Training Course on

Risk-Based Ship Design

7th and 8th June 2005

To be held at

The Ship Stability Research Centre
Universities of Glasgow and Strathclyde
Glasgow, United Kingdom

Organised by

SAFER EURORO II
Thematic Network

An EC-Funded FP5 GROWTH Project

Risk-Based Ship Design

Risk-based ship design aims at a systematic integration of risk analysis in the design process with prevention/reduction of risk (to life, property and the environment) embedded as a design objective, alongside standard design objectives (such as speed, cargo capacity, passenger capacity, and turnaround times).

This implies the adoption of a methodology that links risk prevention/reduction measures to ship performance and cost by using relevant tools to address ship design and operation.

This is a radical shift from the current treatment of safety (risk) as a design constraint imposed by rules and regulations. Risk-based ship design offers freedom to the designer to choose/identify optimal solutions to meet safety targets. For risk-based ship design to be realised, safety must be treated as a life cycle issue, which in turn implies focus on risk-based operation and need for a risk-based regulatory framework.

Expected Benefits

Risk-based ship design is expected to satisfy the European maritime industries' need to deliver ever more innovative and competitive transport solutions to their customers as well as a wider societal need for increasingly safer transport. Risk-based ship design is expected to deliver the foundation for the EU maritime sector to sustain world-leadership on safety-critical and knowledge-intensive ships; maritime services; products; equipment and related software.

Course Description

This two-day course starts with a review of the founding principles of risk-based approaches in ship design, operation and regulation. The risk-based ship design concept, methodology and framework will be presented, followed by lectures on risk and safety assessment methods, risk acceptance criteria and an outlook of the future approval process for ships designed using risk-based approaches.

The second day of the course is devoted to practical applications of risk-based ship design methodology. Issues such as collision and grounding, crashworthiness, damage stability and survivability, fire and smoke propagation and evacuation will be elaborated upon detailing the theoretical background of each of these areas and demonstrating their applicability to specific case studies.

Organisation and Venue

The course is organised as part of the activities of the EC-funded Thematic Network SAFER EURORO II (An Integrated Approach to Safe European Ro-Ro Ferry Design), G3RT-CT-2001-05050.

Lectures will take place at the premises of the Ship Stability Research Centre, Department of Naval Architecture and Marine Engineering of the Universities of Glasgow and Strathclyde (Henry Dyer Building, University of Strathclyde, 100 Montrose Street, Glasgow G4 0LZ, United Kingdom).

Course Schedule

Tuesday 7 June 2005

Risk-Based Design Concept, Methodology and Framework; Professor Dracos Vassalos, Universities of Glasgow and Strathclyde, UK

- Motivation for Risk-Based Design
- Transition from traditional design to Risk-Based Design
- Elements of Risk-Based Design and Design Integration
- Application Examples

Safety Assessment and Risk Acceptance Criteria; Dr Rolf Skjong, Det Norske Veritas, Norway

- Background from other industries
- Elements of safety assessments and definitions
- IMO work (past and present, FSA guidelines and applications, future outlook)
- FSA in more detail (with example: navigation)
- Acceptance criteria (why?, how to derive and update? examples)

Outlook of Future Approval for Risk-Based Design Ships; Dr Pierre C. Sames, Germanischer Lloyd, Germany

- Background and anticipated need
- Elements of approval process for Risk-Based Design ships and definitions
- Current approval following SOLAS II.2/17
- Integration into the IMO regulatory framework
- Outline of future approval process
- Expected early applications
- Expected effects on operation

Wednesday 8 June 2005

Collision and Grounding; Professor Peter Friis Hansen, Technical University of Denmark

- Framework for risk-based evaluation of navigational safety
- Tools for assessing the frequency of collision and grounding events
- Structural damage assessment
- Assessment of economic loss of oil spills
- Application example (evaluation of the navigational safety in West Baltic)

Crashworthiness; Mr Alex Vredeveldt, TNO, The Netherlands

- Assessment of crashworthiness of ship structures
- Crashworthiness and safety assessment
- Relation of crashworthiness with damage survivability
- Exploiting crashworthiness within the existing SOLAS framework
- An application example

Damage Stability and Survivability; Dr Andrzej Jasionowski, Universities of Glasgow and Strathclyde, UK

- Overview of the state-of-the-art in assessing damage stability of ships
- Interpretations of risk-based methodologies pertinent to damage stability
- Applicability and limitations of existing analytical tools for risk assessment
- Application examples, future challenges and the way ahead

Fire / Smoke and Evacuation; Dr Fernando Caldeira-Saraiva, British Maritime Technology, UK

- Fire simulation (zone and field models)
- Evacuation models (configurational, environmental, procedural and behavioural aspects)
- Availability of data and model validation
- Circulation models

Participants

The training course is designed to attract professionals from a broad spectrum of organisations within the maritime industry, including: designers, operators, personnel from regulatory authorities, government administration and classification societies, researchers and educators.

Registration

Please complete the accompanying registration form and submit to:

Dr Dimitris Konovessis
NAME-SSRC
Glasgow & Strathclyde Universities
100 Montrose Street
Glasgow G4 0LZ, United Kingdom

E-mail: d.konovessis@na-me.ac.uk

The course is designed to accommodate 40 participants. The registration fee includes lecture notes, coffee, lunch and an evening dinner. The registration fee of €800 (€500 for additional participants from the same company) is payable by company invoice, cheque or bank transfer.

City of Glasgow

Information on the city of Glasgow can be found at http://www.glasgow.gov.uk/en/visitors, and on the University of Strathclyde web page http://www.strath.ac.uk/visitor.