COMMITTEE MANDATE
Concern for structural design methods for naval ships including uncertainties in modeling techniques. Consideration shall be given to applicability of classification society rules to design of naval ships. Particular attention shall be given to those aspects that differentiate naval ship design from merchant ship design such as blast loading, vulnerability analysis and others, as appropriate.

COMMITTEE MEMBERS
Chairman: G Ashe
T Bosman
F Cheng
S Ferraris
P Kaeding
H Kaneko
D McGeorge
M Norwood
J Park
R Dow
L Ferreiro

KEYWORDS
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INTRODUCTION

Structural design is the oldest and most fundamental of the technical disciplines which together comprise the art of naval architecture. Over the past decades, structural design as it is applied to naval ships has diverged from and converged with that for commercial ships for a variety of reasons. In recent times, resource constraints have made it necessary for governments around the world to seek out alternatives to established practices in many areas including naval vessel acquisition. Fortunately, the convergence of commercial and naval design practices has made it possible to look at commercial processes. One development arising from these conditions is that navies have increasingly turned to the application of classification society processes and resources to help them in establishing and applying technical criteria for naval ship design and construction including those related to the ship’s structure. It is the purpose of this Committee to explore the current state of this general trend as it relates to ship structures.

CONCLUSIONS

We have explored those aspects of naval structural design which make it unique in the field of naval architecture and attempted to outline the considerations and approaches currently in use. We can see how the state of the art and the power of computing tools currently available have made it possible to converge many of the techniques and processes for naval structural design with those for commercial vessels. This is especially welcome in light of the current necessity for most governments to leverage their naval ship acquisition programs with commercial processes. A part of this is the ability to develop and apply classification society Rules which address the criteria relevant to the naval vessel mission and operational expectations. In adopting this approach, navies must work closely with classification society partners both in the development and application of such criteria. In the specific area of ship structures, this approach offers a number of benefits:

- a harmonized certification approach, from design phase to delivery, including surveillance during construction;
- an established method for updating of the criteria to be applied;
- a closer link with International Organizations facilitating technology transfer between naval and commercial communities;
- an established core process for inspection and maintenance planning for the through-life logistic support of vessels;
- the adoption of civil standards, wherever possible, as well as COTS products and solutions, to contain global costs and ease the logistic support with no impact on reliability and overall quality.

RECOMMENDATIONS

It is recommended that this committee continue concentrating on

- an actual design study comparing application of several Rule sets to a structure.

- reference to the ongoing activities towards a Naval Ship Code and its possible impact on structural design (for example the probabilistic approach to flooding and consequent evaluation of damaged stability and vessel survivability).