

# **THE AUSTRALIAN NAVAL ARCHITECT**



**Volume 4 Number 1  
February 2000**



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# THE AUSTRALIAN NAVAL ARCHITECT

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

Volume 4 Number 1  
February 2000

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## Cover Photo:

The reconstruction of the seventeenth century VOC ship *Batavia* on Sydney Harbour during her official arrival on 5 December 1999. This fine ship is on display at the Australian National Maritime Museum until early 2001 (Photo John Jeremy).

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Opinions expressed in this journal are not necessarily those of the Institution.

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February 2000

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**RINA Australian Division**

on the

World Wide Web

**[www.rina.org.uk/au](http://www.rina.org.uk/au)**

## From the Division President

Welcome to the New Year. It is perhaps appropriate to look back on the achievements of the Australian Division over the past year and to review future prospects in the lead up to the AGM in March.

The year saw the establishment of a new section in Queensland giving better representation to council for those members living up north as well as having a body to organise technical and other meetings and to promote naval architecture within the region. Additionally we have continued our important discussions with IEAust to formalise the relationship between our two organisations making dual membership easier to obtain for those wishing it.

Last year also saw the Chief Executive Officer of RINA, Mr Trevor Blakeley, visit Australia and a number of members were able to meet with him and discuss matters relevant to our region as his visit included a number of sections around the country. It is expected that by the time this is printed both Mr Trevor Blakeley and Mr David Goodrich, the current President of RINA, will have been to both the Sea Australia 2000 and the STAB 2000 conferences. Some members may be aware of a proposal for members in New Zealand to be included as a part of the Australian Division. We are still awaiting developments from London on this proposal.

For the future it is apparent from the papers sent to me with the notification of the RINA AGM in London that discussions are ongoing with IMarE regarding the merger between the two Institutions. A recent proposal to set up a joint steering group has been reconsidered and currently the decision to merge with the IMarE is being questioned. It has been decided that the future role and direction of the Institution should be carefully considered and that the proposed further discussions with the IMarE should consider how closer collaboration in the operating activities of both institutions could be achieved. The next AGM of RINA in London will also consider including Associate Members and Associates as corporate members of the Institution. It is proposed that these Associate Members and Associates will be allowed to

transfer to Fellows of the institution provided they meet the requirements of council for such a transfer.

Finally, some members will be aware that Bryan Chapman has returned to our shores and has no plans to leave us again in the foreseeable future. This being the case and, having discussed the position of Australian Divisional President with Bryan, I have decided to step aside in his favour at the next council meeting to be held just before the AGM in March. This will allow me to retire from council at this coming AGM as I had originally planned and will let Bryan finish the term for which he was elected. I wish to thank all those who helped me during my time as President, in particular Mr Keith Adams along with the rest of the council, who provided support and assistance when it was needed.

*John Colquhoun*

## Editorial

On the afternoon of the third day of Sea Australia 2000, those conference delegates who had lasted the distance sat down for Session 25 to hear Peter Burgess and David White of Forgacs tell the story of the conversion and refit of two ex-USN landing craft into highly-capable amphibious transports for the Royal Australian Navy. Those of us in the audience who have had experience with the refit and modernisation of old naval ships could readily understand the challenge that Forgacs faced with this project. The scope of the work, the spectacular growth in the repair component at the work progressed, and the problems created by divided control within the customer's organisation must have tested the patience of those involved yet ensured even greater satisfaction when the job was completed.

As that presentation (the paper is reproduced in this edition of *The ANA*) was being given, in Canberra the Minister for Defence was releasing two reports into the project (see page 13). One report was by the Inspector General of the Department of Defence and the other by the Head of the LPA Delivery Team with the endorsement of the Chief of Navy. Both set out the story of the acquisition and conversion of the ships in some detail, and both make sensible recommen-

dations in an endeavour to prevent similar circumstances arising again.

That such recommendations should have to be made *at all* must be a concern to those of us who 'have been around this buoy before'. The report by the Head of the LPA Delivery Team says, for example, 'Project management of the LPA project was poor. The inter-relationship of the modification packages with the extensive refit, which was separately funded, produced a project whose management needs were more complex than a new construction ship. This was not understood by Defence at the time.'

Some of us would say that Defence should have understood the inherent risks of this project — this is not the first time that work of this nature on old ships has been done in Australia, even if these ships were so old that they would normally have been regarded as having reached end-of-life. Many of the important lessons of this project, and indeed, of others of recent times, have been learnt before.

Whilst the growth in emergent work in the LPAs has been spectacular, it is not unprecedented. The need for a single authority in charge of funding with the ability to make rapid decisions on the spot to avoid unnecessary delay has been demonstrated on previous complex naval refit projects. On occasions, these experiences have been documented in papers presented to this Institution.

Why can we not more effectively learn the lessons of the past? No doubt the amount of time between similar projects has some influence, as does the relatively short tenure of managers in Defence positions before moving on in the organisation. In recent years much attention has been focussed on the need for professional project management skills in Defence. This is, of course, an important development. Modern management tools are powerful when coupled with good product knowledge in the project management team, and adequate resources to handle the task. Sustaining corporate memory is always a challenge and there needs to be a way to make collective experience more readily accessible.

*John Jeremy*

## Letters to the Editor

Dear Sir,

I read with interest John Jeremy's Editorial in the November 1999 Issue of *The Australian Naval Architect*. He expressed the view that a total naval capability system comprises not only weapons sub-systems but also an integrated platform sub-system capable of future upgrades. I could not agree more with John's view.

I then read in the same issue John Benjamin's report on the RAN FFG Upgrade Project (\$900 million for four ships). Having been involved in the early design stages of the USN FFGs that went back to the early 1970s (almost 30 years ago), the catch phrase for these ships was 'design to cost' (whatever that subsequently proved to be). I remember that almost no margins were provided on strength, stability, performance, space and weight in the very initial design stages. This was to keep the hull displacement down to an affordable cost (assuming displacement was directly related to total ship cost).

Looking back at this design I now wonder about this approach. It was no doubt more suited to the USN operational concepts than those of the RAN. As far as the USN was concerned at the time, their FFG's were to be built in great numbers (ultimately over 50 of them) and were to be discarded without significant upgrade when their 'use-by date' of 20 years expired. Although during the operational life of the USN ships modernisation and upgrades were investigated, I believe only two or three of the ships were eventually upgraded. I believe the remaining vessels have subsequently been either placed in moth-balls, sold to other navies or have been passed over to the US Naval Reserve Forces.

I was also involved during the late 1980s in the first upgrade of the three early RAN FFGs. At that time we went through the exercise of enhancing the ship's structure to support the increase in weight and additional solid ballast to enhance the intact stability and also carried out other numerous modifications to enhance the damaged stability and reserve buoyancy of the vessels. This was necessary because of the lack of initial margins. I wondered then if it was all worth it and I wonder now about the economics

of the current upgrade.

I guess where all this is leading is to try to put some value and meaning (for future decision makers) to the editor's comment that bigger hulls with realistic margins are a more effective and economical initial investment. So I ask John Benjamin if he has any cost breakdown figures for the current FFG Upgrade that he can make public that would give us some idea of how much of the \$900 million is going into the hull, mechanical and electrical aspects of the upgrade compared to that going directly into the upgraded weapon system and its installation. This information may help to establish if this money could have been better spent on providing a more effective platform [*i.e. ship — Ed.*] with more realistic margins included at the outset.

*Brian Robson FRINA*

*John Benjamin replies:*

Dear Sir

Very few of us would disagree with Brian Robson that when new ships are acquired consideration should be given to obtaining a larger ship than the minimum requirement. This would certainly simplify the inevitable future upgrades if larger margins were included up front.

ADI Limited has teamed with Gibbs & Cox, Inc of New York for the platform design component of the FFG Upgrade. As Brian's letter raised a number of issues associated with the original design of the FFG Class, I asked Gibbs & Cox to respond to that part of the letter. The following was received from Gibbs & Cox:

'No one who is familiar with the history of the FFG7 Class program can disagree with Mr Robson that the "design to cost" philosophy resulted in a design with minimum margins for future growth. The top-level requirements for the FFG7 Class established a weight constraint of 3 400 tons in the full load condition. Together with cost and manning levels the displacement constraint become one of the driving factors in the initial FFG7 design. Unfortunately, the performance requirements were never compatible with a ship of that displacement.

What is not evident from Mr Robson's remarks is that the design of the FFG7 Class did not re-

main static during the construction phase or after the ships were in service. More than fifty FFG7 Class ships were built in the United States in four flights over a twelve year period during the 1970s and 1980s. The design of each flight incorporated a package of changes which enhanced the capabilities and performance of the ships. Major upgrades successfully integrated into the design included accommodation for 30 additional crew, a towed-array sonar system, a helicopter securing and traversing system (RAST), and the LAMPS III ASW system with two 10 ton helicopters. The increase in capability was accompanied by a corresponding increase in displacement. The supporting hull, machinery and electrical systems were modified and upgraded to suit. The majority of the design changes by weight were due to improvements in the combat system, manning or habitability and survivability.

Many of these design changes have been back-fitted into existing ships. Most US Navy and all RAN FFGs have been modified to provide a 4 100 ton limiting displacement. Even the LAMPS III/RAST system, which requires an extensive change to the stern configuration, has been installed on in-service ships. The point of these examples is to illustrate that whilst the original design had by today's standards minimal margins for future growth, the design of the FFG7 Class has improved as the threat and operational requirements have changed.'

From the ADI FFG Upgrade viewpoint, the \$900 million value of the project will provide six upgraded ships, a Weapons System Support Centre/Land Based Test Site located at Garden Island, and a Team Training Facility located at HMAS *Watson*.

The RAN FFGs are currently at a limiting displacement of 4 100 tons. The FFG Upgrade will increase the Limiting Displacement to 4 200 tons. The increase to 4 200 tons requires only minor strengthening of internal stiffeners and no additional external doubler plates.

At this stage of the design, it appears that the chilled water capacity will need to be increased due to the higher heat load from the new combat system, but the electrical load is within the ca-

capacity of the existing generators. It could be argued that increasing the chilled water capacity would have been required for this upgrade regardless of the size of the original ship.

As a percentage of the total upgrade, the combat system and land-based facilities are by far the largest component. The hull, mechanical and electrical aspects of the project amount to approximately 5% to 10% of the project.

Whilst it is true that not all ship classes could accommodate extensive upgrades, the FFG Class has demonstrated an extraordinary capacity to accommodate upgrades that have increased the limiting displacement from 3 400 tons to 4 200 tons. There is currently a US Navy Shipalt available to upgrade these ships to 4 300 tons and Gibbs & Cox have designed an upgrade proposal to increase them to 4 500 tons.

*John Benjamin*

Dear Sir,

My congratulations to Bob Campbell for leading Sea Australia 2000 to a successful conclusion. Added to these congratulations, I would like to comment on the enormous amount of work put in to this event by Laurie Prandolini in persuading so many competent authors from all parts of the globe to participate, and to his collation of the papers in a programme which will take some beating; though may I add that Laurie says the next conference will be even more wide ranging and he predicts that it will be even better!

Having said that, for the next conference may I suggest that training, both practical and theoretical, and educational opportunities for maritime engineers be one of the principal streams for papers.

Then, though I realise the oil and gas people have separate conferences, maybe some joint involvement of the oil and gas and production rig industry could be introduced to Sea Australia 2002.

Fourthly, getting away from conference matters, I would like to suggest that a joint panel of naval architects and marine engineers be set up to prepare a brochure for annual distribution to high schools and for Internet viewing so that young people may be attracted to maritime matters and encouraged to take up education and a career in

this field. This country relies on the sea routes yet, if one speaks to many people who have no direct involvement with marine matters, they little realise the necessity this nation has for our profession. It is time we set out to rectify that.

*Andrew Tait*

Dear Sir,

Australia has emerged as niche leaders in fast catamarans. Before people forget, I think we need to jot down any recollections of the development in Australia.

In the early 1960s, Cmdr Williams developed a catamaran surface gunnery target for the RAN. This was constructed from steel and could be towed faster than the previous battle targets.

At Garden Island in 1969, Don Dixon and myself were tasked to design an improved target. We chose to use GRP hulls with aluminium members and mast, which weighed considerably less and could be towed faster than the Williams type; 23 knots compared with 17 knots, the limiting factor being the drag on the towrope. It was 6.4 m long and 4.37 m wide. This was trialled with various mast configurations until being accepted into service in 1977, where its design has been unchanged to this day. Phil Helmore and Geoff Scott undertook the 1971–72 series of trials whilst I was at Cockatoo Dockyard, which was about the time Don left to teach at STC.

In 1968, a catamaran aircraft water lighter was built to enable Skyhawk planes to be off loaded from our aircraft carrier whilst in Jervis Bay. In 1972 three similar catamarans were constructed at Cockatoo Dockyard, and fitted out as crane stores lighters for the numerous RAN depots around Sydney Harbour.

About this time I started lobbying for improved ferry services — more destinations including a second terminal at Darling Harbour, new Manly ferries with government subsidies (they were privately operated then). In February 1974 I wrote to the Minister for Transport suggesting catamaran ferries for some harbour runs. These would be 24.4 m long by 10.7 m beam, and could be double ended by using inboard-outboard leg propulsion. Furthermore a similar unpowered

*(Continued on Page 10)*

# NEWS FROM THE SECTIONS

## New South Wales

The NSW Section Committee met on 25 November and discussed the finances of the section, the annual dinner combined with the IMarE (Sydney Branch), future sponsorship, and the technical meeting program for 2000.

They also met on 20 January and discussed the financial report for the year ending 31 December 1999, support for the Pacific 2000 exhibition, the technical and social program and venues for 2000, and elected Phil Helmore for a further term of office as the NSW Section representative on the Australian Division council. The program of NSW Section technical meetings for 2000 is shown in the *Coming Events* column in this issue.

RINA hosted a stand at the Pacific 2000 exhibition held 1–4 February at the Sydney Convention and Exhibition Centre, Darling Harbour. RINA's Chief Executive, Trevor Blakeley, and Marketing Manager, Debbi Bonner, talked to people about the benefits of RINA membership. The stand was tended by members of the NSW Section, and many thanks to all those who put time into representing their Institution in this way.

*Phil Helmore*

## Queensland

The Queensland Section met on one occasion during the last quarter. This was the usual quarterly section committee meeting held on 7 December at the Yeronga Institute of TAFE and was followed by a technical presentation by John Lund of John Lund Marine Design Pty Ltd.

The technical presentation was on *The characteristics, design and operational experiences with an 80 m Self-Discharging Ore Barge* Western Challenge. The barge (capable of transporting 4 500 t of lead or zinc) was designed by John and has been operating successfully in King Sound, Western Australia, since January 1997. Presentation papers can be obtained from John Lund or the Section Secretary.

Membership of the Queensland Section is on the increase and existing members have been upgrading their membership to more appropriate levels. The strategies and goals contained in the section's Business Plan are mostly on target, which can only mean that a viable future for the section is assured.

*Brian Robson*

## Canberra

At a joint IEAust/IMarE/RINA meeting at Engineering House on 16 November Greg Hellesey of the Australian Customs Service provided an update on the introduction into service of the new Bay Class Customs patrol boats. The details of these new patrol boats have been provided in *The Australian Naval Architect* of November 1999. This project provides an interesting benchmark against which the participants in the audience from the Department of Defence could compare the acquisition strategy for the Fremantle Class patrol boat replacements.

In conjunction with a visit to Canberra on 2 December for other activities, Dr Stuart Cannon of the Aeronautical and Maritime Research Laboratories of DSTO gave a presentation on the investigation into the loss of the bulk carrier MV *Derbyshire* which he had previously presented to the Victorian section. Prior to the location of the wreckage of the *Derbyshire*, investigation had concentrated on the possible catastrophic failure of an area of structural discontinuity in the hull forward of the superstructure. Dr Cannon discussed the various metallurgical and structural investigations that had been undertaken. The presentation prompted discussion on the current theory as to the cause of the loss of the ship. This theory is that progressive flooding of the forward spaces and holds occurred, initially through an access hatch and subsequently as a result of the failure of a forward cargo hatch due to green seas. As a result of the flooding, a hull structural failure occurred. Ian Williams made the interesting observation that, unfortunately, the design standards for structural strength and



damage stability for such vessels had been considered in isolation, rather than in combination.

With the approach of the 1999 Sydney to Hobart Yacht Race, the Canberra sections of RINA/IMarE arranged a final meeting for the year on 20 December. This meeting concerned Australia's Search and Rescue organisation and included first hand accounts of the Southern Ocean and Sydney to Hobart yacht race rescue efforts. Presentations were given by Arthur Heather of the Australian Maritime Safety Authority AusSAR organisation, and Mark Delf, an aircrew-man from the Canberra-based South Care rescue helicopter operated by Lloyd helicopters.

Arthur provided an overview of the AusSAR organisation and the equipment and methods used for search and rescue within Australia's area of responsibility. Having been the commander of the RAN Seahawk involved in the recovery of Thierry Dubois from the Southern Ocean, he described aspects of that rescue effort which concluded with a short video of the rescue of Thierry Dubois and Tony Bullimore.

Mark Delf then related his experiences with the South Care helicopter service during the rescue of four crew from one of the disabled yachts during the 1998 Sydney–Hobart race. With the South Care Bell 412 having been introduced into service only a few months earlier, the training of the paramedics who were to be lowered down to retrieve the yachtsmen had been limited to the calm conditions encountered on Lake Burley Griffin. This was no match for the conditions they encountered heading out over Bass Strait. Mark described how at one stage, due to the rapid movement of the helicopter while he was operating the winch, he had been thrown outside of the cabin and was suspended only by his safety harness. Although both the paramedics who retrieved the four crew were exhausted following the winching operations, the helicopter returned safely to Merimbula and waiting ambulances.

The presentations were followed by a tour through the AusSAR coordination centre where further information was provided on the operation of the centre. Those in attendance certainly appreciated the presentations and tour and thanks

go to Arthur and Mark, the staff at AusSAR and Rob Gehling who arranged for this meeting at the AMSA offices.

On 20 January Bruce McNeice, a naval architect with the Naval Material Requirements branch of the Department of Defence, gave a presentation on the preparations for and subsequent conduct of the shock trials on the RAN's new coastal minehunter HMAS *Hawkesbury*. Bruce, who had been seconded to ADI Limited at the time when preparations were being made for the shock trial, became heavily involved in organisation of the myriad activities required for the conduct of such trials. He described the environmental considerations involved in such trials, which included monitoring the movement of marine life in the area planned for the trial up to two years in advance as well as safety aspects of handling the explosives for the tests. The positioning of the explosive charge and the monitoring of the shock tests were also described. This was the world's first pre-delivery shock trial of a naval vessel, and was required to demonstrate the shock capability of the vessel. The trial was a joint effort between ADI and the Department of Defence, with a number of other agencies and contractors involved at various stages. It was pleasing to hear that the trials ran smoothly.

The Canberra section arranged an informal meeting and dinner with the RINA President, David Goodrich, at the Canberra Yacht Club on the evening of 27 January.

While a longer-term schedule of meetings for the Canberra section remains elusive, offers of technical presentations, both from within the local section and from interstate visitors, have allowed a reasonably steady level of meetings to be maintained during 1999. Apart from setting a meeting schedule for 2000, attention now needs to be focussed on how to attract a greater interest in such presentations, including from those who are not currently RINA or IMarE members.

*Martin Grimm*

## Victoria

On 16 November 1999 Mr Martin Robson presented a paper of particular appeal on new propeller technology. In particular he described three new developments — the ring propeller, a controllable-pitch propeller and orbital gearboxes.

Dr Stuart Cannon of DSTO has been awarded the Pieter Bossen Memorial Award for 1999 for his paper *Investigating Some Loss Scenarios Proposed for MV Derbyshire*.

On Tuesday 15 February Mr Ken Hope presented a paper entitled *Marine Propellers and Computer Methods for Small Vessels — a Review*.

On Wednesday 23 February a gathering of members of the Victoria Section and other interested people will be held at the Clare Castle Hotel, Gramway and Ross Streets, Port Melbourne.

Business for the evening will include:

- Election of a Section Chairman
- Election of a Section representative on Division Council and on the Committee of the Victoria-Tasmania Branch of the Institute of Marine Engineers.
- Attendance at and participation in the joint meetings held with the Institute of Marine Engineers.

*Bob Herd*

## Western Australia

The Western Australian Section has had one technical meeting since the last report, on the evening of 20 January 2000. Kim Klaka, a Senior Research Fellow for the Centre for Marine Science and Technology at Curtin University, spoke about his twelve-month cruise along the western and eastern Australian coastlines with his wife

Annette. Kim's talk concentrated on the yacht and its equipment, in particular which equipment worked well and which didn't. Kim's first overhead presented to the audience read *Cruising: The Art of Repairing Yachts in Exotic Locations with Inadequate Tools*.

Kim's yacht *Panache II* is a 10.4 m van der Stadt design. Its navigation equipment is VHF and HF radio, two GPS units, a mobile phone, an autohelm, and a depth sounder. The cruise commenced with a 1000 n mile sail north along the Western Australian coast from Fremantle to Dampier. From here, the cruise was sped up by trucking the vessel across to Mooloolooba on the Sunshine Coast. From Mooloolooba they sailed north to the Witsundays and then south down the east coast to Jervis Bay. The yacht was once again loaded onto a truck in Botany Bay and trucked across the Nullabor to Fremantle. The voyage took 12 months, using the engine 42% of the time for an average speed of 4.9 kn. Only five nights were spent at sea.

Items that Kim had particular trouble with were the main switch panel with illuminated rocker switches, and electrical deck plugs. Items that he was particularly happy with were the Lavac Zenith toilet, Volvo 2003 diesel, mylar roller furling headsail, and the Tinker Tramp dinghy. This inflatable dinghy doubled as a liferaft and has a sailing capability as an option.

One area of concern which Kim mentioned was that fact that when his two identical non-differential GPSs were placed alongside each other and switched on at the same time they gave position fixes which differed by 300 m. Not a comforting thought for any sailors who supposedly rely on their GPS for navigating down a 200 m wide channel at night.

*Geoff Leggatt*

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*(Continued from page 7)*

catamaran could be close coupled to increase capacity during peak hours. It must have made a point, for a short time later a comment on my suggestion appeared in the newspapers. By 1980 there were catamaran ferries on several services, which were later followed by low-wash cats up the Parramatta River.

At the end of 1974 the Tasman Bridge in Hobart was closed for an extended period, after a collision from a ship. All sorts of craft were pressed into service to connect both sides of the harbour, and catamaran ferries and local shipyards got a most significant boost.

*Hugh Hyland*

# COMING EVENTS

## Australian Division AGM

The Annual General Meeting of the Australian Division of RINA will be held on Wednesday 22 March at 5:30 pm in the Harricks Auditorium of the Institution of Engineers Australia, Eagle House, 118 Alfred St, Milsons Point (see notice elsewhere in this issue). The Australian Division AGM will be followed by a technical meeting of the NSW Section.

## NSW Section AGM and Technical Meetings

The Annual General Meeting of the New South Wales Section of RINA will be held on Wednesday 22 March immediately following the Australian Division AGM and the scheduled technical meeting in the Harricks Auditorium of the Institution of Engineers Australia, Eagle House, 118 Alfred St, Milsons Point (see notice mailed to NSW addressees with this issue).

Technical meetings are generally combined with the Sydney Branch of the IMarE and held on the fourth Wednesday of each month in the Harricks Auditorium of the Institution of Engineers Australia, Eagle House, 118 Alfred St, Milsons Point (note the new venue) unless notified otherwise. They start at 5:30 pm for 6:00 pm and generally finish by 8 pm. The provisional program of meetings for 2000 is as follows:

23 Feb	Panel Discussion, <i>The Design of Fast Ships</i> , with panellists from Incat, AMD, Crowther Multihulls, and Holymans
22 Mar	J. C. Jeremy, <i>Preparing for Olympic Sailing: a Volunteer's Perspective</i>
26 Apr	I. Williams, <i>Improvements in Ro/Ro Ferry Safety: MV Estonia</i>
24 May	S. Oliveira, Alfa Laval, <i>Innovation in Separator Development</i>
28 Jun	P. Dalley, Port Marine, <i>Controlling the Effects on the Environment by Minimising Waste Water</i>
26 Jul	To be advised
23 Aug	G. Spiliotis, Germanischer Lloyd (Australia), <i>Application of Class</i>

## Rules for WIG Craft

** Sep	Ship Visit to a Wave-piercing Catamaran (in Darling Harbour for the Olympics)
27 Sep	T. Hertzell, ABB, <i>Experience with the GT35 Gas Turbine in Marine Propulsion</i>
25 Oct	N. Edwards, Adsteam Marine, <i>Design and Construction of 62 t Bollard Pull Tugs</i>
** Nov	SMIX Bash/Annual Dinner
**	Date to be advised

With the change to our new venue, we have lost our opportunity to foregather for suitable refreshments at Rosie O'Grady's Tavern. However, there are several congenial watering holes in the immediate vicinity of Eagle House for furthering discussions after the technical presentations.

## Canberra Section Technical Meeting

23 Feb	M. Julian, AMSA, <i>Marine Environmental Challenges into the New Millennium</i> .
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Mike Julian, who is chairman of IMO's Marine Environment Protection Committee, will review ship-sourced pollution of all types including oil, chemical, sewage, garbage, air, anti-fouling and organisms carried by water ballast. The venue is the Canberra Southern Cross Yacht Club.

## Victorian Section Technical Meeting

The joint technical meetings with the Victoria-Tasmania Branch of the Institute of Marine Engineers are normally held on the third Thursday of the month, February to November, at the Institution of Engineers building at 21 Bedford Street, North Melbourne. All interested persons are welcome.

On Tuesday 21 March Mr Mike Hines of Shell Australia Limited will present a paper on *Fire Risk Assessment in Engine Rooms*.

## Queensland Section AGM and Technical Meeting

The first Annual General Meeting of the Queensland Section will be held at Yeronga TAFE on 7 March at 5.30 pm and will be

followed by a technical presentation. *Pilot Boat Development* will be presented by Bill Wright, Managing Director, Norman R Wright and Sons Pty Ltd, Boatbuilders of Brisbane. Interstate members and visitors are welcome to attend.

## ISSC 2000

The 14th International Ship and Offshore Structures Congress (ISSC 2000) will be held in Nagasaki, Japan, on 2–6 October 2000.

The new committee structure for ISSC is as follows:

### Technical Committees

- I.1 Environment
- I.2 Loads
- II.1 Quasi-static Response
- II.2 Dynamic Response
- III.1 Ultimate Strength
- III.2 Fatigue and Fracture
- IV.1 Design Principles and Criteria
- IV.2 Design Methods

### Specialist Committees

- V.1 Risk Assessment
- V.2 Structural Design of High

### Speed Vessels

- V.3 Fabrication Technology
- V.4 Inspection and Monitoring
- V.5 Floating Production System
- V.6 Collision and Grounding

### Special Task Committees

- VI.1 Fatigue Loading (Chairman: Dr. I. Watanabe)
- VI.2 Fatigue Strength Assessment (Chairman: Prof. S. Berge)

The structure of the committee indicates the areas which will be canvassed at the congress. The organisers would like to invite two observers from Australia to the Congress and have called for expressions of interest. Attendance would be at your own expense, but would be beneficial to the industry generally as you could report back via *The ANA*.

If you are interested in attending as an observer, or sending someone from your company, then please advise Dr Mac Chowdhury at [m.chowdhury@unsw.edu.au](mailto:m.chowdhury@unsw.edu.au) and send your CV in the following format direct to the conference secretary by 29 February. Invitations to the Congress will be dispatched in early April.

## CV Format

Name  
Title  
Address  
Telephone  
Fax  
Email  
Position  
Education  
Experience  
Field of Principal Interest  
Latest Relevant Publications (if applicable, max.4) or other achievements  
ISSC Committees of Interest  
(propose at least 2)

Further information can be obtained from, and CVs should be sent to, the Secretary of ISSC 2000, Y. Sumi, Department of Naval Architecture and Ocean Engineering, Yokohama National University, Tokiwadai 79-5, Hodogaya-ku, Yokohama 240-8501, Japan, phone +81-45-339 4091, fax +81-45-339 4099, email [sumi@structlab.shp.ynu.ac.jp](mailto:sumi@structlab.shp.ynu.ac.jp).

## Ausmarine 2000

This two-yearly international exhibition and conference for the commercial marine industry will be held from Tuesday 31 October to Thursday 2 November in Fremantle, WA. Further information can be obtained from the exhibition and conference director, Baird Publications Pty Ltd, 135 Sturt St, Southbank, Melbourne, Vic 3006, phone (03) 9645 0411, fax 9645 0475 or email [marinfo@baird.com.au](mailto:marinfo@baird.com.au).

## IMarE Conference 2001

The Australia/New Zealand Division of IMarE will host an international maritime conference at the Wellington Convention Bureau, Wellington, New Zealand, from Monday 19 to Wednesday 21 November 2001. The theme of the conference will include latest developments, high-speed craft, fishing vessels, yachts and all aspects of the marine industry. Details are being developed; watch this space. Further information may be obtained from Mr Barry Coupland, phone +64-4-382 9666, fax 382 6303 or email [barry.coupland@marine.co.nz](mailto:barry.coupland@marine.co.nz).

# GENERAL NEWS

## Submarine Upgrade Proceeds

The Minister for Defence, John Moore, recently announced that the Federal Government had approved the upgrade of two Collins class submarines to increased operational capability by December 2000.

‘This announcement reaffirms the Government’s commitment to sustaining Australia’s submarine capability and rectifying shortcomings identified in the McIntosh-Prescott Report,’ Mr Moore said.

‘The upgrade will give Australia two operational Collins submarines when the final Oberon Class retires in 2001.’

The two submarines to be upgraded are HMAS *Dechaineux* and HMAS *Sheean* at a cost of \$266 million. Approximately half of the funding will be used to incorporate new technology and for enhancements to operational performance of the submarines. The balance will be used to rectify shortcomings identified by the McIntosh-Prescott Report.

The Government will consider proposals to bring all six Collins Class submarines to satisfactory completion in the first part of next year.

Improvements to *Dechaineux* and *Sheean* will make their systems more reliable, provide fast and discrete communications, mean that the submarines are significantly less vulnerable to counter detection, and ensure that they are able to respond quickly in self-defence if necessary.

Work to be undertaken includes:

- Improvements to the sonar system, the tactical data-handling system and weapons control;
- Ongoing operational fixes to reduce the noise signature;
- Augmentation (upgrade and improvement) of the combat system;
- Upgrades and enhancements to existing platform systems to meet contemporary technology standards;
- Platform improvements including hull, fin and casing modifications;
- Measures to fix problems with the propeller, periscope, mast and communications system; and

- Improvements in training and the introduction of a number of personnel initiatives.

Mr Moore said the Government’s decision was based on recommendations submitted by the Submarine Capability Team (SMCT) headed by Rear Admiral Peter Briggs, as well as the findings of the McIntosh-Prescott Report.

The SMCT was appointed by the Government in July to provide advice to Government on outstanding management and financial issues relating to the Collins submarines and to provide a roadmap for the project’s future.

## Reports on Amphibious Transport Ships

On 3 February the Minister for Defence, John Moore, released two reports on the Navy’s Amphibious Transport (LPA) project.

‘Shortly after becoming Minister for Defence, I was made aware of significant increases in cost and completion delays for HMAS *Manoora* and HMAS *Kanimbla*,’ Mr Moore said. ‘I considered these overruns to be totally unsatisfactory, and in August last year, I directed the incoming Chief of Navy, Vice admiral David Shackleton, to provide me with a full report on the project. I also asked the Inspector General of Defence to review the acquisition of the ships and Defence’s management of their conversion and modification. I have now received these reports and both indicate that the process of acquiring and upgrading these vessels fell well short of performance levels expected by the Government.’

In mid-1994, the previous Australian Government approved the purchase of two ex-United States Navy Newport Class amphibious landing ships. HMAS *Manoora* and HMAS *Kanimbla* arrived in Australia later that year and, since mid-1996, have been undergoing extensive modifications to upgrade them to Amphibious Transport Ships (known as LPAs).

The initial project cost was to be \$120 m at December 1998 prices. Present planning indicates that when the project is completed in late 2000, the final cost could exceed \$400 million.

In addition to this three-fold increase in cost, there

was a delivery delay of 26 months for the first ship, *Manoora*, from the time of contract, and 35 months for *Kanimbla*.

‘As Defence Minister, I find these delays and cost overruns totally unacceptable, and I am determined to see Defence management practices improve, particularly in Defence Acquisition,’ Mr Moore said. ‘I have instructed the Secretary, Dr Allan Hawke, and the Under Secretary, Mr Mick Roche, to recommend to me improvements in the management of the Department to ensure the experience of the LPA purchase is not repeated in current and future acquisition projects. The entire Department should learn from this unfortunate, costly experience.’

The Minister said the lessons to be learnt by Defence include the need for:

- properly conducted pre-procurement inspections, particularly of second-hand materiel;
- implementation of thorough risk analysis and appropriate risk abatement measures;
- full life cycle costing of equipment purchases;
- clearly defined operational requirements for the equipment before it is purchased;
- dedicated, competent project teams with full access and authority over expenditure of the project’s funds; and
- more active involvement by senior oversight committees

## *Research Naval Architect*



**CURTIN**  
University of Technology  
Western Australia

### **Expressions of Interest sought**

The Centre for Marine Science & Technology at Curtin University is seeking expressions of interest from naval architects interested in working at the Centre. The activities encompass a range of commercial-in-confidence and industry-driven research projects in fields including:

- seakeeping
- hydrodynamics
- yacht performance
- full scale trials
- computational fluid dynamics

This is an opportunity to:

- work with a multi-disciplinary team of marine technologists
- lead research projects and provide naval architecture support in others
- contribute to lecturing programmes and supervision of students.

A relevant higher degree and experience in industry R&D would be appropriate.

Please submit a response and c.v. to:

Prof. John Penrose, Director  
Centre for Marine Science & Technology  
Curtin University of Technology  
GPO Box U1987, PERTH, WA 6845  
Tel: 08 9266 7380 Fax: 08 9266 2377  
Email: J.Penrose@cmst.curtin.edu.au

An LPA Delivery Team has been formed to bring this project to a timely conclusion.

Operational sea trials with *Manoora* have commenced.

Copies of the reports are available on the Internet at the Defence website: <http://www.minister.defence.gov.au/2000/index.html>.

## Austal Delivers Luxury Catamaran

Last November the Western Australian ship-builder Austal ships completed a luxury cruise catamaran for service in the islands of the French Caribbean.

The recently-completed 80 passenger, 60 m *Rivage St Martin* was designed to satisfy the requirements of the cruise operator, Riviages Crossieres' French Caribbean operation.

*Rivage St Martin* is unique in that it is constructed entirely of aluminium, contains passenger-in-berth accommodation and is fully compliant with SOLAS regulations. The design of the on-board domestic systems are also unique as they are designed to cope with the high demand of providing services to all passengers at the same time and have back-up systems to ensure passenger comfort is not disrupted.

With a cruising speed of approximately 14.5 knots, *Rivage St Martin* will operate from its base in St Martin for coastal cruising with a typical duration of seven days, the seventh day being a 'changeover' day at the home port. The vessel will cruise at night only, for approximately three hours at a time, allowing passengers to awake and enjoy breakfast in a new port and new surroundings each morning.

The vessel's shallow draft of 2.1 m makes it particularly well suited to the cruise concept and its area of operation, enabling anchoring close to the shore in an area such as a lagoon protected by a reef, rather than berthing in a busy port or anchoring offshore. This provides direct water-sports access and also facilitates rapid transfer to and from shore via three large, fast rigid inflatable tenders. In addition, it provides guests with more pleasant, secluded surroundings and more enjoyable views from their cabins.

*Rivage St Martin* features a very high standard of interior finish throughout. The complement of 80 guests is accommodated in thirty-four cabins over three decks. Single beds in the two berth cabins are capable of sliding together and all cabins provide guests with direct views of the surroundings. A private en suite, air conditioning

*Rivage Saint Martin* on trials off Fremantle (Photo courtesy Austal Ships)



control, safety deposit box, ample wardrobe space and television units connected to the ship's video system are featured in each cabin. Carpeted flooring is featured throughout in the combined colours of steel blue and grey.

The 60 m cruise catamaran will operate with 20 crew (8 officers and ratings and 12 hotel and catering staff). Crew accommodation is located in the forward hulls and features single bunks, a desk area and bathroom. The Captain and Chief Engineer berths are located aft of the bridge. Crew amenities also include a crew mess area with tables and chairs for fifteen crew and a crew lounge with hi-fi, video and television system.

The bridge is comprehensively equipped with three main consoles and two desk units located on the aft bulkhead. Main electronics include two Furuno radars, a steering system incorporating gyro and autopilot (C-Plath), Navtex GMDSS and Leica DGPS Navigator, EPIRB, Satcom Mini M satellite telephone system and aeronautical VHF system.

A crew communication office is also featured on the bridge. The vessel is equipped with six 50-person life rafts with mini-slides for evacuation located on the main deck abeam of the galley.

The propulsion package for *Rivage St Martin* comprises two MTU 12V 2000 M70 engines, two ZF BW 256 gearboxes, two fixed pitch propellers and two hydraulic bow thrusters.

## Image Marine Wins Order for 36 m Cruise Catamaran

Western Australian shipbuilder Image Marine has announced a new contract to build a 36 m luxury cruise catamaran. The vessel is scheduled for delivery in October 2000.

The vessel will be of aluminium construction with a stylish 'motoryacht' profile and well-appointed accommodation.

With a cruising speed of approximately 20 kn, the private cruise catamaran will be based in Singapore and used for coastal cruising to destinations such as the Philippines, Indonesia and the Asian region. Features aboard the stylish catamaran will be spread over two decks with the

main deck featuring a fully-equipped galley and bar area, a dining area for 10 and a large lounge and entertainment area. A fully-equipped laundry will be located in the hulls, incorporating additional fridge/freezer facilities.

The vessel has been designed to carry fourteen guests and five crew accommodated in eight cabins. The spacious master suite, located on the upper deck, features a king-size bed, lounge and fully-equipped entertainment area, exercise area, walk-in wardrobe and ensuite with bath and sauna. The suite also features full-length windows on both sides of the room to optimise views. The captain's cabin is located directly aft of the wheelhouse and features an ensuite and study area. Three cabins are located in the hulls of the vessel and feature twin bunks with ensuites and showers. Another three cabins (one twin berth and two double) are located forward on the main deck and feature lockers and ensuites with shower and wash facilities.

Recreational entertainment will also be well catered for with the provision of water-sports equipment, including two jet skis located forward on the main deck and two rigid-inflatable vessels (located aft on the main deck) that can be launched off a stern ramp and used for general transport purposes. A dive compressor and dive tank storage areas will be located aft on the main deck.

Principal dimensions of the cruise catamaran are overall length of 56.0 m, beam of 12.0 m and hull draft of 1.75 m. The propulsion package comprises two MTU 12V2000 M90 engines, two ZF BW190 gearboxes and two Teignbridge propellers.

## WaveMaster contract for Germany

On 17 November 1999 WaveMaster International announced the award of a new contract for the design and construction of a fifty-metre high-speed aluminium monohull ferry for a leading German operator.

WaveMaster's Managing Director, Mr Christopher Gerrard, said 'This new project caps another tremendously successful year for WaveMaster, with deliveries to Asia, Europe, Australia and New Zealand. This new vessel will be the first large aluminium monohull ferry



exported by an Australian shipyard to Europe. The vessel will be delivered to Germany in time for the next European summer, and will run between Bremen and the Friesian Islands of the North Sea.'

## New South Wales news

### New Construction

Another vessel designed by Advanced Multihull Designs has just completed trials. The AMD183 was built by Shanghai Simno Marine in the Peoples' Republic of China. Consistent poor weather required the trials to be carried out in 1.5 m waves, but even in these conditions the wave-piercing catamaran exceeded the contract speed by half a knot, achieving 27 kn in the full load condition.

### New Design

At the other end of the spectrum, Advanced Multihull Designs is working on the design of a 142 m monohull car-carrying fast ferry, in co-operation with Dutch shipbuilder van der Giessen de Norde. The AMD2400 will carry semi trailers as well as passengers and cars, and is designed for a speed of 44 kn with a deadweight of 1 500 t. Due to an efficient hullform design the vessel achieves this performance with considerably less power than the high-speed monohulls currently popular in the Mediterranean. AMD's Market-

ing Manager, Craig Boulton, in conjunction with van der Giessen de Norde's Vice President, presented a paper on the vessel at the recent fast ferry conference in Nice, France.

### Around and About

The Sydney Heritage Fleet's *James Craig* is now berthed at Wharf 7, Darling Harbour, after time in dock at ADI, Garden Island, to have her stern tubes, tail shafts and propellers fitted. The intermediate shafts have since been fitted, and are awaiting final line-up. Twenty-first century electrics are now being fitted as unobtrusively as possible, the yards are being re-fitted and the standing rigging tensioned. About half the sails have been delivered and they are working on the running rigging, with alongside trials planned for May. She is now open to the public for free tours on Sundays. Great interest was shown when she berthed at the southern end of Circular Quay on Australia Day, and 10 000 people toured her in the day.

The Sydney Heritage Fleet is holding a meeting of all volunteers on Saturday 26 February to discuss the plans for restoration of *John Oxley*. The meeting will be held at 1030 on board *Kanangra* at Rozelle Bay. If you are interested in *John Oxley* then please come along; you don't need to have skills or to sign up for anything — interest is sufficient.

*Phil Helmore*

*James Craig* after undocking (Photo John Jeremy)



# Incat Delivers 96 m Ferry

Built for operation by the leading Spanish ferry operator Fred. Olsen SA in the Canary Islands, *Benchijigua Express* was launched on 20 December 1999 from Incat Tasmania's Coverdales shipbuilding facility at Prince of Wales Bay, near Hobart. The 96 m wave-piercing catamaran entered service on the 20 n mile route between the ports of Los Cristianos de Tenerife and San Sebastian on the nearby island of La Gomera in February, reducing travel time between the two islands by conventional ferry from 1 hour 15 minutes to 40 minutes.

An earlier 96 m Incat vessel, *Bonanza Express*, entered service with Fred. Olsen SA last April between Santa Cruz de Tenerife and Agaete on Gran Canaria. *Benchijigua Express* joins sister ship *Bentayga Express* in the Canary Islands, bringing the number of Incat-built vessels delivered to Fred. Olsen SA to three.

*Bentayga Express* was described in the November 1999 edition of *The ANA*.

## Particulars of *Benchijigua Express*

Length overall	96.00 m
Length waterline	86.00 m
Beam overall	26.00 m
Draft	3.70 m
Hull beam	4.50 m
Deadweight	over 675 t
Speeds at 100% mcr	48 knots lightship 42 knots at 400 t dwt 38 knots at 675 t dwt
Total complement	1 000 people (max)
Main Engines:	Four Caterpillar 361 marine diesels of 7 080 kW each at 1 030 rpm.
Transmission:	Four Reintjes VLJ6831 gearboxes.
Water Jets:	Four Lips 150 D water-jets configured for steering and reverse.
Alternators	Four Caterpillar 3406B 230 kW alternators supplying 415V, 50Hz.

*Bonanza Express* and *Bentayga Express* at work in November 1999  
(Photo courtesy Incat Tasmania)



## Drydocking of Naval Ships in Western Australia

In dry dock, naval ships require considerable clearance under their keels for propellers and sonars, and for the removal of rudders and sensors. For the guided missile frigates (FFG), the Anzac class frigates, and the Collins class submarines, this is of the order of 3.5 metres. All of these classes are home-ported in Western Australia.

The docking facility in WA is a ship lift, and naval ships require high purpose-built cradles. These cradles consist of the wheels (or 'carts') which run along the rails; the keel line, which consists of welded units to form high blocks topped with keel blocks made up from hardwood and Oregon capping; and side blocks, consisting of welded pedestals, topped with bilge caps made up from hardwood and Oregon capping. In the case of the submarines, the keel blocks and bilge blocks consist of steel stools with rubber sections on top.

With respect to earthquakes, all cradles are designed to withstand 'seismic overturning moments' in accordance with the USN criteria.

Whilst there are three cradles, each specific to its class, there is a large degree of interchangeability. The carts are common to all. The three keel lines maintain a common height, with the longest being for the FFGs and the shortest being for the Collins. The keel blocks could be assembled on top of any of these with minimal adjustment. All major components are bolted to each other. In 1998–99 we docked an FFG and a Collins submarine on their own cradles, and an Anzac utilising a Collins keel line, and an FFG utilising an Anzac keel line. In order to dock two ships of the same class we would need a second set of keel and bilge caps, along with some slight modifications to the side blocks.

*Hugh Hyland*

HMAS *Adelaide* docked in Western Australia in October 1997  
(Photo Hugh Hyland)





HMA Ships *Anzac* (above) and *Farncomb* (below) docked in Western Australia during 1999  
(Photos Hugh Hyland)



## Northern Territory News

Darwin Ship Repair and Engineering has modified and fitted out an existing 17.55 m tri-hull as an accommodation vessel for Paspaley Pearling who operate pearl farms in the remote parts of north western WA. There are no suitable airfields and most supplies and personnel are brought in by boat or seaplane. Accommodation for personnel at one of these farms is now on this fully self-contained 24 person capacity non-propelled vessel with sleeping and cooking facilities, with capacity for 30 000 L of fresh water and 10 000 L of diesel fuel and stores. The vessel was brought into NT survey to meet 3D survey requirements. Though not required, the vessel fully met the stability requirements of USL Class 1B. It is fitted with two 25 kW generators. Aircraft tender boats or dinghies are always available alongside. During cyclonic conditions the vessel will be towed into the creeks between gorges. VHF, MF/HF radios in survey and EPIRB over and above Class 3D requirements have also been fitted.

ASM (NT) has built a 5.35 m crocodile catching boat for the NT Parks & Wildlife Commission to USL Class 2D survey. This unique vessel has a stern cut out on one side through which crocodiles can be hauled in by rangers with the help of a winch on the other side. The winch control console forms a protective barrier between the crocodile and the rangers. The vessel is certified to catch crocodiles up to 300 kg with three rangers on board. It is fitted with solid internal buoy-

ancy and meets the requirements of AS 1799.1 for upright flotation in a swamped condition. The vessel is fitted with a Yamaha 86 kW outboard and a 150 L under-deck fuel tank.

*Sri Srinavas*

## Anzac Frigate Delivered

The fourth Anzac class frigate to be completed by Tenix at Williamstown in Victoria was handed over to the Royal New Zealand Navy on 19 October 1999. HMNZS *Te Mana* is the second of two ships for the RNZN and was launched in May 1997. Her sister ship HMNZS *Te Kaha*, recently served with the first ship of the class, HMAS *Anzac*, off East Timor in support of the Interfet forces.

## Minehunter Starts Trials

*Norman*, the third coastal minehunter of the Huon class to be completed by ADI Limited in Newcastle, began sea trials off Newcastle on Monday 24 January 2000. *Norman* will be handed over to the RAN later this year.

The lead ship of the class, HMAS *Huon*, was commissioned last year and the second, HMAS *Hawkesbury*, was commissioned in Sydney on 12 February 2000. *Hawkesbury* is the first of the minehunters to be fully constructed in Australia. *Gascoyne*, *Diamantina* and *Yarra* are under construction.

The minehunter *Norman* fitting out at ADI Newcastle (Photo John Jeremy)



## Sea Australia 2000

After some three years of planning it is gratifying to report on the success of this joint venture — the first of its kind to be held in Australia. Apart from the traditional involvement of the two professional maritime institutions, the Institution of Engineers Australia joined us as an integral part of the conference consortium. The success of the venture was enhanced by the associated maritime exhibition, Pacific 2000, organised by the Aerospace Foundation of Australia, its first venture into the maritime field. Registration for the conference included unrestricted access to this exhibition.

Some excitement was generated by a telephoned bomb threat, fortunately a false alarm, which inevitably disrupted the first day's schedule. At the official opening of the exhibition and conferences David Goodrich, President of the RINA, expressed a welcome to delegates on behalf of Sea Australia 2000. At the opening of the conference itself, David Goodrich's address was followed by keynote addresses by Professor Chengi Kuo (Strathclyde University, Glasgow), Tom Allan (International Maritime Organisation) and Phil Hercus (Incat Designs, Sydney).

The conference was conducted in three streams over the next two-and-a-half days. A total of ninety-four papers were presented — a mammoth achievement and a surfeit for the conference delegates!

The organisers were reasonably satisfied with the attendance figures (over 300), which included a number of retirees who, apart from being refreshed by the technology presented in the papers, enjoyed nostalgic exchanges of memories of times past.

During the lunch break and after-conference hours delegates were able to visit the exhibition and discover the latest in marine hardware and services. The RINA and IMarE were represented in the exhibition and attracted some interest.

On the evening of Wednesday 2 February, Sea Australia 2000 hosted a cocktail party at the Australian National Maritime Museum — sponsored by the Tenix Group — which was thoroughly enjoyed by all. This included the opportunity for a brief inspection of the museum.

We have been invited, and agreed, to organise another conference for February 2002. The theme has still to be determined but will, not unnaturally, be different to Sea Australia 2000. It is hoped that it will attract at least the same degree of support both locally and from overseas. The organisers are indebted to all who made Sea Australia 2000 a success.

*Bob Campbell*

## STAB2000

STAB2000, the Seventh International Conference on the Stability of Ships and Ocean Vehicles was held at the Novotel Hotel in Launceston from Monday 7 to Friday 11 February 2000.

After a welcome to the conference by Dr Martin Renilson, Chair of the National Organising Committee, the conference was opened by Mr David Goodrich, President of the Royal Institution of Naval Architects. In his address, Mr Goodrich said of intact and damaged stability criteria for the ferry industry that 'It is public perceptions which ultimately determine that which is acceptable at sea'.

The conference attracted 130 delegates from twenty-four countries, including Ms Jennifer Knox of Lightning Naval Architecture in Sydney, and Ms Anna Ericson from the Department of Naval Architecture at KTH in Stockholm. Seventy-four papers were presented, sixty of which were refereed, in the following broad areas:

- human factors involved in stability;
- stability standards;
- operational aspects;
- water on deck;
- damaged stability;
- following and quartering seas;
- high-speed craft;
- stability of yachts;
- non-linear dynamics;
- standards for naval craft;
- test procedures;
- roll stabilisation and cargo shift;
- waves and the environment;
- rolling in beam waves; and
- special topics.

In addition, workshops were held in the special

areas of:

- damaged stability;
- naval craft;
- non-linear dynamics; and
- following and quartering seas.

The social program included a welcome dinner on the first evening at Rosevear's winery, overlooking the Tamar River a short bus trip downstream from Launceston. Pre-dinner drinks in the open air, an excellent meal, congenial company, a rollicking welcome address by Prof. Chengi Kuo from the University of Strathclyde, and great interest by our overseas visitors in the stars of the southern skies ensured a memorable evening. A tour of the Australian Maritime College towing tank, ship simulator and cavitation tunnel, followed by a barbecue in their grounds made Tuesday evening enjoyable. This was followed on Wednesday's free afternoon by a visit to a wildlife park for the visitors to see some local wildlife.

The accompanying-persons' program was organised by Ms Susan Renilson and, from talking to those who went on the outings, was the best of any conference for many years. In addition to doing the organising, not to mention the initial reconnaissance, Susan took a week of her annual holidays to ensure that the whole program ran smoothly. It was typified by Wednesday's river cruise, on a beautiful sunny day, with morning tea and lunch, from Launceston to the long reach below the Batman Bridge. Everyone returned tired, but happy.

The conference dinner was held at the Novotel on Thursday evening in the Grand Ballroom, and rounded out the program nicely. Mr Martin van Wijngarten paid tribute to Martin Renilson as the chair of the National Organising Committee, and Ms Marinella Vassalos presented Ms Susan Renilson with a bouquet of flowers for her magnificent accompanying persons' program. The after-dinner speaker told jokes about everyone, leaving no demographic unscathed, and had everyone in stitches with his tale of the IRA vasectomy!

Accommodation was provided at both the Novotel and the Australian Maritime College, and those keen to maintain fitness could be seen

stealing out of the Novotel between 6:00 and 7:00 am and making their way walking or running down to some part of the Tamar River. Among the interesting sights in the river were *Defender* (a 25 m ketch built in 1895 by Mr George Frost — Mr Noel Riley's grandfather — on the Brisbane Water, NSW, and restored by Mr Les Dick in Launceston in time for Australia's bi-centennial celebrations on Sydney Harbour in 1988) and *Lady Jillian* (the 30 m cargo vessel which supplies Flinders Island). One particular group, including Dr Jan de Kat, found the Zig-Zag Track up over the hill and down into Cataract Gorge and regularly ran there for an early-morning swim in the First Basin.

The conference was organised by a National Committee under the banner of the Australian Maritime Engineering CRC Ltd, supported by the Australian Maritime College, the University of New South Wales, the Australian Maritime Safety Authority, the Institute of Marine Engineers and the Royal Institution of Naval Architects.

The number of delegates was significantly more than at the last two such conferences, which attracted less than one hundred each, and included academics, naval architects, shipbuilders and operators. The conference was widely held to be so successful that it is already one of the highlights of the Australian maritime calendar in 2000. The organisers may feel rightly proud of their achievement.

In his summary remarks, Mr Tom Allan of the International Maritime Organisation in London expressed the hope that the next STAB conference would see a higher proportion of operators and builders. Following the closing of the conference on Friday by Dr Martin Renilson, an invitation was given by the newly-elected chair of the National Organising Committee, Mr Luis Perez-Rojas of Escuela Tecnica Superior Ingenieros Navales in Madrid to attend the next STAB conference in 2003 in Madrid, Spain.

*Phil Helmore*



Alberto Francescutto from the University of Trieste (left) and Numilote Bulimaibau of the Marine Department, Fiji with Martin Renilson of the AMC (right)

## Seen at STAB 2000

Jerzy Matusiak from the Helsinki University of Technology (left) with Stephan Grochowalski of Marine Analytics, Canada and Naoya Umeda from Osaka University (right)





## The University of New South Wales

### Undergraduate News

A number of changes have been made to the naval architecture course for 2000 resulting from the industry liaison meeting in September 1999, and a change to the credit point system instituted by the university as a whole. The credit point system now requires each subject to be completed in one session. This has involved changes to some subjects, deletion of one and introduction of another, and badge-engineering of year-long subjects to become two half-year subjects. The major changes are as follows:

A new subject, Ship Practice, has been introduced into first session of the third year and will be taught by Mr Phil Helmore. This is intended as an introduction to the practical aspects of naval architecture, and will centre around visits to naval and commercial ships, terminals, dockyards, drawing offices, classification societies, survey authorities, a propeller foundry, and the Australian National Maritime Museum, including an inclining experiment on one of their vessels.

Principles of Ship Design 2 has been split into two subjects, Design of High-speed Craft to be taught in first session by Mr Craig Boulton of Advanced Multihull Designs, and Design of Yachts to be taught in second session by Mr David Lyons of Lyons Yacht Designers.

Ship Structures 2 has been combined with Aerospace Structures 2 and a post-graduate Mechanical Structures subject, involving finite element analysis to be taught by A/Prof. Don Kelly.

### Post-graduate and Other News

A/Prof. Lawry Doctors attended the RINA International Conference on the Hydrodynamics of High-speed Craft at RINA headquarters in London, held on 24 and 25 November 1999. Twenty papers were presented at the meeting, including A/Prof. Doctors' own paper, *The Foil-stabilised Super-slender Monohull*.

Two papers covered the topic of the wave wake system developed by high-speed craft. This prob-

lem is of concern to many operators who have recently been forced to severely restrict their services. Of note was the fact that there are still popular misconceptions regarding the rate of decay of wave amplitude with respect to distance from the craft. There is, in fact, no simple algebraic rule for this decay; one is required to perform a complete calculation of the wave field at each speed of interest, since the rate of decay depends on both the specific hull shape (principally the prismatic coefficient) and the Froude number.

Air-supported marine craft were the subject of another two papers. Essentially, these are vessels not unlike a surface-effect ship, but without the troublesome flexible skirts. A number of successful full-size prototypes have now been built using this concept. Video clips of these craft were shown to the participants.

Many of the other topics specifically covered catamarans and the matter of the accurate prediction of resistance itself was a central theme. It was good to observe a healthy Australian participation with delegates travelling from Perth, Hobart, and Sydney.

A/Prof. Doctors presented his paper *The Foil-stabilised Super-slender Monohull* on a systematic investigation into the calm-water resistance characteristics of monohulls. He showed that monohulls which are optimal in terms of their resistance tend to have rather great lengths — much greater than the lengths normally considered for practical use. Indeed, the principal difficulty then lies with the transverse hydrostatic stability of the monohull, which is almost certainly negative.

The concept of utilising a pair of hydrofoil stabilisers, suspended from outriggers on each side of the central hull, is studied in this paper. The stabilisers are sized so that they can provide the required stability to satisfy the usual criteria relating to the overturning moment when executing a turn, lateral wind pressure, and transverse shift of the passenger or cargo load. It is shown that the drag penalty of such stabilisers is relatively small.

The relevant figure of merit is the transport effi-

ciency, which is essentially a measure of the carrying capacity of the vessel in relation to its drag. A very high transport efficiency of 24.75 appears to be attainable for the foil-stabilised monohull, when designed with a displacement of 10 000 t and operating at 56 knots. This compares favourably with a figure of 18.66 for the equivalent catamaran.

*Phil Helmore  
Lawry Doctors*

## Curtin University

There will be a distinct French flavour at Curtin as the Centre for Marine Science and Technology (CMST) will be hosting two students from the Institut des Sciences de L'Ingenieur de Toulon et du Var for five months from March 2000. One of the students will be working on improving ROV controller systems whilst the other will be investigating techniques for predicting wave wake propagation.

Two final-year mechanical engineering students are undertaking final year projects with CMST

in the field of wave wake. Firstly, a student will be utilising the newly acquired software, SHIPFLOW, which is a numerical towing tank, to carry out comparisons with experimental measurements. A second student will be performing these experiments utilising CMST wave recorders and the 8 m experimental catamaran *Educat*.

A short course on Seakeeping is to be held at Curtin in March 2000. This course will be run in conjunction with Formation Design Systems and will be based around their seakeeping prediction code 'Seakeeper'. Enquiries should be directed to Kim Klaka on (08) 9266 7380 or [k.klaka@cmst.curtin.edu.au](mailto:k.klaka@cmst.curtin.edu.au).

The yacht performance prediction workshop to be held in Tasmania in February was cancelled due to lack of support. It is hoped that this workshop will be run in the future and lower-cost formats are now being considered as well as alternative venues.

*Giles Thomas*

## THE NAVAL ARCHITECT SHIP & BOAT INTERNATIONAL

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The Institutions journals are a source of valuable reference and provide a wealth of information. The first editions of the Naval Architect and Ship & Boat International on CD ROM will be available from January 2000, containing all issues published in 1999, with a title and key word search facility. No longer will you have to remember which month or year an article appeared only to find that you did not keep that particular issue or that the library copy has disappeared!

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# FROM THE CROW'S NEST

## Incat – Australia's Leading Trainer

Incat's Human Resources Manager, Mr Dennis Baker, received not one but two awards when he attended the Australian National Training Awards ceremony, held by the Australian National Training Authority (ANTA), at the Adelaide Convention Centre on 11 November 1999. He was attending the ceremony because Incat was a finalist in the Australian National Training Award, a category which it won on the night.

However, at the end of the night, Incat's name was announced again as the dual recipient of the ANTA Board Award. The Board Award was presented to the High-speed Ferry Manufacturing Industry — an industry in which Incat accounts for a significant share.

ANTA, which is the government's key training body, awarded Incat the Australian National Training Award in recognition of innovation and excellence in training: specifically for its development of a competencies system, IRoC. This system became fully operational this year, and was developed by Incat to increase efficiency by taking greater control of training.

Since the introduction of IroC, Incat has eliminated unnecessary training by recognising employee competencies and training needs. Through IRoC, training modules have been directly matched to Incat's needs, including increasing multiskilling. Because the IRoC training is self-paced it helps to cut down on the length of apprenticeships.

In the past, the ANTA Board Award has been presented to individuals who have made an outstanding contribution to vocational education and training. ANTA departed from this tradition for the first time in 1998, and now again in 1999, presenting the discretionary award to an industry that 'is an excellent role model for the take-up of national training initiatives', said Mr Stuart Hornery, AO, Chairman of the Australian National Training Authority, at the presentation of the award.

## Top IEAust Award to Shipbuilder

Don Fry, AO FIEAust CPEng, is the winner of the Peter Nicol Russell Memorial Medal for 1999. The medal is the Institution of Engineers Australia's most prestigious individual medal. It has been awarded annually since 1923 in recognition of each recipient's outstanding service to engineering and to Australia.

Fry has made an outstanding contribution to the engineering profession and to the community. His vision to identify and develop opportunities and take up the challenges of developing and designing new products has led to the research, development and manufacturing of significant products in the sugar, marine, agriculture, shipbuilding, aeronautical, and mining industries. He has contributed significantly to the Cairns community as the city's largest employer and has helped numerous community and charity organisations along the way.

Fry has been a major contributor to the development of new and innovative processing equipment for the sugar industry since the 1960s, including advanced and specialised equipment not only for the Australian industry but also for export to Southeast Asia, Fiji and Papua New Guinea.

His input was also integral to the construction of 204 ships, including 59 for the Australian Defence Forces.

Fry also served on a number of community organisations, such as Jaycees, the Salvation Army, Lifeline and, more recently, Austcare's landmine defusion program.

IEAust President Ian Pedersen congratulated Fry on behalf of the Institution, saying that he 'applauds and salutes' him for his achievements and his contributions to the engineering profession and the Australian community.

'Don's name is well known in the engineering community in Australia and I am very happy that the Institution is able to recognise his achievements in such a tangible way. Personally, I consider it a great honour to be national president in

the year that Don is conferred with this award.'

*Engineers Australia*, January 2000

## Symbols

It may interest readers to know the correct symbols for 'nautical miles' and 'knots'.

The International Bureau of Legal Metrology (BIPM) was set up in 1875 to ensure world-wide unification of physical measurements. Their publication, *The International System of Units*, 7th Edition (1998), states that 'As yet there is no internationally agreed symbol' [for the nautical mile]. Similarly, there is no symbol for knot.

However, in Australia, the National Measurement Regulations prescribe the Australian legal units of measurement of any physical quantity and prefixes which may be used. These include the following non-SI units accepted for use with the International System:

Item Name	Symbol
3.7 nautical mile	n mile
3.17 knot	kn

By way of explanation, there is no abbreviating symbol for mile ('m' is used for metres) and this is always spelled out. For nautical miles, a space is required after the 'n' to indicate that it is not nanomiles that is intended.

The symbol for knots is distinguished from 'kn' for kilonewtons by the difference in cases of the 'n' and 'N'; the use of 'kt' is incorrect as this is the symbol for kilotonnes.

You will find that AS ISO 1000 — 1998 *The International System of Units (SI) and its Application*, AS/NZS 1376 — 1996 *Conversion Factors*, and the Commonwealth Government's *Style Manual for Authors, Editors and Printers* (5th Edition, 1994) are all subordinate to the National Measurement Regulations, and give the symbols quoted above.

## Duyfken sets Sail

The *Duyfken* replica, built by the Fremantle Maritime Museum, set sail for the first time on Saturday 10 July 1999 in ideal conditions, with smooth seas and a 10 kn breeze. Greg Tonnison, master of the sail training ship *Leeuwin*, was master for the day. *Duyfken* was towed to the entrance of Fremantle fishing boat harbour and

set sail, dropping the tow before clearing the entrance. Fore and main courses were set without bonnets, and then the mizzen, which created some weather helm. Setting the fore topsail fixed that, and when the main topsail was set, she made 4 kn on a beam reach, and 7 kn downwind. She tacked easily, but the rigging needs some refinement so that the yards can be braced round far enough to make ground to windward.

## Batavia in Sydney

It was fine and sunny on Sunday 5 December 1999 when the 59 m replica VOC armed merchant ship *Batavia* officially arrived in Sydney. She had actually arrived the previous week in the dock ship *Condock V*, and had been undocked and re-rigged at Garden Island.

On 5 December she was towed by three tugs from Garden Island to the sea buoy and back to her regular berth in Darling Harbour escorted by a large flotilla of boats, large and small. Her guns were fired in salute off Fort Denison and again under the Harbour Bridge in one of those maritime events that are so successful in Sydney.

*Batavia* will be open for inspection on most days at the Australian National Maritime Museum until January 2001. Whilst she is a reconstruction rather than a replica (for we cannot be sure of the details of the original) she is a remarkable ship. Without her complement of over 300 seventeenth century people with their goods, chattels and animals, the new *Batavia* lacks the atmosphere (and certainly the smell) of the original ship but is not to be missed by anyone who is interested in the history of ships and the maritime history of Australia.

## America's Cup

It may all be over by the time you read this. The America's Cup Challenge series began on Saturday 19 February and, for the first time in the history of the famous series, there is no American yacht in the match.

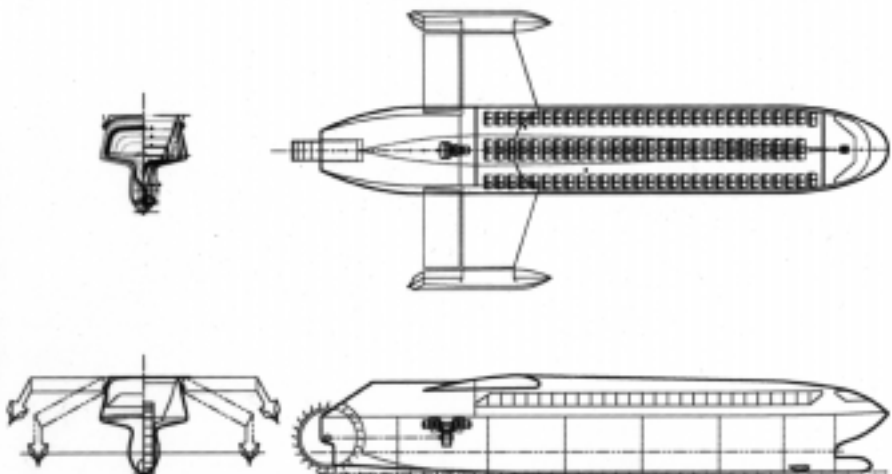
The Italian Prada yacht *Luna Rossa* defeated *AmericaOne* five races to four in a drama-packed final to win the Louis Vuitton Cup and the right to challenge the New Zealand defender on Hauraki Gulf off Auckland. We won't even attempt to forecast the outcome.

# AUSTRALIAN INNOVATION



The recent successes of the Australian maritime industry have been founded on innovation, and ideas continue to appear today giving the prospect of an exciting time ahead. The above photograph shows an experimental wing craft built by Incat Tasmania, that has reached speeds of between 60 and 70 knots on trials.

The drawing of the *Sea Arrow* (below) was revealed by the designer Don Fry at Sea Australia 2000. It is intended to be propelled by gas turbines driving a paddlewheel for a speed of about 70 knots. The novel ship would be built by Don Fry's NQEA Australia. The design is © Fry Design & Research Pty Ltd.



**SEA ARROW**

# Hydrographic ships for the RAN

D G Fry AO  
NQE Australia Pty Limited

Two new hydrographic ships (HMA Ships *Leeuwin* and *Melville*) have entered service with the RAN this year. The ships were designed and built by NQE Australia with support from a number of specialist sub-contractors including Schiffko GmbH.

Both ships are under the control of the RAN Hydrographic Office and will assist with the generation and updating of charts for use by the RAN and commercial shipping within the 200 mile coastal zone of Australia. Each ship is fitted with three survey motor boats which enable surveys to be conducted in shallow water areas which the hydrographic ships are unable to access.



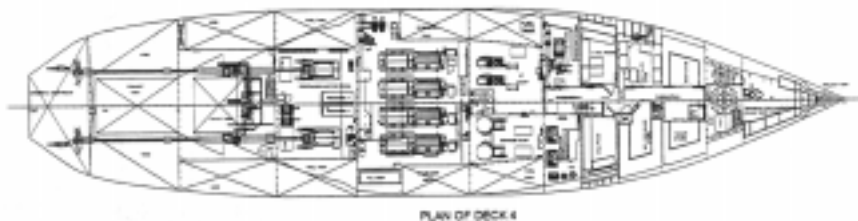
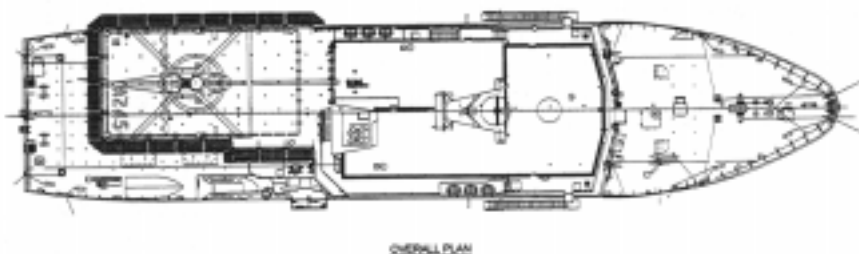
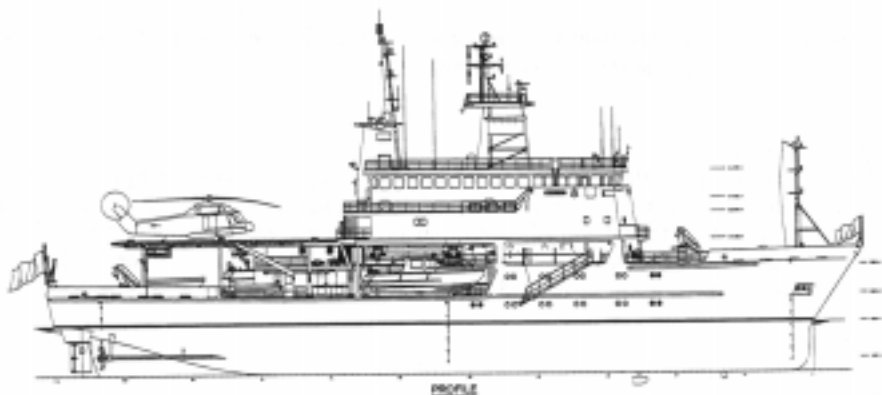
HMAS *Leeuwin* on trials

## Hydrographic Survey Capability

Each hydrographic ship has the capability to conduct hydrographic surveys within the following parameters:

- Priority operational area, northern Australian waters with base port Cairns;
- 21 day long missions, consisting of three days in port and 18 days at sea;
- 300 days per year operation at sea;
- Achieve 5 000 n miles of survey coverage per year with a maximum planned transit of 1 500 n miles at 12 kn;
- Maintain active hydrographic survey data-gathering mode on the Hydrographic Ship for 24 hours and for each Survey Motor Boat 10 hours per day;
- Hydrographic survey at all ship speeds up to 12 kn, in sea state 4;
- Deployment of survey motor boats;
- Mobilisation of shore camps;

- Carry out underway determinations of the 3D seawater sound velocity structure;
- Carry out stationary sound velocity determinations, bottom sampling and feature investigations;
- Deploy differential global positioning system/terrestrial-based positioning-system reference aids, tide gauges and current meters at remote locations within the survey area;
- Gather bathymetric data achieving detection of navigationally significant features for water depths of 0–6 000 m;
- Gather hydrographic data for water depths 0–6 000 m;
- Process such data to hydrographic soundings to Australian Hydrographic and Oceanographic Instructions (AH01) Epoch 2 standards, producing a bathymetric model of the survey area;
- Acquire data on tidal heights, tidal flow velocities, sub-surface currents, temperature depth profiles; and
- Gather data on sonar contacts — underwater features such as wrecks and seabed obstructions.



General arrangement of HMA Ships *Leeuwin* and *Melville*

Feature detection is performed online during the data acquisition process and during the offline validation of data processing. The initial detection of underwater features is accomplished during the operational survey line sounding process using the total or collective hydrographic sensor assets appropriate to this task.

These include:

- (a) Forward-looking sonar (FLS);
- (b) Multibeam echosounder (MBES) bathymetry;
- (c) Multibeam echosounder (MBES) sidescan imagery;
- (d) Single beam echosounder (SBES) bathymetry; and
- (e) Towed sidescan imagery (when deployed).

Data from each of the four sensors is processed offline and features detected during this process are passed to the store of feature data in the underwater feature plot. Features detected on the towed light weight side-scan sonar (TL-WSSS) and forward-looking sonar (FLS) displays are passed to the HSS via serial communications interfaces. These interfaces pass information from the sensor to the HSS and hence existing features are not displayed on the respective displays as symbols or markers.

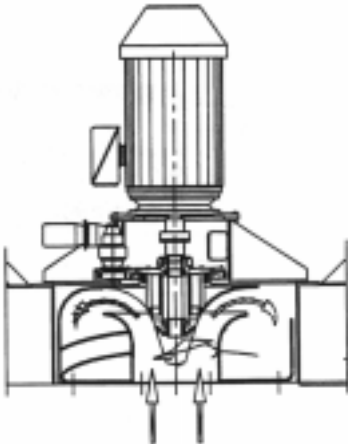
**General Particulars**

Length:	71.2 m	Range:	8 000 n miles
Beam:	15.2 m	Complement:	47
Displacement:	2 300 t	Class:	Lloyds Register

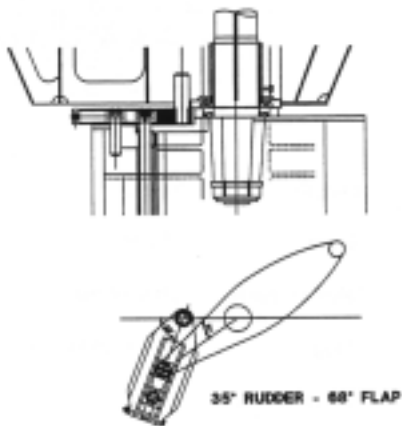
Power: Four Ruston diesel generator sets each producing 800 kW at 660 volt 3 phase.  
Propulsion: Two 1000 kW electric motors each driving a fixed-pitch four-blade medium-skewed propeller (outward turning).

Speed control: Variation to each propeller’s rotational speed is achieved using a variable-frequency electric drive. Harmonic distortion generated by this form of drive is kept to a minimum by incorporating two transformers, arranged for sharing the load with a 60° lag preceding supply to the AC/DC rectifier station. Additional harmonic distortion filters are fitted. The inversion of the DC to a controlled frequency is achieved using controlled banks of IGBTs.

Bow thruster: This is a special purpose thruster built by NQEA Australia. It incorporates a 400 kW driven vertical turbine which pressurises an azimuthing chamber fitted with two outlet nozzles which generate a balanced thrust. The unit remains flush with the underside of the vessel. A 3 kW electric motor provides the power to rotate the twin jets giving 360° thrust availability.



Bow thruster



Rudder detail



## Fit Out

Accommodation:	Captain (Single-berth cabin) 1 Berth Executive Officer (Single-berth cabin) Officers (Six three-berth cabins) Senior Sailors (Four two-berth cabins) Junior Sailors (Eight four-berth cabins)
Air Conditioning:	Two 190 kW Refrigeration Units
Emergency Generator:	Caterpillar 3606 TA 160 kW
Harbour Generator:	Caterpillar 3412 TA 310 kW
Sewerage treatment:	Twin Orca with EVAC vacuum recovery system
Stabilisers:	Intering passive system

## Communication System:

The Communications System consists of internal and external communications capabilities, including voice communications, helicopter operational circuits communications, LF through UHF exterior communications, satellite and safety communications.

- Internal Communications System
- External Communications System
- Sound Powered Telephone Subsystem
- HF Transmitter Subsystem
- Tactical Intercom Subsystem
- System Control Subsystem
- Broadcast and Alarm Subsystem
- HF Receiver Subsystem
- Ships Telephone Subsystem
- Satellite Receiver Subsystem
- Entertainment and Training Subsystem
- UHF/VHF Transceiver Subsystem
- Ships Administration Subsystem
- Base Station Subsystem
- Frequency/Time Subsystem
- Message Handling Subsystem
- Electronic Navigational Subsystem
- Safety Radio Subsystem
- Closed-circuit Television Subsystem
- Secure Voice Subsystem
- Meteorological Subsystem
- Direction Finding Subsystem

## Proven in service

The ship is designed to operate at continuous speed of 12 kn in sea state 4 whilst towing a 10 kN force. Both ships achieved 14 knots in sea state 2 during trials. The final lightship displacement was 1 481 t whereas the contract target displacement was 1 881 t. The interaction of the hull, propulsion system and hydrographic survey equipment has proven to be successful.

*This article is based on a paper presented at Sea Australia 2000, Sydney, February 2000.*



**THE ROYAL INSTITUTION OF NAVAL ARCHITECTS  
AUSTRALIAN DIVISION**

**NOTICE OF  
ANNUAL GENERAL MEETING**

Notice is hereby given that the Twentieth Annual General Meeting of the Australian Division of the Royal Institution of Naval Architects will be held in the Harricks Auditorium of the Institution of Engineers, Australia, Eagle House, 118 Alfred Street, Milsons Point NSW on Wednesday, 22 March 2000 commencing at 5.30 pm Sydney Time.

**AGENDA**

- 1 . Opening
2. Apologies
3. To confirm the Minutes of AGM 19, held in Sydney on Friday 26 March 1999
4. To receive the President's Report
5. To receive, consider and adopt the Financial Statements and Auditors' Report for the year ending 31 December 1999
6. Membership of the Australian Division Council
7. Other Business

By Order of the Council

*Keith M Adams*

Secretary

February 2000

**Note:** At an Annual General Meeting each member may vote in person or by proxy should a poll be demanded. A proxy must be a member of the Institution, in writing, be received by the Secretary not later than 20 March 2000 and in the following form - (name of member) being a member of the Australian Division of the Royal Institution of Naval Architects hereby appoint (name of person appointed as proxy) of (address of proxy) or the Chairman of the meeting — to vote for me at the AGM to be held on 22 March 2000 and any adjournment thereof. Signed this (day) of (month) 2000 followed by the signature of the member.

Apologies or proxies to be forwarded to the Secretary at PO Box 976, Epping NSW 2121.

# Repair and conversion of the LPA ships

Peter Burgess and David White  
Forgacs Dockyard, Newcastle

## 1. INTRODUCTION

The LPA Project comprises the refit and conversion of two Newport Class Tank Landing Ships (USS *Fairfax County* and USS *Saginaw*) into the Amphibious Transport Ships (LPA) HMAS *Manoora* and HMAS *Kanimbla* for the Royal Australian Navy.

The LPA Project achieved a significant milestone on 26 November 1999 with the hand over to Navy of HMAS *Manoora*. Since this time, the ship has successfully conducted sea trials. The conversion of both ships has been deliberately staggered to allow sea trials and crewing targets to be achieved.

## 2. LPA OVERVIEW

The Newport Class of the US Navy comprised twenty four ships; approximately half of these have now been sold world wide. The Australian Government purchased two vessels with the intention of converting their capability from that of Landing Ship Tank (LST) to Amphibious Transports (LPA).

The LPA Project, the completion of *Manoora* and progress on *Kanimbla*, has presented the company with Australia's largest ship repair project, which has not been without its challenges.

Apart from the challenges presented by designing capabilities into an existing configuration and the everyday challenges of productivity and profitability perhaps the greatest challenge is that of project management.

The project tasks and therefore the project schedule (including material and labour resources) remained fluid up to hand over as the repair requirements were not known until a complete survey had been conducted and the additional configuration changes were dependent on funding. These factors often resulted in the design of tasks being undertaken with very little lead-time before production.

HMAS *Manoora* during trials (RAN photograph)

## 3. SCOPE OF MODIFICATION AND REPAIR

### 3.1 Vessel Capability

As defined by the contract the modification was designed to provide the capability of undertaking the following roles when both LPAs are operated in combination:

- (a) embark trainees and provide the facilities to support at-sea training;
- (b) conduct an amphibious tactical lodgement by an appropriate combination of:
  - (1) helicopters in platoon lift cycles of no more than 20–30 minutes; and
  - (2) embarked landing craft.
- (c) transport a tactically embarked battalion group to a maximum range of 6 000 km, remain on station for 14 days and conduct a Services Protected Evacuation (SPE);
- (d) conduct Logistics Over The Shore (LOTS) for the lodgement and sustainment of force



- elements, moving embarked battalion group equipment ashore in approximately eight hours;
- (e) embark and disembark a battalion group and its equipment at fixed port facilities;
- (f) provide facilities for the command, control, communications, electronic warfare and intelligence needs of a deployable joint headquarters;
- (g) provide a medical facility capable of conducting initial and wound surgery and providing intensive care;
- (h) provide a base from which to conduct helicopter operations;
- (i) provide potable water for a force operating ashore;
- (j) provide various types of fuel for the force operating ashore; and
- (k) provide a disaster relief operating base in Australian and regional waters.

### 3.2 Provision of the Capability

The LPA Project contract provides the above capability by:

- taking advantage of available vessels;
- providing discrete capability enhancements within a price cap and;
- entering a fixed price contract for the design and conversion of the ships through competitive tender.

### 3.3 Role of the Contractor

The LPA Project is a hybrid of shipbuilding and ship repair and the contract borrows from both arenas. The role of Forgas as the prime contractor can be summarised as follows:

- Project management
- Management of design for all changes in configuration.
- Turnkey production of the finished vessel including:
  - On-site production at the Newcastle dockyard.
  - Procurement, maximising AII; and
  - Management of all sub-contractors at Dockyard and remote sites.
- Writing and executing an integrated test and trials package to prove the design and production.
- Provision of Integrated Logistic Support (ILS) products for the modified configuration of the vessels.

HMAS *Kanimbla* (left) and HMAS *Manoora* during refit and conversion at Forgas Dockyard Newcastle in 1999 (Photo John Jeremy)



### 3.4 Major work undertaken

The contract originally consisted of discrete capability packages for both ships plus a refit (repair) package for *Kanimbla* only. The contract subsequently experienced significant variations from the following sources:

- (a) additional configuration changes or capability packages;
- (b) additional maintenance work;
- (c) emergent work arising from defects observed or discovered through survey.

The way in which the work package evolved, and the effect that this had on management of the project, is interesting but is not the purpose of this paper. It is intended to provide an overview of the entire scope of work undertaken to produce the final LPA configuration which *Manoora* now represents.

The following arbitrary categories summarise the main thrust of the work undertaken:

- (a) changes to improve accommodation and habitability;
- (b) facilities for embarkation and disembarkation of personnel and equipment;
- (c) medical facilities;
- (d) communications enhancements; and
- (e) improvements to and repair of the existing ship platform and systems.

The major work items within the above categories are briefly outlined below. Items shown in bold text were part of the original contract, all other items were added to the scope of work after the contract start date.

- (a) Changes to improve accommodation and habitability
  - **Provision of a Classroom/Briefing Room, Chartroom and Command and Control Space** Three new compartments requiring the construction and outfit of new aluminium superstructure on 04 deck.
  - **Modification to accommodation spaces** Reconfiguration of all existing senior sailors' sleeping areas and all heads and bathrooms to suit RAN manning requirements and the requirements of mixed-gender crewing.
  - **Replacement of auxiliary boilers and water-making plant** The existing flash evaporators had been removed and have been replaced with a single reverse-osmosis plant capable of providing 150 t of potable water per day. This is sufficient to service the crew and embarked force requirements (the boilers were subsequently superseded by the installation of a fourth 750 kW generator, which removed steam from the vessels entirely).
  - **Modification to the sewage system** Installation of two MARPOL-compliant sewage-treatment plants.
  - Upgrade Main Galley. Rip-out and rebuild of the main crews' galley and cafeteria plus the creation of embarked force galley and cafeteria on 2 deck.
  - Modification of the junior sailors' mess decks. Reconfiguration of all junior sailors' accommodation to provide sleeping and recreation areas compatible with modern RAN requirements and capable of providing the flexibility required for mixed-gender crewing.
  - Removal of steam. Installation of a fourth generator and switchboard. Associated works were new electric-powered hot-water system and laundry facilities.
  - Upgrade of air conditioning chilled water plant. The existing chilled water plant was replaced with three new chillers with a combined capacity of 1 120 kW.
  - Modifications to embarked forces' mess decks. The US Marine standard messes were very rudimentary and were refurbished and modified to provide a basic but improved standard of accommodation.
  - Upgrade wardroom, senior sailors' messes and associated pantries. Extensive reconfiguration

of these compartments.

(b) Facilities for embarkation and disembarkation of personnel and equipment

- **Removal of bow derricks and associated equipment** The LSTs operated by beaching and deploying a ramp to the beach; heavy vehicles then crossed from ship to beach via the ramp. The LPA no longer uses the beaching capacity and the derricks would obstruct the forward helicopter landing area. For this reason the derricks and associated equipment (predominately heavy winches) were removed. The bow doors were welded closed and the hinge assemblies removed.
- **Arrangement and design of the forward helicopter landing facility** This capability package necessitated the conversion of the forward deck to achieve certification to land Blackhawk helicopters. All rotor obstructions in the landing area, such as tank vents and anchor handling equipment, had to be relocated. The deck was widened by the addition of the two hull sponsons, each built of approximately thirty tonnes of new steel. The resultant deck was fitted with all of the systems required for helicopter capability such as fold-down deck-edge nets, wash lights, line up lights and a flight deck marshalling position. The deck size achieved also allows sufficient space in the alternative role for stowage of two LCM8 landing craft on deck.
- **Arrangement and design of the aft helicopter landing facility** This modification provided two landing spots aft of the helicopter shelter. Similar to the forward deck, extensive modifications were required to achieve the necessary clear deck area. The aft deck on the LSTs was mainly a boat-handling area and was cluttered with davits, winches, vent terminals, snaking winches and mooring fittings. The deck was lengthened to accommodate the two helicopter spots and the starboard funnel was moved outboard to provide rotor clearance. The most obvious changes are the extension of the stern of the vessel (the stern door changed from vertical to inclined but remains and can marry with LCM8 and LCH) and the addition of the aft sponsons which were required to provide mooring decks for lines handling. Less obvious are the extensive works required to relocate services that had previously surfaced on the main deck; changes to ventilation trunking and tank vents were very involved. Wherever possible existing equipment was utilised; the main deck hatch, which was retained but made to run in the opposite direction to avoid fouling the helicopter shelter, is a good example. As with the forward deck, the aft deck is fully equipped for helicopter landing and, with the addition of gyro-stabilised glide-slope indicator and horizon reference systems, can allow landings at night or in poor visibility.
- **Roll reduction measures (bilge keels)** The LSTs had a reputation for high roll amplitudes and accelerations. It was anticipated that this would be incompatible with the intended helicopter operations. Sizeable bilge keels were designed and fitted during the docking of both vessels. Initial reports from *Manoora* suggest that these and other weight and moment changes have had a very beneficial effect on seakeeping.
- **Modification to the aviation fuel system** The original combined fuel/ballast tanks are now dedicated to aviation fuel and the system has been modified to give dedicated fuelling/defuelling stations on the forward and after decks. The ships have the capacity to embark and utilise 250 t of aviation fuel.
- **Arrangement and design of the helicopter shelter** The helicopter shelter is a new structure designed to accommodate four Blackhawk or three Sea King helicopters. The shelter is fully equipped to provide service and maintenance for these aircraft. The shelter also has an alternate role as a triage area for the medical centre with medical gases and services reticulated to each triage position. The shelter was the largest structural addition on the ship and consists of approximately 95 t of new steel. The new structure is connected to the existing superstructure by an innovative expansion joint to avoid possible problems associated extending the length of structurally-effective superstructure. Included in this structure is the flying control centre (Flyco)

which is fully outfitted to provide control of all three helicopter spots and communications integrated with the bridge and the communications centre (Comcen). On the helicopter shelter roof a hydraulic stores crane is provided which plumbs over the port side and down through the main deck hatch into the vehicle deck.

- **Arrangement and design for the carriage of two LCM8s** LCM8s are the Army-operated small landing craft currently carried by HMAS *Tobruk*. This capability required the incorporation of a Government-supplied 70 t SWL hydraulic crane into the ship structure on the aft port side of the forward helicopter landing deck. When the helicopter landing deck is to be used for carriage of boats, two sets of portable cradles are secured on the forward deck and the LCM8s lifted on board one at a time using the crane. The crane is able to load heavy vehicles and other equipment (deployed from the vehicle deck via the forward ramp) onto an LCH or LCM8 moored alongside.
- **PLC control of the AFFF fire fighting system to the aviation areas** The ship's existing AFFF system on the vehicle deck and in the machinery spaces has been extended to provide deluge in the helicopter shelter and a foam blanket on both helicopter landing decks via the counter-measure wash-down nozzles fitted on the main deck. These extended requirements make it crucial that the limited supply of AFFF is used effectively. To ensure that this happens, a PLC control system has been designed which operates pneumatically-actuated butterfly valves installed in the AFFF main. This system provides touch-screen control to Flyco and DCC to ensure that the foam available from three tanks below decks is used effectively in a helicopter crash on deck or other multiple-fire situation.

(c) Medical facilities

- **Medical facility** The medical facility is located on the port side outboard of the helicopter shelter and is mostly new structure built from a combination of aluminum and steel. The facility provides the capabilities of a civilian hospital built to NSW Health Authority standards, the only concessions being those related to accommodating extensive capability in a very constrained space envelope. The facility will handle a throughput of twenty patients a day and up to ten casualties arriving simultaneously. Arriving casualties are triaged in the helicopter shelter then treated in the four-table operating theatre. Adjacent to the operating theatre is an eight-bed high-dependency unit; patients who do not require such intensive care are transferred to the thirty-six bed low-dependency areas on 1 deck by a newly-installed lift. Navy communications, nurse call, entertainment, crash-on-deck alarms and medical intercom service all appropriate areas. Comprehensive support facilities are also provided with dirty and clean utilities, X-ray, blood bank and administration compartments. The standard of medical facilities on the LPA vessels far exceeds that available on any other fleet unit and will allow the Commonwealth to meet the stated medical objectives for military and disaster-relief operations.

(d) Communications enhancements

- **Enhanced command, control and communications (Army) and integrated navy communications** These combined tasks provide the ship with a fully-integrated communications system. The outfit resulted in nineteen Navy radios and twenty-one Army radios communicating through a novel software switch to forty-three antennae. As well as requiring a complete rebuild of the Comcen the capabilities provided by these systems are seamlessly incorporated into all relevant new and existing compartments such as the joint forces HQ, classroom, Flyco, operations room and bridge.

(e) Improvements to and repair of the existing ship platform and systems

- **Replacement of existing radar** Replacement of the existing radar by two Kelvin Hughes 1007.
- **Replacement of existing boats and davits** The boat handling areas were previously within the helo shelter and aft landing areas. This work package provided for a new boat deck to stow and handle two RIBs. This area has been located on 01 deck level above the medical centre. Diesel

fuel, fresh water and CCTV coverage are provided to service the boat deck.

- Two major asbestos removal operations on each vessel (approximately three months each).
- Replacement of Halon 1301 with FM 200.
- Replacement of all medium pressure air compressors.
- Replacement of all oil purifiers.
- Replacement of primary and secondary gyro compasses.
- Installation of Bird Johnson electronic propulsion control to replace existing pneumatic control.
- Reconfiguration of approximately twenty compartments to suit differences between RAN and USN operations.
- Upgrade and overhaul of twenty ALCO diesel main and auxiliary engines.
- Maintenance packages (not including emergent work) totalling 72 000 hours on *Manoora* and 213 000 hours on *Kanimbla* to date.
- Abrasive blasting and painting of all external surfaces.
- Validation and repair of the entire electric power system (approximately 6 000 circuits per ship).

### 3.5 Work Summary

The following statistics are provided to help visualise the overall size of the task on each ship.

- New steel added exceeded 250 t.
- 12 t of new aluminium added.
- 46 km of electric cable installed.
- 11 km of cupro-nickel pipe (greater than 25 mm diameter) installed.

## 4. CONCLUSION

The delivery of HMAS *Manoora* has added significant amphibious transport capability to the Royal Australian Navy. When HMAS *Kanimbla* is completed later in 2000 the two ships (when operating together) will allow the deployment of 900 troops with vehicles and equipment. Alternatively, the ships provide the ability to attend disaster sites and provide relief in the form of electrical power, fresh water, accommodation needs and medical attention.

The LPA Project has been a significant contributor to economic activity in the Newcastle region, bringing together a vast array of skills and allowing the region to demonstrate the depth of its capabilities in Defence contracting. Forgacs is justifiably proud of its association with Defence and the conversion of HMAS *Manoora* and looks forward to meeting the challenges of future Defence contracts.

*This article is based on a paper presented at Sea Australia 2000, Sydney, February 2000.*

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## New turbine ordered

Continuing our series of reports intended to keep our world in perspective when it comes to equipment costs for ships, last November the US Navy awarded a contract to the Electric Boat Corp. in Groton Connecticut. for the manufacture, testing and delivery of one production main propulsion unit for the fourth Virginia class submarine. The value of the contract is US\$54 705 960 (about A\$85 480 000) and the work will complete by June 2004.

The keel of USS *Virginia* was laid on 9 September 1999 (US Navy photo)



The Australian Naval Architect



# The Solar Sailor

## Concept

A new company, Advanced Technology Watercraft, are building their first commercial vessel, a hybrid vessel based on movable solar wings, the Solar Sailor. Design expertise is being provided by Grahame Parker Design, the designer of Sydney's Rivercats, Matilda Cruises' Rockets, Brisbane's City Cats, and Sydney's new Super Cats.

The concept of the design embodies solar panels on movable wing shapes above the superstructure, and a patent is pending. The wings are individually able to move relative to the vessel and hence relative to the renewable energies available from wind and sun, and are angled so as to optimise the combined output using computer control. The concept has been tested and proved on a prototype, *Marjorie K*, which Sydneysiders may have seen in action on Pittwater from time to time.

## Benefits

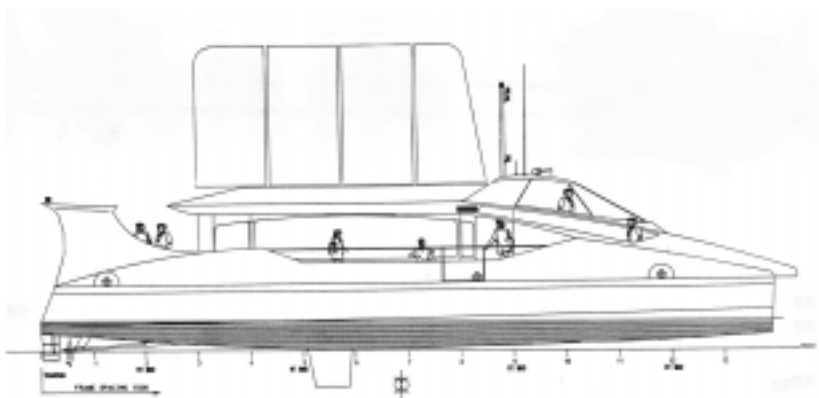
The Solar Sailor is a forward-looking design, embodying principles of benefit to:

- Operators, by way of fuel savings, access to environmentally-sensitive waterways, and unlimited range;
- Passengers, by way of absence of noise, fumes and vibration; and
- Environment, by way of low wash, zero water pollution, reduced air pollution and greenhouse gases, and preservation of fossil fuels.

## Specifications

Principal particulars of the first commercial vessel, a catamaran, are as follows:

Length overall	21.5 m
Beam overall	10.3 m
Beam demihull	1.3 m
Draft	1.2 m
Passengers	100
Crew	2
Power	Two 40 kW Rare Earth Magnet Brushless DC
Batteries	Eighty 70 A.h sealed Absorbed Glass Matt, half in each hull
Solar wings	Eight Advanced Technology Watercraft
Auxiliary	80 kW genset
Class	DNV Class R5, inshore waters to 1 m swell



## Performance

Expected performance is as follows:

Sailing:	5–7 kn reaching in 15 kn wind; 12–15 kn in 25 kn wind
Solar Power alone:	7 kn in full sun; 3–4 kn in overcast
Solar sailing	12–15 kn reaching in 15 kn wind
Batteries alone	5 kn for 5 h (quick charge 2 h from grid)
Auxiliary	10–12 kn in any direction, any conditions, as required

## Construction

ATW are now constructing their first commercial vessel at their premises on the Hallmark Estate on the highway at Ulladulla, NSW. This vessel will be used for cruising on Sydney Harbour, demonstrating and marketing the concept. It is due for launch in March, followed by fitting out and sea trials, arriving in Sydney about the end of May. A prominent profile on Sydney Harbour during the Olympic period is expected.

The overall concept is simple, but the craft is elegant, highly sophisticated and uses advanced computer technology. The company has designs for a range of recreational and commercial, ocean-going and sheltered-water, Solar Sailor catamarans and trimarans from a length of 15 m carrying 8 persons up to a length of 30 metres carrying 300 persons.

ATW experienced enormous interest in the Solar Sailor at the international boat show at La Rochelle, France, in September 1999. Governments and communities in Europe place a high priority on safeguarding of the health of their rivers and lakes, and boats powered by fossil fuels are already banned from many lakes in Europe.

Further information may be obtained from ATW's managing director, Robert Dane, Unit 17, Hallmark Estate, 259 Princes Hwy, Ulladulla, NSW 2539, phone (02) 4454 4328, fax 4454 4329, email [admin@solarsailor.com.au](mailto:admin@solarsailor.com.au), or by visiting their website [www.solarsailor.com](http://www.solarsailor.com).

*Phil Helmore*

An impression of the Solar Sailor on Sydney Harbour



# New Model Test Basin

The Australian Maritime College has announced the construction of Australia's largest model test basin for testing ocean engineering structures. The new facility will be ideally suited to conduct research and consulting for the burgeoning oil and gas industry, and will help support exploration and development in Australia's newly-established 200 mile Exclusive Economic Zone. This will contribute substantially to Australia's ability to benefit from the enormous potential available in this vast natural asset.

The need for such a facility was recognised by the Federal Government in Australia's Marine Science and Technology Plan, and it is now being funded jointly by the Tasmanian State Government and AMC.

The model test basin will provide staff and students with the opportunity to conduct world-class ocean engineering research, and will underpin the new Bachelor of Engineering degree in Ocean Engineering being offered at AMC. This is the only such degree running in Australia, having been developed in conjunction with leading members of the Australian offshore engineering industries to provide graduates ready to tackle the stimulating and rewarding ocean engineering environment.

The new test basin will complement the existing specialist facilities at AMC, which are used by industry as well as staff and students from Universities all over Australia. The model test basin will be 35 m long, 12 m wide, and will have an adjustable water depth up to 1 m. It will be equipped with a multi-directional wave maker and will have the capability of towing models at speeds up to 4 m/s.

## THE INTERNET

### Y2k Problems

Welcome to the Year 2000, and we hope that the roll-over was free of problems for you. The only quirks we have heard about locally are a 286 PC which rolled over to 1 January 1980 and would not allow prior dates to be set (but which otherwise works quite happily), and the file transfer protocol (FTP) which gives some Y2k-like symptoms but not problems. There were some glitches on the Internet. The US Navy's official web site showed the date on New Year's Day as January 1, 19100, — apparently a common easily-fixed coding problem. Many people are saying that Y2k was 'much ado about nothing'. However, this view ignores the fact that early software carried the potential for problems, and that many people spent a lot of time and effort in eradicating the potential problems so that the roll-over went smoothly.

### RINA

The RINA web-site has been upgraded and now includes much more information about the institution, application forms, publications, coming events, and a members' section. Here members  
**February 2000**

may update their contact details on-line or participate in the on-line forum (posting questions or discussion), the Young Members' Group forum, or the Small Craft Group forum. Several members have already availed themselves of the on-line forum, and one enterprising student member has enquired about industrial training in the UK. Some publications for written comment are downloadable. There are links directly from the site to the Australian Division, where you can see who is on the Division Council, check the coming events, and download past issues of *The ANA*. If you haven't seen it, or haven't seen it recently, have a look at [www.rina.org.uk](http://www.rina.org.uk).

### SNAME

The SNAME web-site is comprehensive and has information about the society, application forms, committees, coming events, an index of publications and papers which is searchable (a big plus), a publications catalogue and ordering information. In their members' section there are details of annual contributions, an on-line forum, a membership directory, job postings and resume postings. Another plus on this site is that click-

ing on a conference (e.g. the 1999 Annual Meeting in Baltimore) and then on the technical program allows you to view an abstract of each paper to be presented and/or download a copy of each paper. This bypasses the old problem of having to buy the whole proceedings to read the one paper of interest to you. There is also an overseas members' services survey which you should complete soon. If you haven't seen it, or haven't seen it recently, have a look at [www.sname.org](http://www.sname.org).

### **Classic Fast Ferries**

There is a new a new website for the electronic magazine *Classic Fast Ferries*. This site has been initiated by a hydrofoil buff in Denmark. To download an issue of this mini magazine, click on the icon to view the current issue. It may then be necessary to change one of the backslashes (\) in the path to a forward slash (/). The site can be found at <http://classicfast-f.homepage.dk>.

### **Marine-L Newsgroup**

Marine-L (The Marine Studies and Information List) is one of a number of news/discussion

groups which you can join to get the latest news on what is happening where. The interest areas of this one include ship design, building, management, education and training, navigation, communications, resources, search-and-rescue, oceanography, sail training, etc. Each message that is posted by each subscriber is emailed to other subscribers, and is a good way of keeping up-to-date in particular areas.

To join this discussion list, send a message to [listserver@cgc.ns.ca](mailto:listserver@cgc.ns.ca). Do not attach a signature, and do not place anything in the Subject area. In the body of the message type the following: SUBSCRIBE MARINE-L yourgivenname yourfamilyname. You will then receive a reply saying that you are subscribed and giving further information. Messages are archived (from July 1997) and searchable at [www.reference.com/cgi-bin/pn/listarch?list=marine-l@cgc.ns.ca](http://www.reference.com/cgi-bin/pn/listarch?list=marine-l@cgc.ns.ca). You can unsubscribe at any time the same way, but using the word UNSUBSCRIBE. Any problems or queries, contact Jim Calvesbert by email at [jim@cgc.ns.ca](mailto:jim@cgc.ns.ca).

*Phil Helmore*

## **MEMBERSHIP NOTES**

### **Award for Charles Sparrow**

Congratulations to member Charles Sparrow who received the Medal of the Order of Australia in this year's Australia Day Honours. The award is for service to sailing, particularly as designer of the Vaucluse Junior (VJ) sailing boat.

### **Subscription Renewals**

Some members noticed that, although subscriptions may now be paid directly in Australian dollars, there was no indication of the exchange rate on the 2000 Subscription Renewal Notice. Correspondence with head office after several complaints revealed that their computer should be given notice. More than about twenty characters in the name and honours caused wrap-around to succeeding lines, and meant that the last *two* lines, including the exchange rate, were left out of the fixed-length fees box!

Head office is replacing their membership database system with a new, integrated management

information system, and we are reliably assured that this problem will not happen again!

### **Missing in Action**

Mail addressed to the following members has been returned to the Secretary marked 'No longer at this address.' All were at the AMC. Launceston.

Mr S R Bullen  
Mr B S Duncan  
Mr A P Ivonac  
Mr C S Johnson  
Mr P X Pham  
Mr N D O'Toole

If anyone knows their current address then it would be appreciated if they could advise Keith Adams, Secretary of the Australian Division of RINA on (02) 9876 4140, fax (02) 9876 5421 or email [kadams@zeta.org.au](mailto:kadams@zeta.org.au).

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**Bob Herd's series *Forensic Naval Architecture* will return in the May edition of *The ANA*.**

**The Australian Naval Architect**

# NAVAL ARCHITECTS ON THE MOVE

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

Habibul Ahmed has taken up a position as a naval architect with Austal Ships.

Michael Andrewartha, a graduand of The University of New South Wales, has commenced work for his PhD on optimisation of hybrid hullforms at The University of New South Wales.

Jonathan Binns, who graduated from the University of New South Wales in 1995, completed his MSc at Curtin University of Technology in mid-1996, and then worked for both Murray, Burns and Dovell, and the Australian Maritime Engineering CRC till the end of 1999. He has now commenced work for his PhD investigating the capsizing and self-righting tendencies of modern racing yachts at the Australian Maritime College.

Martin Cabot, a graduand of the Australian Maritime College, has taken up a position as a naval architect with Austal Ships.

Larissa Deck has taken up a position as a naval architect with Elliot Bay Design Group, Seattle, USA.

Lina Diaz, a graduand of The University of New South Wales, continues in her position as a trainee marine surveyor with Bureau Veritas in Sydney, and has commenced work for her ME on lines lifting using photogrammetry at The University of New South Wales.

David Ellery has taken up a position as a naval architect with North West Bay Ships in Hobart. Stuart Friezer has consolidated his operations and is now consulting at the head of a team of naval architects and engineers as Waterline Technology in Sydney. They have expertise in finite-element analysis, 3D modelling, CFD, hydrodynamics, prefabrication and production streamlining.

Robin Gehling has moved on in AMSA from his position as Area Manager for SA/NT in the Adelaide office and has taken up the position of Principal Adviser — Technical, Maritime Safety and Environment Strategy, in the Canberra office.

Glenn Green, a graduand of the Australian Maritime College and a Lieutenant in the Royal Australian Navy, has taken up a position as an engineer on board HMAS *Darwin*.

Andrew Harvey is now consulting as Nekton International on the Gold Coast.

Matthew Klingberg has taken up a position as a naval architect with New Westcoaster in Fremantle.

Matthew Hogan has taken up a position as a naval architect with the Department of Defence in Canberra.

Timothy Lilienthal has commenced work for his PhD in ship stability at the Australian Maritime College.

Cameron Lowry has taken up a position as a naval architect with Stewart Marine Design in Cairns.

Bruce McRae has taken up a position as a naval architect with Murray, Burns and Dovell in Sydney.

Timothy Mak has taken up a position as a naval architect with Austal Ships.

Keir Malpas left the DoD in January 1998 after 18 years as a naval architect plus another five years working in the Defence Estate Organisation where, amongst other things, he was put in charge of the decontamination and disposal of Cockatoo Island. He and his wife, Margaret, now live near Jervis Bay, and he works for Defence Maritime Services (DMS), is Supervisor of Sail Training at HMAS *Creswell* and master of the sail training vessel *Salthorse*, a 21.3 m ketch.

Keir writes: 'As you may know, DMS won the RAN Port Services and Support Craft contract in 1997, a 10-year contract valued at about \$34million pa and part of Defence's Commercial Support Program. When not providing sail training, sea awareness, navigation or team-building exercises, I also get to drive range-clearance vessels, radio-controlled surface targets and the occasional stint on a torpedo recovery vessel. For those who remember the TRVs at sea, we have now fitted slotted bilge keels which have provided a quantum leap in both roll and pitch damp-

ing. If any one feels like visiting me, or needs a bed for the night, my work number is (02) 4429 7880 and, given enough notice, I may be able to arrange some time afloat on *Salthorse*'.

Shinsuke Matsubara, a graduand of The University of New South Wales, is completing his work experience with Graham Parker Design in Sydney.

Teresa Michell who is consulting as Teresa Michell Maritime Solutions in Sydney (see *The ANA*, November 1999) now includes North West Bay Ships among her clients.

Kathryn Murphy has taken up a position as a naval architect with North West Bay Ships in Hobart.

Trung Nguyen has taken up a position as a naval architect with the Vietnam Maritime Register, Hanoi, Vietnam.

Bernard O'Shea has taken up a position as a naval architect with Austal Ships.

Christopher Polis, a graduand of the Australian Maritime College, has taken up a position as a naval architect with Seward Maritime in Gravelly Beach, Tasmania.

Steve Quigley has been consulting as Quigley Marine Designs in Sydney for some time. He and Rob Tulk have been contracted by a new yard in Hobart, North West Bay Ships, to join the design team and are working on a revolutionary new design which recently commenced construction in Hobart.

Andrew Richards, a graduand of the Australian Maritime College, has taken up a position as a naval architect with John Lund Marine Design on the Gold Coast.

Damien Smith has moved on from Optimum Control Pty Ltd, and has taken up a position as a naval architect with Austal Ships while he completes his thesis for graduation from UNSW in October. En route to the west he competed in the OK Dinghy national titles at Metung on the Gippsland Lakes in January. Sailing his thirty-year-old dinghy against the modern high techs and with a couple of DNFs, he came a creditable twenty-third out of thirty-five.

Justin Steel, a graduand of the Australian Maritime College, has taken up a position as a naval

architect with Crowther Multihulls in Sydney.

Ian Stevens turned up, you will be pleased to know. He had taken the position of Fleet Engineer for Seaswift Engineering, a division of Seaswift Shipping, based in Cairns. However, don't bother calling Seaswift. He has already leapfrogged that position and has now taken up a position as the operations manager of the PNG Dockyard at Motukea Island, Port Moresby, Papua New Guinea.

Samuel Stevens has taken up a position as a naval architect with Oceantech Design in Adelaide.

Samantha Tait has taken up a position in the Logistics Office for the *Anzac*-class frigates with the Department of Defence in Melbourne.

Murray Townsend, fresh from his PhD in coastal engineering at Monash University, has taken up a position with the Environment Protection Agency in Adelaide.

Chris Tucker, a graduand of The University of New South Wales and a manager for the University's *sUNSWift* solar car project in 1999, has taken up a position as a naval architect with Austal Ships.

Rob Tulk has moved on from International Catamaran Designs and is consulting as Nautilus Marine in Sydney. He and Steve Quigley have been contracted by a new yard in Hobart, North West Bay Ships, to join the design team and are working on a revolutionary new design which recently commenced construction in Hobart.

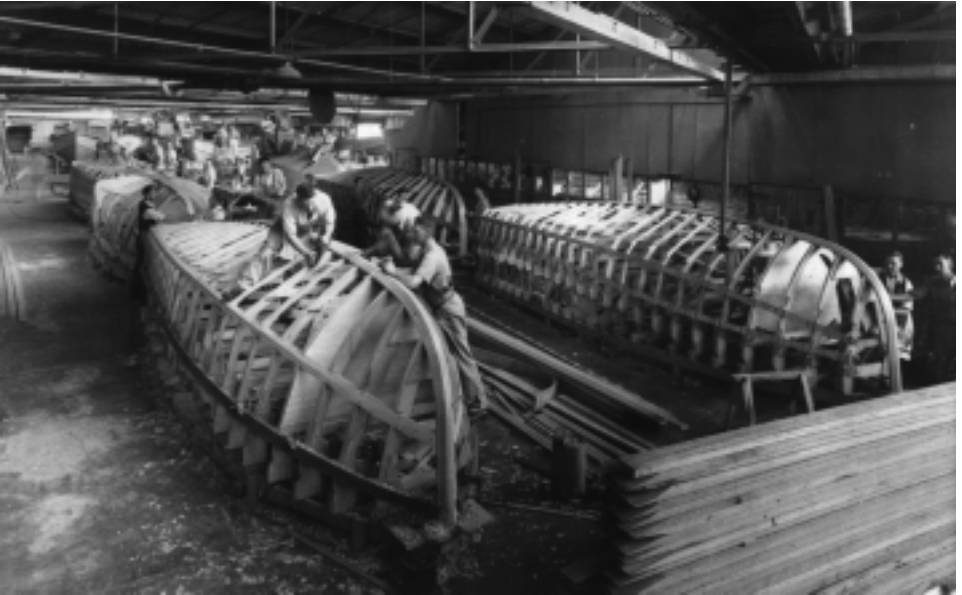
Alistair Verth, a graduand of the Australian Maritime College, has taken up a position as a naval architect with Universal Design and Drafting in Adelaide.

Delwyn Wee, a graduand of The University of New South Wales who already holds a diploma in marine engineering from Singapore Polytechnic, has taken up a position with the Republic of Singapore Navy.

This column is intended to keep everyone 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 and brighter things, or if you know of a move anyone else has made recently.

*Phil Helmore*

## FROM THE ARCHIVES



In this edition we are issuing a challenge for readers. Scenes of busy wooden boat building such as these are not common today (certainly not in Australia). Does anyone know when and where these photos were taken, and what the boats were? The photos were taken in Australia.  
(Photos John Jeremy collection)





**MAREX OS in any case....  
the remote control with CAN bus**

**The concept**

- Open, modular system configuration
- Can be used in any marine propulsion system
- Intelligent and compact basic components
- Control heads with lever follow up

**The technology**

- Microprocessor based control processing
- Data transfer via CAN bus
- Clear text information via display
- Serial interfaces to external systems

**The advantages**

- Safe and comfortable manoeuvring
- Minimises design and installation costs
- Simplified display adjustment for commissioning
- Reduced service costs using telediagnosis

**Rexroth Marine Technology**