RINA
The Royal Institution of Naval Architects

International Conference

HIGH SPEED CRAFT
17 - 18 NOVEMBER 2004,
RINA HQ, LONDON, UK
Prospects within the high speed craft sector are once again beginning to improve. Craft are being designed and built for an ever wider range of roles and more demanding applications. The industry is seeking to extend the economic operating envelope of these craft, reducing downtime, increasing reliability and safety.

The conference will consider a wide range of vessel types including small high speed craft, military vessels, passenger ferries, freight carriers, etc. Continuing the Institution's successful series of conferences on high speed craft, this two day event will give the industry the opportunity to debate these problems and look at possible solutions.

day 1

09.30 - 10.00 Registration and coffee

10.00 - 10.35 The Influence of New Technology on the Design and Manufacture of High Speed Craft: A Special Reference to Recent Monohulls, Multi hulls, Air Cushion Vehicles and Surface Effect Ships
J.L.Allison, B.G.Farsetti, D.R.Lovis, J.Purnell, CD Marine, USA
This paper addresses all the aspects of High Speed Craft with reference to actual vessels that have been recently designed, developed and successfully built and tested, together with some that are currently in process of final design and completion, and some advanced concepts under research. The paper addresses the need to ensure that new High Speed Craft have viable economic bases and/or military missions. The use of new materials for hull construction is discussed with several examples. A current design example is a version of the US Navy’s Landing Craft, Air Cushion, LCAC that employs new deep skirt technology and low-profile bow thrusters. The development of advanced axial flow waterjets is also discussed.

10.35 - 11.10 High Speed Multihull Craft for Medium Distance Marine Transportation
E Begovic, C Bartorello, S Caltarella, P Cassella, University of Naples, Italy
The increasing demand of fast marine transportation also for routes of medium range has led to a significant interest in multi-hull ships. Therefore, new unconventional multihull craft, suitable for medium speed fast ferries have been proposed. The trimaran and the pentameran seem to be the most interesting possibilities for such routes, because of the benefits given by their main hull slender form stabilized by very slender outriggers. Experimental research has been carried out at Naples University towing tank comparing the resistance of trimaran and a pentameran hull forms suitable for a medium distance ship with equivalent service capability as existing monohulls. The powering performances and stability characteristics, determined for different freeboard and displacement ratios of the two considered vessels have been assessed and compared.

11.10 - 11.40 Coffee

11.40 - 12.15 Defect and Damage Assessment for Ships Built in FRP Sandwich
Brian Hayman, Det Norske Veritas, Norway
SANDWICH construction, with fibre-reinforced polymer (FRP) skins separated by a lightweight core, has been used extensively in the hulls and superstructures of high speed and naval craft. When such a structure experiences damage, the current practice is normally to repair it as soon as possible. The paper describes a damage tolerance based approach that will enable more rational decisions to be made as to whether, when and how a repair should be performed. With reference to some specific defect and damage cases, a scheme is described by means of which the local and global performance of the damaged ship can be assessed, and acceptance criteria can be established for defects and damage with regard to their size and location. The paper includes a brief discussion of the challenges being faced with regard to the detection of such defects and damage and the determination of their location and extent.

12.15 - 12.50 An Inverse Design Procedure for Hydrodynamic Optimisation of High Speed Hull Form Using Commercial Software
Nigel Koh, University of Newcastle
The objective of this paper is to present a novel approach to multi-objective hydrodynamic optimisation of hull forms in preliminary design stage using commercial naval architect software by Tribon Solutions and Artificial Neural Networks (ANN). The objective functions are good resistance, seakeeping and manoeuvring characteristics. The hull forms are studied. All the results are established as a database, in the form of regression equation using ANN technique. The optimal hull form is selected using ANN based optimisation techniques.

12.50 - 13.25 Aluminum Construction for High Speed Craft: A Case Study
Jennifer Grimsley, Carderock Division Combatant Craft Department, USA
The U.S. Navy has accepted delivery of a technology demonstration craft designed by NAWSE NSWC Carderock Division Combatant Craft Department (CCD) and built by Oregon Iron Works (O.I.W.), a naval manufacturing company headquartered in Clackamas, OR. The craft, named SEALION, is currently undergoing testing and evaluation. This paper will discuss the design approach, technology insertion and lessons learned through experimentation by the US Navy. It will also describe advances in aluminum construction that proved successful on the SEALION technology demonstrator. This paper will go on to describe approaches taken for design and construction to meet the rigors of high-speed operation in heavy seas and still maintain tolerance requirements. Investigations into design and construction techniques for modular payloads will be discussed.

13.25 - 14.25 Lunch

14.25 - 15.00 The Development and Validation of a Hydrodynamic and Structural Design Methodology for High Speed Craft
Holly Phillips and Bob Cripps, Royal National Lifeboat Institution
Simon Rees and Roger Dennis, Frazer-Nash Consultancy Limited
The RNLI, with their key partner Frazer-Nash Consultancy, have been working for some time on a design methodology for high speed craft that operate beyond normal design rule conditions. From a hull-shape concept, the hydrodynamic and then dynamic behaviour of the hull in smooth and rough water has been numerically modelled. The effect of the wave loads and effective load curves can then be examined, and the structural layout of the craft modified accordingly. Each stage has now been validated. Smooth and rough water hydrodynamic performance has been compared with tank and full-sized craft measurements, and the structural response predictions checked against strain-gauge data. The methodology can now deliver designs as both for both design, and potentially for the development of future design codes.

15.00 - 15.35 The Influence of the Central Bow Bulbs on the Resistance of Catamarans
Carlo Bartorello & Pasquale Cassella, University of Naples, Italy
Dario Brizzante, University of Genoa, Italia, Igor Zotti, University of Trieste, Italy
It has been demonstrated that the use of central bow bulks on a catamaran hull can improve its seakeeping and resistance characteristics. These hull configurations, defined by a central bow bulb, placed between the demi-hulls, were called Bulb-Cat configurations. The resistance data presented previously was obtained from a series of tests made on a small scale model (1:20) tested at the towing tank of the Trieste University. To verify the reliability of the results, it was decided to extend the resistance tests to a larger scale model. The results obtained from the experiments have been compared with similar results obtained from a numerical investigation on the wave pattern resistance to investigate the scale effects. A detailed description of the tests and the most significant results obtained from both the experiments and the numerical investigations will be given.

15.40 - 16.00 Coffee

16.00 -16.40 No Stone Unturned: A Comprehensive Approach to the Development of a New Class of High Speed Ferry for Alaska
In 1998 Alaska Marine Highways System (AMHS) started a procurement programme for high speed passenger and vehicle ferries to provide improved transport links for communities on the West coast of Alaska. This paper will provide a summary of the work completed by AMHS to identify the owner’s requirements with regards to design function, arrangement, weight restrictions, noise, vibration, fatigue and wash. The paper will go on to look at the design challenges presented by these requirements, and those imposed upon the project through US federal regulatory requirements, during the development of the first of these vessels MV Fairweather. Comparisons between the predicted performance and trials results will also be presented. The paper will also look at production methods used during construction and difficulties encountered in building the first IMO HSC approved passenger/vehicle ferry in the USA.

16.40 - 17.15 Seakeeping Predictions for a 100 knot Yacht
Jeffrey B. Bowles and Dean M. Schleicher, Donald L. Blount and Associates, Inc., USA
DLBA has previously explored the technical feasibility of a 100 knot yacht using data available within the public domain, examining the state-of-the-art relationship between weight, power and speed for high chine hull forms. This paper explores the seakeeping characteristics of high speed craft in a macroscopic sense using data and information available in the public domain, supplemented by an extensive proprietary database of high speed, rough water and seakeeping data. This methodology will be presented to apply analytical design tools to evaluate the seakeeping performance of a vessel in the concept design phase. Recommendations for maximum speeds in various sea states will be provided for the 100 knot yacht.
Programme and may be subject to change

day 2

09.00 - 09.30 Coffee

09.30 - 10.05 The Evolution of the 112m Wave Piercing Catamaran Design
Gary Davidson and Tim Roberts, Revolution Design, Australia.

10.05 - 10.40 Design of High Speed Low Wake Hydrofoil Passenger Ferry
Endcott M. Fay, Teignbridge Propellers Ltd., UK

11.00 - 11.45 The X-Craft
Nigel Gee and Mike Machell, BMT Nigel Gee and Associates Ltd

11.45 - 12.20 The Design of a Low Wash Fast Ferry for Inland Waters: use the TRIDELTA
J.A.Keuning , H. Boonstra and M. van den Hoven, DELFT University of Technology

12.20 - 12.55 Design Development of 24m Air-Supported Vessel (ASV) Catamaran Demonstrators, Suitable for Fast Passenger Ferries and Various Naval /Paramilitary Applications
Ulf Tudem, SES Europe AS, Norway

12.55 - 13.35 Lunch

Andrew G. Blyth, Blyth Bridges Marine Consultants Ltd, UK

14.30 - 15.05 Racking Damage to High Speed Craft: A Proposal for the High Speed Craft Code

15.05 - 15.35 Coffee

15.35 - 16.10 High Speed Safety: The Impact of Human and Organisational Factors
Torkel Soma, Det Norske Veritas, Norway

Bo Cerup Simonsen, Det Norske Veritas, Norway
International Conference
HIGH SPEED CRAFT
17 - 18 NOVEMBER 2004
RINA HQ, LONDON, UK

To register, simply complete all sections of this form and return it
with your payment to:
The Conference Department, RINA, 10 Upper Belgrave Street,
London, SW1X 8BQ,
TEL: +44 (0)20 7201 2401
FAX: +44 (0)20 7259 5912
E-MAIL: conference@rina.org.uk

TITLE (Dr, Mr, Eur Ing):

NAME (as it should appear on name badge):

POSITION:

COMPANY (as it should appear on name badge):

INVOICE ADDRESS:

POSTCODE:

COUNTRY:

TELEPHONE:

FAX:

E-MAIL:

CONTACT MAILING ADDRESS (if different):

POSTCODE:

COUNTRY:

TELEPHONE:

FAX:

E-MAIL:

PLEASE INDICATE YOUR PREFERRED METHOD OF PAYMENT:

I enclose a cheque for:
(made payable to RINA)

Please send me an invoice for:

Bank Transfer details enclosed for:

Please debit my credit card by:

Card Number: (Visa/Amex/Mastercard)

Expiry Date:  Signature:

PAYMENTS
Payment must be made in pounds sterling by Eurocheque, cheque drawn on a bank with
a UK branch address, credit card (VISA/Amex/Mastercard) or bank transfer. Please note
RINA requires payment before the conference date.
Account Name: The Royal Institution of Naval Architects;
Account Number: 10042127; Account Code: 1600716
Bank Address: Royal Bank of Scotland PLC, Belgravia Branch, 24 Grosvenor Place,
London, SW1X 7HF UK.
IBAN No: GB14RBOS16001610042127
SWIFT No: RBOSGB2L

"VAT. Under UK Customs and Excise regulations delegates from all countries are required
to pay VAT on any course taking place in the UK. Delegates from outside the UK may be
entitled to reclaim this cost.

VENUE
The Venue for "High Speed Craft"
is RINA, HQ, London, UK.

EVENING RECEPTION
17th November 2004
Following the end of day one, delegates are invited to attend an evening reception at
the conference venue.

ACCOMMODATION
Upon registration you will be provided with details of a hotel booking service offering
reduced rate accommodation for conference participants.

CONTINUING PROFESSIONAL DEVELOPMENT
RINA Certificates of Attendance will be issued at the event, which contribute towards
the Institution's Continuing Professional Development Scheme. For further details
regarding the scheme please contact Giuseppe Gigantesco, Director, Professional
Affairs on Tel: +44 (0)20 7235 4622 or
E-Mail: membership@rina.org.uk

STUDENT SPONSORSHIP
A number of sponsored places at this conference are available for Student Members of
RINA. Sponsored places are funded by RINA and by participating industry partners. For
more information about this scheme and how to apply, please contact Ellie Jones,
Professional Affairs on Tel: +44 (0)20 7235 4622 or e-mail: ejones@rina.org.uk.

PROMOTIONAL OPPORTUNITIES
Why not use this conference to promote your company's products and services. It
provides an excellent opportunity to increase your profile and to network with a
highly focused audience. We offer a number of cost effective options, including
various conference sponsorship packages, exhibition space and literature distribution.
Please contact Ellie Jones, Marketing Assistant on +44 (0)20 7235 4622 or
E-mail: sarmitage@rina.org.uk

REGISTRATION FEE (Inc VAT*)

<table>
<thead>
<tr>
<th></th>
<th>By 20/10/2004</th>
<th>After 20/10/2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>RINA MEMBERS:</td>
<td>£530</td>
<td>£610</td>
</tr>
<tr>
<td>NON-MEMBERS:</td>
<td>£630</td>
<td>£720</td>
</tr>
<tr>
<td>CONCESSIONS:</td>
<td>£230</td>
<td>£230</td>
</tr>
<tr>
<td>(Retired/Students etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.B. Please note the registration fee includes conference papers, lunch, refreshments,
reception, and VAT

CONFERENCE PAPERS
Conference papers will also be for sale after the event in both print and CD ROM
versions. The CD ROM will also include presentations from the conference where
available. If you would like to order copies, please fill in the relevant sections.

If I am unable to attend the conference, please reserve me _______ set(s) of Conference
Papers @ £95 (members) £115 (non-members) £115 (non-members)

CD ROM @ £95 (members) £115 (non-members) £115 (non-members)

For a full list of the Institution’s Conference papers, CD-Rom’s and other technical
publications please contact Ellie Jones, Marketing Assistant on +44 (0)20 7235 4622 or
via e-mail at: publications@rina.org.uk

CANCELLATION CHARGES
The RINA regrets that the following charges will be made in the event of cancellation:
£100 if received by 3rd November 2004 and £200 thereafter. Cancellations received
within 24 hours of the event, or in the case of non-attendance will not be refunded.
Delegates may be substituted; this must be sent in writing and confirmed with the
Conference Organiser.

DATA PROTECTION
Personal data is gathered in accordance with the Data Protection Act 1998. Your
details may be passed to other companies who wish to communicate with you offers
related to your business activities. Please tick the box below where appropriate:

Please do not pass my information to any third party.
I wish to receive email notification of future RINA events or publications

If you have any questions regarding this or any other RINA event please contact
Sophie Armitage (Conference Organiser), on:
Tel: +44 (0)20 7201 2401
Fax: +44 (0)20 7259 5912
E-Mail: sarmitage@rina.org.uk
www.rina.org.uk/events