

According to Mr Jaakko Eskola, Group Vice President, Ship Power, Wärtsilä Corporation, the acquisition supports Wärtsilä's strategic focus to grow as a system integrator and provider of total solutions to the shipping and shipbuilding market. The acquired business will add ship design expertise to Wärtsilä's wide product and service offerings. The acquisition of Schiffko supports the development of Wärtsilä's low-speed engine business in Asia and especially in the Chinese market.

Commenting on the transaction, Mr Berend Pruin, Chairman of Schiffko and chief representative of its shareholders, stated "We think our customers will benefit markedly from the broader offering and resources which the Wärtsilä network brings. For Schiffko's design business, its customers and our employees, the acquisition will offer enhanced opportunities as part of Wärtsilä's total service offering and global network."

Schiffko has 50 years experience in planning and design in the marine field. It has been involved in more than 2500 ship design projects in 60 countries all over the world. The Schiffko group of companies includes Schiffko GmbH Forschung und Entwicklung Maritimer Systeme and Schiffko GmbH Multifunktionales Ingenieurbüro als Maritimes Innovationszentrum (Schiffko).

Wärtsilä and the German Company Becker to Develop Energy-saving Propulsion Systems

Wärtsilä and the German company Becker Marine Systems have entered into a co-operation agreement on the optimization of ship propulsion systems.

Becker Marine Systems has annual net sales of €50 million and is the leading supplier of high-performance rudders of all profiles and sizes, as well as related systems. More than 100 professionals form the Becker offices in Germany, the

UK, Norway and China. The company has its headquarters in Hamburg, Germany. Agencies around the world complete the company's global design, sales and service network.

The aim of the co-operation is to develop and market optimized propeller-rudder systems that will save energy, enhance crew and passenger comfort, and ensure maximum manoeuvrability of coastal and seagoing vessels. These newly-combined propulsion and manoeuvring systems will be marketed and sold under the well established Wärtsilä brand.

Both companies will keep their commercial independence and continue to market their traditional products individually.

The agreement marks the start of joint development combining the hydrodynamic and constructional capabilities of both companies.

Wärtsilä Boosts Capacity for LNG Carrier Market

In January 2007, Wärtsilä and Hyundai Heavy Industries Co. Ltd (HHI) signed an agreement to set up a 50/50-owned joint venture in Korea to manufacture dual-fuel engines for LNG (liquefied natural gas) carriers. The total investment in the company will be €58 million, Wärtsilä's share being €29 million. The name of the company will be Wärtsilä Hyundai Engine Company Ltd, and the intended location is in South Korea.

The technology shift towards dual-fuel machinery in LNG carriers has significantly increased demand for Wärtsilä's dual-fuel engines. The main market is Korea. Demand in the market is forecast to continue growing in pace with the increasing demand for natural gas. To date, Wärtsilä has received orders for 206 Wärtsilä 50DF dual-fuel engines for 52 LNG carriers, most of which will be built in Korea. The global market share of Korea in the LNG shipbuilding market currently exceeds 70%.

"This joint venture will accentuate the strengths of two companies which are already partners; the vast know-how of the world's biggest shipbuilder with the expertise and experience of a global leader in engine design and ship machinery. The joint venture marks a major step in Wärtsilä's strategy to accelerate growth in the continuously expanding Asian market", said Ole Johansson, President and CEO of Wärtsilä when signing the contract in Korea with PhD Min, Keh-Sik, Vice Chairman and CEO of HHI.

The joint venture will manufacture Wärtsilä 50DF dual-fuel engines for the Korean, Japanese, Chinese and Taiwanese shipbuilding markets. Focussing on assembly and testing of the engines, the joint venture is scheduled to deliver its first engine in the second half of 2008. The total capacity of the factory will be in the magnitude of 100 engines per

year. Wärtsilä's sales organization will continue to serve the Japanese, Chinese and Taiwanese markets whereas the Korean market will be served by the joint-venture company directly.

The joint venture will utilize the established global service networks of Wärtsilä and HHI to take complete care of customers' ship machinery needs at every stage in about 70 countries.

The Trieste factory in Italy will continue to manufacture Wärtsilä 50DF dual-fuel engines for the marine markets outside East Asia and the growing worldwide power plant market.

Wärtsilä and Hyundai Heavy Industries have a long history of close co-operation. Wärtsilä and HHI have a licence agreement to produce low-speed engines..

The deal is subject to the approvals of the relevant regulatory authorities.

Technical aspects of Wärtsilä 50DF engines

The Wärtsilä 50DF dual-fuel engine has pioneered an industry change from the traditionally-applied steam turbine machinery to a dual-fuel-electric concept with the benefits of much-better operating economy and lower exhaust emissions.

The Wärtsilä 50DF is a lean-burn dual-fuel engine with a high power concentration of 950 kW/cylinder at synchronous speeds of 500 or 514 rpm.

When running on natural gas, the engine operates in a lean-burn Otto cycle. Natural gas is mixed with air in the inlet channels of the individual cylinders and ignited in the combustion chambers upon injection of a small quantity of diesel oil. The injection of this pilot fuel is regulated by an electronic control system which also adjusts the air-gas ratio to keep each cylinder at its correct operating point between knocking and misfiring limits.

In the diesel mode, the engines run on liquid fuel oil such as heavy fuel oil or marine diesel oil as a conventional diesel engine. The engines switch from gas to back-up liquid fuel instantly and automatically should the gas supply be interrupted or, in the event of any other alarm, while maintaining power and speed. When the situation returns to normal it is then possible to switch back to gas mode.

EU Grant for Wärtsilä-run Research Consortium

The European Union has chosen a research consortium coordinated by Wärtsilä to receive a €1.0 million grant to develop the use of methanol-consuming fuel cells to provide electrical power to marine vessels. The project is entitled "Validation of a Renewable Methanol Based Auxiliary Power System for Commercial Vessels" (METHAPU). The entire project costs €1.9 million.

The main purpose of the project is to develop and validate renewable-fuel-based technology on board a cargo vessel involved in international trade. Wärtsilä's task in the project is to study the suitability of a methanol-based fuel cell system on board the cargo vessel. A further important aim of the project is to lay the technical groundwork to support the introduction of the regulations necessary for allowing the use of methanol as a marine fuel. The specific components of

the technology to be validated are methanol fuel bunkering, distribution, storage system and a solid-oxide fuel-cell system that consumes methanol. The consortium is made up of world-class players in the field of fuel-cell system integration, sustainable shipping, classification work and environmental assessment.

The consortium's research will deal with the SOFC unit of 250 kW-class and the focus is on marine application issues, as well as the unit's safety and reliability aspects. For marine validation purposes, a smaller 20 kW unit will be installed on board a Wallenius Marine car carrier. The 20 kW unit will be factory-tested, laboratory-tested and approved before installation. The installation, likewise, will be approved before the unit and its carrying vessel begin to sail on world trade routes. A life-cycle assessment and an operational safety assessment will be made. The results of the validation run and the tests will contribute to the second and final part of the research — the marine-compatibility of the 250 kW unit, its safety and reliability.

The project will take two-and-a-half years, one year of which is dedicated to the application's validation. The regulations and technical requirements for using methanol as a marine fuel will pave the way for the commercial use of methanol-consuming fuel cells on board commercial vessels. This research project also serves as a springboard for future research related to a sustainable society; specifically, new greener marine power sources and a methanol-based economy.

The consortium consists of world-class organizations including Wärtsilä Corporation, Lloyd's Register, Wallenius Marine, the University of Genoa and Det Norske Veritas AS.

Wärtsilä Wins First FP Propeller Order from Vietnam

Wärtsilä has won a Vinashin Shipbuilding Industry Corporation contract to supply fixed pitch propellers for a series of five bulk carriers under construction for UK-based shipowner Graig Group.

Due for delivery in August 2007, the first Lips-type propeller will be for installation on a Diamond 34K bulker under construction at Vinashin's Pha Rung shipyard. The first vessel is due for delivery to Graig in November 2007.

The CarlBro-designed D34K is a double-hulled, handy-size bulk carrier with a length of 180 m, a moulded breadth of 30 m and a deadweight of 34 000 t. The first ships in the series have reportedly been sold to an Italian shipowner.

Wärtsilä's Lips-type fixed-pitch propeller propellers are custom designed and made for each application. Propellers vary in diameter from 1 to 12 m and from several hundreds of kilos to more than 100 t, while the propellers for these series will have a diameter of 5.6 m. The propellers will be delivered complete with shafting and Wärtsilä's JMT seals. The seals are of Sternguard 4BL type.

Given the complex geometry of modern propellers, the casting process is monitored from start to finish, ensuring a high-quality casting. Wärtsilä's patented CuNiAl material provides excellent casting, machining and fatigue properties with optimum efficiency and reduced noise and vibration levels. An additional advantage is that they are easy to repair.

MEMBERSHIP

Meeting of the Australian Division Council

The final meeting of the Council of the Australian Division of RINA for 2006 was held on Wednesday 13 December 2006.

During this meeting the following matters, among others, occupied the attention of members of Council:

Senate Inquiry into Naval Shipbuilding in Australia

It was reported that the Senate Committee had now published the Committee's report and this was available on the Senate website.

RINA/EA Agreement of Cooperation

Council was awaiting the reply from Engineers Australia to RINA's detailed response to EA's initial proposed Agreement and, in view of the lengthy delay in EA's response, the President undertook to pursue the matter with a view to a reply being available for the consideration of Council as a matter of some urgency.

Naval Architects and Complex Project Management

A report to Council had been prepared by Mr Lord and this would be considered in detail at the next meeting of Council.

Budget for 2007

The Budget was adopted which included an increase in prize money from \$A250 to \$A500 for the RINA (Australian Division) prize for a final year student at the Australian Maritime

College and at the University of New South Wales. The cash prize is in addition to the Division's Medallion and Certificate.

The Walter Atkinson Award

As there had been few or no nominations for this Award over recent years, Council decided that, for the time being, the Award would be made at the discretion of Council.

Pacific 2008 International Maritime Conference

Mr Jeremy, as Chairman of the Pacific 2008 IMC Organising Committee, reported that some response had already been received by the Program Committee from the recent Call for Abstracts. The IMC Organising Committee is looking forward to, once again, healthy cooperation with the RAN Sea Power Centre.

Australian Division President

The Council elected Dr Stuart Cannon, Vice-President of the Division, to the position of President for a two-year term to commence at the conclusion of the next Annual General Meeting of the Division. Dr Cannon will succeed Mr Rob Gehling who will retire from office upon the completion of his four-year term as President.

The next meeting of the Council of the Australian Division is scheduled to be held on Wednesday, 14 March 2007.

Keith M Adams
Secretary

NAVAL ARCHITECTS ON THE MOVE

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

Trevor Allan, a final-year student of the University of New South Wales, has taken up a position as a naval architect with the Australian Submarine Corporation in Adelaide while he competes his thesis project on the feasibility of a recreational submarine for use in Australian waters.

Anderson Chaplow has moved on within Lloyd's Register and has taken up a position in the Ship Design Systems Division at their London office to work on the RulesCalc software, which is being updated to reflect the new requirements of the *Common Structural Rules for Double Hull Oil Tankers*.

Matt Duff has taken up a position as a naval architect with Burness Corlett Three Quays Australia in Sydney.

Hasan Farazi, a graduand of the University of New South Wales, has moved on from his part time job as Chief Engineer on *Sydney 2000* and has taken up a position as a Senior Surveyor with Det Norske Veritas in Singapore.

Rob Gehling has retired from his position as Principal Adviser — Technical with the Australian Maritime Safety Authority and is now consulting as Rob Gehling and Associates in Canberra. AMSA has already been chalked up on his list of clients!

Hason Ho moved on from Argus Technologies in Sydney some moons ago, and ended up in London where, to no-one's surprise, he undertook another degree! For his dissertation, *Artificial Spacetime Simulation using Four Dimensional Finite Element Classical Mechanics in a*

Virtual Environment (yes, all doctoral theses must have a long name), he was conferred with the status of DSc (Doctor of Science) by the Robert Gordon University. Friends can go to <http://members.dodo.com.au/~hace/news/cv/doctorate/science.html> to check out the whole story. Doctor Ho has now taken up a position with Qantas in Sydney, where he is burning up his staff miles and pondering the future.

Sean Ilbery has taken up a position as Senior Passenger Ship Specialist with the Ship Emergency Response Service of Lloyd's Register in London, UK.

Daal Jaffers has moved on from Sea Transport Solutions and is currently tele-commuting for Derektor Shipyards in the USA. The current project is a motor yacht, designed by Azure yachts in The Netherlands and the detail design and CNC by BMT Nigel Gee in the UK, with Daal filling in the gaps.

Ruth Jago has moved on from Donald L. Blount and Associates in the USA and has taken up a position in the Structures Research and Development Department of Lloyd's Register in London, UK. In between, Ruth found time to come home to Sydney for Christmas with her family and SMIX Bash.

Andrew Joyce, a graduand of the University of New South Wales, has taken up a position as a Management Consultant with Bain and Co. in Melbourne.

Antony Krokowski has moved on from Marine Safety Queensland and is now consulting as AquaMarine (Australia) in Brisbane.

Ian Laverock has moved on from the Department of Defence and has taken up a position as National Manager Marine Capability with the Australian Customs Service in Canberra. He is developing the marine capability and surveillance requirements for the ACS and working on the replacement patrol boat project.

Regina Lee, a graduand of the University of New South Wales, has taken up a position as a naval architect with the NSW Maritime Authority in Sydney.

Richard Milne, a graduand of the University of New South Wales, has taken up a position as a naval architect with Thales Australia (Naval) at Garden Island in Sydney.

Joanna Mycroft, a graduand of the University of New South Wales, has moved on from her part-time job with Grahame Parker Desihn and has taken up a position waitressing evenings in a restaurant in her home town of Albury to amass finance while she waits for graduation, before heading off on her world tour.

Shaun Phelps has moved on from Mercator Studios in Vancouver, Canada, and has taken up a position as a naval architect with Austal Image in Fremantle.

Mark Smallwood has moved on from Marine Safety Victoria and has taken up the position of Safety Investigator — Engineering in the Office of the Chief Investigator, Transport and Marine Safety Investigations in Melbourne. TMSI is the recently-established Victorian version of NSW's Office of Transport Safety Investigations, and has similar aims to OTSI and the Australian Transport Safety Bureau.

Mark has an engineering role across four transport modes; rail, bus, tram and marine.

Jaime Sotelo has moved on from Transfield and has taken up the position of Quality Manager with Kellogg, Brown and Root in Sydney for their recently-won contract for the in-service support of HMA ships *Manoora*, *Kanimbla*, *Tobruk*, *Success* and *Sirius*.

Tim Speer has moved on within the Austal Ships group, returning from liaising on the Littoral Combat Ship project in Bath, Maine, USA, to work on the LCS and forward-looking Austal projects in Fremantle.

Hiroki Sunayama, a graduand of the University of New South Wales, has taken up a position as a naval architect with Austal Image in Fremantle.

SBLT Dominic Worthington has moved on from working up HMAS *Sirius*, and is now at HMAS *Cerberus* in Victoria, on a further six-month training course, following which he expects to be posted back to sea in the grey-funnel line.

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



Representing centuries of developing design, *Duyfken*, *South Passage*, *Endeavour* and *James Craig* on Sydney Harbour during the 2007 Australia Day Tall Ships race
(Photo John Jeremy)

New Fleet Oiler Delivered Under Budget and Ahead of Schedule

On 30 January 2007, the Australian National Audit Office (ANAO) released a report on the purchase of HMAS *Sirius* that noted that, in less than three months following Government approval, the Defence Materiel Organisation(DMO) “successfully completed the identification, evaluation and purchase of an existing product tanker that was suitable for modification to fulfil the role as the Navy’s new fleet oiler”.

The ANAO report went on to note “that the capability is likely to be delivered within the approved project budget.”

HMAS *Sirius*, 176 m in length with the capacity to carry 37 000 t of cargo, was commissioned into the Royal Australian Navy on 16 September 2006.

The original requirement under the 2000 Defence Capability Plan was for a vessel to be delivered in 2009 and a project budget of about \$450 million. This plan was revised in 2003, with DMO to purchase a commercial vessel with about one-third of the original budget and the in-service date brought forward to 2006–07.

DMO purchased the former MT *Delos* ‘off-the-shelf’ at a cost of \$52 million and converted the commercial tanker

in partnership with Australian industry. The contract for the refit and modification of the tanker was awarded to Tenix, with the majority of the work completed in Western Australia. The contract included incentives for completing the work ahead of schedule.

The ship, delivered new to the Commonwealth, is a double-hulled, environmentally-sustainable oil tanker which has been converted to meet the Navy’s specified requirements.

HMAS *Sirius* has commenced service with the most modern equipment available, and will play an important role in afloat support for the Royal Australian Navy for many years. In October 2006 she successfully undertook her first replenishment at sea (transferring fuel and water supplies to HMAS *Toowoomba*).

The innovative and creative procurement strategy adopted by DMO is now the subject of intense interest among other major navies. The ship is also a striking example of the efficiency that can be gained from the purchase of ‘off-the-shelf’ products where appropriate for Australia’s capability requirements.



HMAS *Sirius* and HMAS *Toowoomba* conducting a replenishment at sea in the Western Australian Exercise area in October 2006 (RAN photograph)

Duyfken Replica Concludes Historic Voyage

An authentic replica of the 16th Century Dutch “jacht” *Duyfken* arrived in Sydney just before Christmas at the conclusion of a 12 000 km voyage to commemorate the 400th anniversary of the first documented European contact with Australia — which occurred at Queensland’s Cape York.

A spokesman for the Federal Department of Environment and Heritage said that the welcome into Sydney was very dramatic, as the *Duyfken* battled strong-to-gale-force northerlies almost all the way from Hobart and was delayed by two days reaching Sydney.

The huge public welcome and official ceremony planned for the morning of Monday 11 December was cancelled at the last minute because of bad weather, which was very disappointing for all involved.

A smaller official ceremony was held at the Royal Sydney Yacht Squadron, Kirribilli. About 30 VIPs attended at the very short notice provided (less than 24 h), including the Netherlands Consul-General, Ms Margaret Bot.

The *Duyfken* replica led the yachts out of Sydney Harbour for the start of the Sydney-to-Hobart yacht race.

The Australian Government provided major sponsorship of \$495 000 for the voyage, which was

the centrepiece of the Government’s 2006 focus on coastal and maritime heritage.

Australian Minister for the Environment and Heritage, Senator Ian Campbell, said in a news release that the important voyage, including calls at 25 ports around the country, was highlighting our early maritime history.

“In 1606, Captain Willem Janszoon and his crew aboard *Duyfken* sailed from the Indonesian island of Banda in search of gold and trade opportunities on the fabled island of Nova Guinea. They did not find gold — but they did find the northern coast of a huge continent: Australia,” Senator Campbell said.

“Willem Janszoon charted the first 350 km of Australia’s coastline, along the western shore of Cape York to Cape Keerweer. It was the beginning of the charting of Australia’s 25 000 km coastline; a coastline that today is rich in natural, historical and indigenous heritage treasures.”

The voyage was a partnership between the Australian Government, the *Duyfken* 1606 Replica Foundation, and volunteer group Australia on the Map 1606 – 2006.

Australian Maritime Digest
No. 154, 1 February 2007

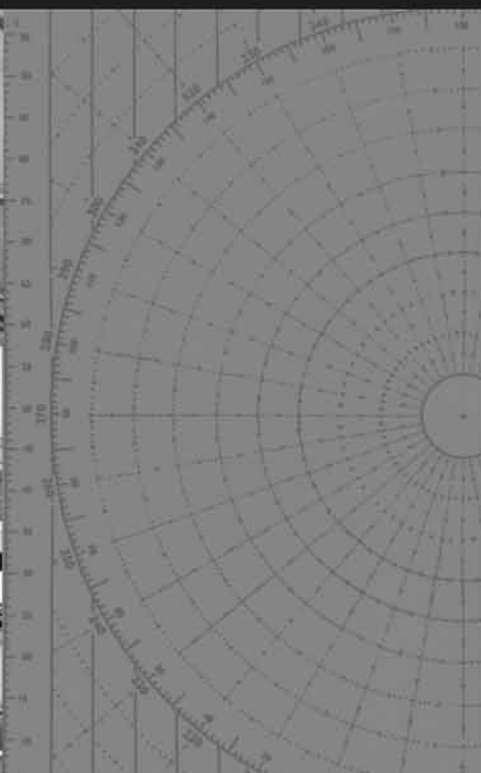


Duyfken sailing before a fresh north easterly on Australia Day
(Photo John Jeremy)



Naval Networks: The Dominance of Communications in Maritime Operations

2007 King-Hall Naval History Conference



THE UNIVERSITY OF
NEW SOUTH WALES



AUSTRALIAN DEFENCE
FORCE ACADEMY



NAVAL NETWORKS: THE DOMINANCE OF COMMUNICATIONS IN MARITIME OPERATIONS

The Royal Australian Navy's Sea Power Centre - Australia, with the assistance of the School of Humanities and Social Sciences, University of New South Wales at the Australian Defence Force Academy, is hosting the fifth biennial King-Hall Naval History Conference, 24 July and 26-27 July 2007. This will be a major international conference with distinguished speakers from Australia, Canada, the United Kingdom and the United States of America. The keynote speaker will be Professor N.A.M. Rodger, author of the much acclaimed multi-volume *A Naval History of Britain*.

The conference program will address the shifting demands facing both national and combined international sea power, together with case studies of command, control, communications and intelligence taken from the ancient world through to the 21st century. The conference will offer new insights into the future face of maritime strategy, the changing nature of global connections, and the continuing nexus between communications and command at sea.

GENERAL INFORMATION

Venue:

24 July: ANZ Theatre, Australian National Maritime Museum, Darling Harbour, Sydney NSW
26-27 July: Rydges Lakeside Canberra, London Circuit, Canberra ACT

Registration:

Sydney: \$100.00 per person
Canberra: \$200.00 per person
(Registration includes lunch, morning tea and afternoon tea)

Proceedings:

Conference proceedings will be published and forwarded to all attendees at no cost.

Conference Dinner:

A dinner will be held on the evening of 26 July in the Anzac Hall, Australian War Memorial, Anzac Parade, Campbell, ACT.
Cost will be \$90.00 per person.

CONTACT

Sea Power Centre - Australia
Conference Coordination Cell
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NAVAL SHIPBUILDING REPORT

In December 2006 the Senate Standing Committee on Foreign Affairs, Defence and Trade tabled its report into naval shipbuilding, *Blue water ships: consolidating past achievements*. The committee strongly recommended that the Government make a commitment to maintaining the industry. The main findings of the committee are reproduced below.

1. The committee has taken a measured and balanced approach to presenting and analysing the evidence. The lack of data in particular, caused the committee to be cautious in reaching its main finding. The evidence, however, was clear cut — Australia's naval shipbuilding base is well-established, and in recent years has become more efficient, motivated and highly skilled. It has produced a number of outstanding world-class vessels that showcase the capability of Australia's naval industrial base. In assessing the four major components of Australia's naval industrial base, the committee found:

- Australian primes have an improved track record;
- SMEs and international subsidiaries form a vibrant, innovative and competitive network of suppliers;
- past and current investment in heavy engineering infrastructure outside the traditional ship building yards places the industry on a sound but flexible footing to meet future demand; and
- initiatives by both the public and private sectors are tackling the problem of skills shortages to ensure that Australia has the knowledge and skills to support the industry.

2. The committee believes that this capability, built up over recent decades, is an asset to the nation which should be encouraged and supported by government, but with stronger emphasis on competitive productivity gains over the long term.

3. Not only does this industrial base have the capacity and potential to contribute to the maintenance of a self-sufficient and self-reliant naval shipbuilding industry, it also contributes in many other ways to Australia's industrial manufacturing base, the broader economy and Australia's national defence interest. The range of benefits include, but are not limited to:

- strategic self reliance for the repair and maintenance of the navy fleet and commercial shipping;
- greater self reliance and independence for national strategic defence capability;
- improved assurance of dependability and flexibility flowing from domestic capacity for ship modification or customisation for Australian conditions, and the development of innovative solutions for any of the Navy's unique requirements which might be considered appropriate and practical;
- increased gross domestic product from capital investment;
- reduced pressure on the balance of payments;
- enhancement of the labour market;
- expanded indigenous research and development (R&D), design, production and management capabilities;
- the acquisition and development of valuable new skills, manufacturing techniques and processes;

- extensive technology transfer across a broad spectrum of activities;
- a strengthening belief in Australia's own capabilities and confidence in its own ability to exploit opportunities;
- enhanced potential for exporting;
- the maintenance of capability to support vessels throughout their operational lives, shorter turn-around time for repairs with in-service support; and
- greater foreign investment.

4. The committee emphasises the need to retain a viable shipbuilding and repair industry to ensure that the Navy has the ability to respond quickly to urgent operational requirements. A reliance on off-shore industry to maintain, repair, upgrade or modify navy vessels would put Australia's defence interests at risk.

5. Further, the committee accepts that domestic naval construction provides greater assurance for ongoing effective technical support, maintenance, refurbishment and emergency repairs—as opposed to post construction technology transfer from overseas providers. There is a direct and strong connection between a ship's build and acquiring the knowledge, skills, experience and resources needed to support the ship, especially when a rapid response is required.

6. When taking account of all the factors that are to be considered when acquiring a naval vessel, the committee believes that it is in Australia's national interest to maintain a viable naval shipbuilding and repair industry.

7. This requires a commitment by the government to have Australia's naval vessels constructed in Australia and for the government and defence to adopt measures that would ensure that the industry remains efficient, innovative and competitive.

8. Government should not allow itself to be captured by overly dependent and uncompetitive suppliers. The trade off between the benefits of self reliance and self sufficiency must be carefully measured against the best possible international benchmarks so as to avoid debilitating subsidisation of inefficient practices, but at the same time promoting improved productivity.

9. While the committee supports in-country builds for naval vessels, the committee notes that for virtual commercial ships where there is no strong strategic defence interest, such as the *Delos* acquisition, offshore purchase may be appropriate.

10. The Committee believes that to assist the shipbuilding and repair industry improve its productivity, it is imperative that government develop longer-term naval defence strategies from which can be derived economies of scale and continuity of demand, without which industry will continue to suffer.

Recommendation 1

11. The committee recommends that the government make a public commitment to maintain Australia's naval shipbuild-

ing and repair industry. This commitment is to be supported by improved long-term planning of naval shipping needs in order to maximise economies of scale and provide continuity for the broad but specialised design and construction skills

required for a healthy industry over the long term.

The full report is available at www.aph.gov.au/Senate/committee/fadt_ctte/shipping/report/index.htm.

FROM THE ARCHIVES



The tanker *P. J. Adams* ready for launching at the Whyalla Shipbuilding and Engineering Works, Whyalla, South Australia. Built for Ampol Petroleum Limited, she was launched by Dame Pattie Menzies on 10 January 1962
(Photo courtesy Bryan Chapman)



We are where you are.

Wärtsilä is the world's leading supplier of complete ship power solutions and a major provider of turnkey solutions for distributed power generation. In addition Wärtsilä operates a successful Nordic engineering steel company. More than 10,000 service oriented people working in 50 countries help Wärtsilä provide its customers with expert local service and support, wherever they are.

