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HARMONISATION OF POLAR SHIPPING RULES NEW PROSPECTS FOR THE MARITIME INDUSTRY

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ABSTRACT

In a period when there is a strong feeling in the industry that attention should be focused on the implementation of existing Rules rather than the introduction of new requirements, a draft IMO International Code of Safety for Ships in Polar Waters and associated draft IACS Unified Requirements for Polar Ships are under consideration.

The purpose of this paper is to describe the process of Harmonisation of Polar Shipping Rules and to advise on the consequences of the forthcoming IMO International Code of Safety for Ships in Polar Waters and proposed IACS Unified Requirements for Polar Ships.

1. INTRODUCTION

Whilst transportation of goods by sea in the polar regions is a fraction of the worldscale shipping activities, the polar regions hold considerable amount of valuable resources and act as lifelines for many communities.

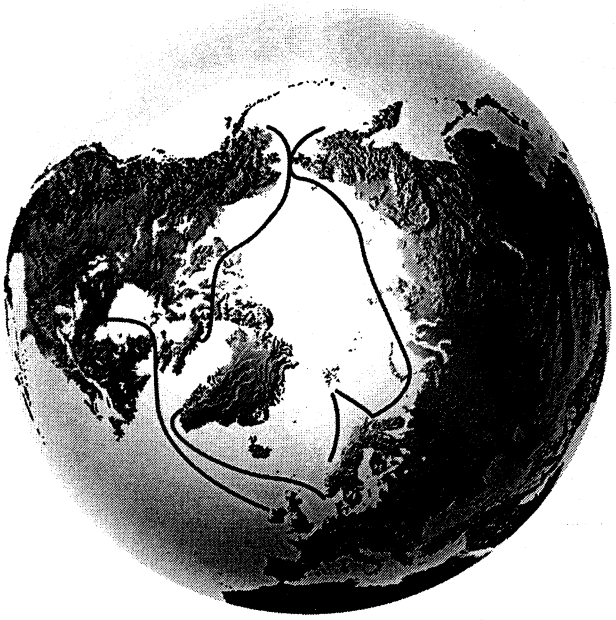

Figure 1. Potential transit routes in the Northern Hemisphere

Increasingly, the seas in the Polar Regions are seen as potential transit routes; not only for local resources, but also between the markets in Europe, the Far East, and North America.

Mining projects can be witnessed in the Canadian Arctic, whilst new Offshore projects in the Russian Arctic are becoming available to foreign investors. Research activities in the Russian Arctic have intensified. Tourism interests in polar waters are increasing, though tourism itself is still very much a niche market.

The expansion of activities in the Polar Regions brings the need to safeguard life, property and the environment in those regions.

Safety is about management of risks. In today's competitive maritime industry, the correct management of risks would be one major characteristic of a successful shipping company.

It is no surprise then, that assessment of polar ships through international regulations not only becomes the logical mechanism for managing the risks, it also becomes a useful tool for accomplishing efficient and safe polar operations within acceptable life cycle costs.

There are five main groups, which could generally be described as comprising the shipping industry; Research, Design, Construction, Operation and Management.

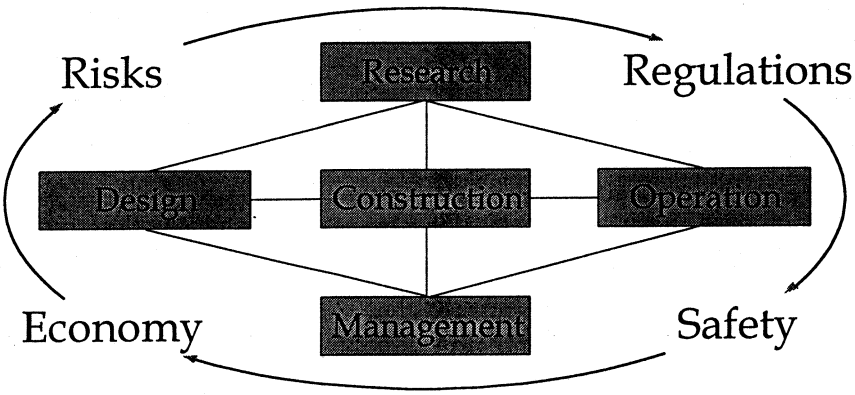

Figure 2. Representation of the shipping industry activities

It is only when these groups achieve understanding of the problems associated with navigation in ice conditions and develop effective interaction that efficient and safe ship operation within acceptable life cycle costs can be accomplished.

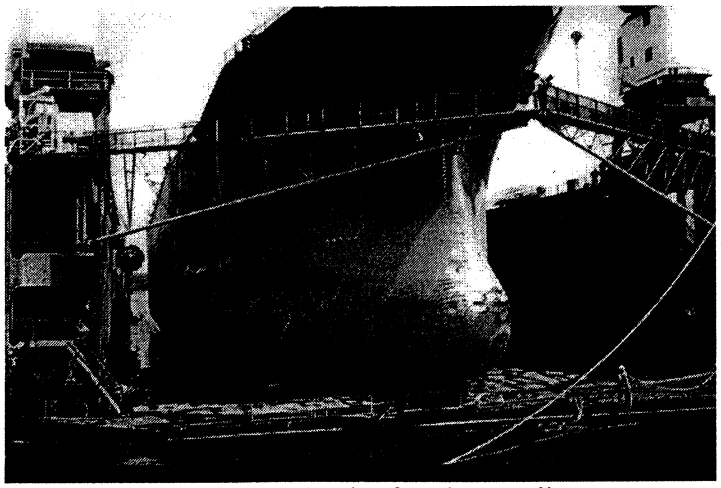

Figure 3. Lack of understanding

The need for consistent evaluation of future shipping activities in the Polar Regions has initiated the harmonisation of polar shipping rules.

The rationale for undertaking the harmonisation work has been precautionary and proactive. Although there has been no single recent incident in polar waters causing major loss of life or pollution, there have been a series of minor incidents indicating a high level of risk. The consequences of major incidents in polar waters are likely to be uniquely dramatic.

2. PROCESS AND PROGRESS

Polar class ships require robust construction capable of withstanding harsh ice conditions. The major classification societies and National Administrations have their own rules and regulations which together cover construction, maintenance and operation of polar ships.

Figure 4. Typical harsh ice environment

In order to unify these rules and regulations a harmonising process was commenced, under an IMO umbrella, in 1993. An important realisation is that all this work requires worldwide utilisation of the relevant technical expertise and service experience obtained from existing ships navigating in Polar Regions. To that effect, certain National Administrations, Research Institutes, Universities, Consultants, Operators and IACS Member Societies have grouped together and contributed to progress the harmonisation process.

As the work progressed the development plan for the harmonised rules and regulations has been refined. The participating National Administrations are responsible for developing the draft for an IMO International Code of Safety for Ships Navigating in Polar Waters, called hereafter as Polar Code; whilst IACS is responsible for developing IACS Unified Requirements for Polar Ships.

Compliance with the rules and regulations of a recognised classification society according to IMO Resolution A.739(18) and the International Conventions ensures compliance with internationally recognised standards for ship safety and marine pollution prevention. The rules and regulations of the recognised classification societies (incorporating IACS Unified Requirements where appropriate) and the International Conventions are developed separately, but they have an extremely important relationship.

The harmonisation process is maintaining this essential and sensitive relationship, i.e. the non-inclusion of detailed requirements for ship structures and shipboard engineering systems of Polar Ships in the proposed draft Polar Code.

The draft Polar Code was submitted to the IMO DE 41 meeting in March 1998, for consideration. The major decision taken by the Sub-Committee was to remove all reference to it becoming a mandatory requirement. Progress in the development of the draft Polar Code was reported to the IMO DE42 meeting in March 1999. At the IMO MSC71 meeting, in May 1999, the IMO delegates debated the applicability, the non-mandatory nature of the Code and its requirements with respect to existing SOLAS requirements. It is not yet clear whether the Polar Code will be applicable to Antarctica waters. Further work on the draft Polar Code is likely to be carried out by the various IMO sub-committees before passing through future MSC and Assembly meetings. The latest version of the Polar Code can be seen at the web-site "www.tc.gc.ca/polarcode/", which has been set-up by Transport Canada on behalf of the IMO Correspondence Group on the Development of the Code.

Regarding the proposed IACS Unified Requirements for Polar Ships, it is intended that by the end of 1999, draft Unified Requirements for structures and machinery will be developed. During 2000, it is anticipated that the necessary review and amendments will be carried out and approval given by IACS Council. It is then possible that by around 2001-2, the Unified Requirements will be implemented by IACS Members through their rules.

3. INTERNATIONAL CODE OF SAFETY FOR SHIPS IN POLAR WATERS

The proposed Code aims to ensure the safety of navigation and the prevention of pollution from ship operations in polar waters. It is recognised that safe operation in polar waters requires an integrated approach; involving design and outfitting of ships to meet the challenges of the operating conditions, their crewing by sufficient numbers of suitably qualified personnel, and their operation in a planned and prudent manner.

The Code will address the fact that the polar environment imposes additional demands on ship systems, including navigation, communications, lifesaving, main and auxiliary machinery, etc. It will emphasise the need to ensure that all ship systems are capable of functioning effectively under the anticipated operating conditions and providing adequate levels of safety in accident and emergency situations.

In addition, the Code will recognise that safe operation in polar conditions requires specific attention to human factors including training and operational procedures.

The draft Code consists principally of three parts: -

- Part A - Construction (Structures, Subdivision and Stability, Accommodation and Escape Measures, Directional Control Systems, Anchoring and Towing Arrangements, Main Machinery, Auxiliary Machinery, Electrical Installations)

- Part B - Equipment (Fire Safety, Life-Saving Appliances and Survival, Navigational Equipment, Communications)
- Part C - Operations (Operational Requirements, Crewing, Emergency Equipment, Environmental Protection and Damage Control)

The draft Code is not being developed as a stand-alone document, but rather as a supplement to other existing IMO Conventions, including SOLAS, MARPOL and STCW. The additional requirements expressed in the Code have been developed to mitigate the additional risk imposed on shipping due to the harsh environmental and climatic conditions found in the Polar Regions.

It should be appreciated that international regulations are developed on the basis of the following: -

- Economical principles (the drive behind every commercial shipping activity)
- Technological capabilities (the ability to drive the activity)
- Social implications (the acceptance of consequences and responsibilities)

In that respect, the draft Code is intended to promote responsible polar operations; therefore its provisions should demonstrate a positive cost/benefit balance. An impact assessment study has been initiated by the Canadian Administration, drawing on data provided by other interested parties. Upon completion, the results of this study will be provided to IMO for consideration in finalising certain provisions of the Code.

Whilst there are several outstanding issues, an attempt has been made to discuss concerns on some of these: -

- Applicability: It has been decided by IMO that the Polar Code will not be mandatory but it will serve as guidelines and recommendations. Moreover, it is unclear whether the Polar Code will be applicable for navigation in Antarctica waters.
- Grandfathering: As the Code will not be mandatory there is a risk that equivalencies granted to existing ships could no longer be given consistently by the National Administrations.
- Class notation/Descriptive note: Classification Societies can issue a polar class notation only when a ship fully complies with the polar class requirements, as implemented in their rules. Equivalency can be given by the National Administration with whom the ship is registered and/or by the National Administration within whose territorial jurisdiction the ship is intended to operate. Classification Societies cannot issue equivalency for existing ice class ships. If requested by the Shipowner, a sentence can be added to the descriptive note in the Registry Book to the effect that the ship is considered equivalent to a Polar Class according to the National Administration with whom the ship is registered. However, it is questionable whether this equivalency will be acceptable to another National Administration.
- Treatment of non-Polar Class ships: Non-Polar Class ships navigating in ice-free "polar waters" –as defined in the draft Polar Code- may or may not be required to comply with Parts B and C of the Code, whilst non-Polar Class ships navigating in ice-free areas which may be excluded from the present definition of "polar waters" – according to MSC71- will not be required to comply with Parts B and C of the Code. Existing ice class ships, such as 1A and 1AS, may be required to comply with Parts B and C at the discretion of the National Administration.

- Pollutants: For Polar Class ships PC6 and PC7, pollutants may be allowed to be carried in double bottom tanks aft of midship and inboard of the turn of the bilge. There appears to be an inconsistency since the risk of grounding for a PC5 is just the same as for a PC6 or PC7.
- Damaged Stability and Subdivision: The present draft criteria appear to be vague. The draft Polar Code does not take into consideration the partial loss of structural members and does not consider the survivability of a damaged ship. The latter could be critical if the ship would have to proceed through seas where wave heights in excess of those experienced at the time of the ice damage may be experienced during transit to a safe haven.
- Powering: No agreement has been reached for a common standard. If a National Administration imposes its own powering requirements, this could result in Polar Class ships not being accepted by another National Administration.
- Permit to operate: No agreement has been reached for a common standard and this could imply different perceptions of the operating capability of the polar class ships by different National Administrations. This will lead to different ice regime strategies imposed by National Administrations.

4. PROPOSED IACS UNIFIED REQUIREMENTS FOR POLAR SHIPS

Part A of the draft Polar Code, sets out the general requirements for ice-capable ships in seven Polar Classes (Table 1); these being the ships -commercial and icebreaker type vessels- whose strength, propulsion machinery, and other features allow them to transit ice-covered waters with reasonable safety.

Table 1. Polar Classes

Polar Class	General Description
PC1	Year-round operation in all Polar Waters
PC2	Year-round operation in moderate multi-year ice conditions
PC3	Year-round operation in second-year ice with old ice inclusions
PC4	Year-round operation in thick first-year ice with old ice inclusions
PC5	Year-round operation in medium first-year ice with old ice inclusions
PC6	Summer/Autumn operation in medium first-year ice with old ice inclusions
PC7	Summer/Autumn operation in thin first-year ice with old ice inclusions

Detailed requirements for such ships are currently being drafted in parallel to the Polar Code, through an IACS initiative.

The development of the proposed IACS Unified Requirements for Polar Ships, necessitated tasks for Structures and Machinery which are listed in Table 2.

Table 2. Tasks for Structures and Machinery

Tasks for Structures	Hull Areas, Materials and Grades of Steel, Abrasion and Corrosion, Longitudinal Strength, Plating and Framing, Appendages, Direct Calculation Procedures
Tasks for Machinery	Propeller-Ice Interaction Forces, Propeller Strength Procedures, Shafting, Shaft Bearings and Seals, Gears, Steering Systems, Sea Water Cooling Systems, Machinery Accelerations

Compliance with the proposed IACS Unified Requirements for Polar Ships when adopted and implemented will represent an acceptable solution to provisions of the draft Code relating to the ship's hull and machinery. The IACS Unified Requirements for Polar Ships are intended to form part of the basis for issuing a document of compliance with the Code.

5. BENEFICIARIES OF NEW POLAR CLASS SHIPS

It is considered important that we should aim to identify the beneficiaries of a ship which will be constructed, maintained and operated in accordance with the rules and regulations of a recognised classification society (incorporating the proposed IACS Unified Requirements for Polar Ships) and the IMO Polar Code.

The application of the statutory and classification regulations will provide the essential level playing field, from the early stages of ship design, tendering, and construction and to the in-service stages of maintenance and competition, without compromising safety.

The beneficiaries of the forthcoming Polar Class Ship are considered to be: -

- The Shipowner (who can embark on his business venture with his ship appropriately certified)
- The Shipbuilder (who has competed, won and fulfilled his contract)
- The Classification Society (which has a basis for further in-service experience which can be incorporated into the future rule making process)
- The Flag State (which has a basis for further statutory certification)
- The Underwriter (who has an independent attestation as to the basis upon which the risk was determined)
- The Financier (who has evidence as to the relative value and marketability of the asset)
- The Charterer (who has evidence of the probability that the vessel can perform the service as required by the charter party agreement)
- Cargo Interests (who have a basis upon which to accept the suitability of the vessel for carriage of goods)
- The Port State (which has an understanding as to the basic structural and mechanical attributes of the vessel)

The two most important participants in the venture have not been mentioned; namely the crew and the public at risk. These two parties, who are unwittingly at risk in the venture, are the indirect beneficiaries and undoubtedly are the most important recipients of this assessment of suitability for navigation in polar waters.

6. CONCLUSION

The last decade has seen an expansion of the offshore and shipping related polar activities particularly in the Arctic. Research activities in design, hull and machinery strength, shipboard systems and other items, carried out by international research agencies, have intensified. Operation in the Arctic and Antarctic regions could prove very rewarding, thus attracting more interest from the Operators.

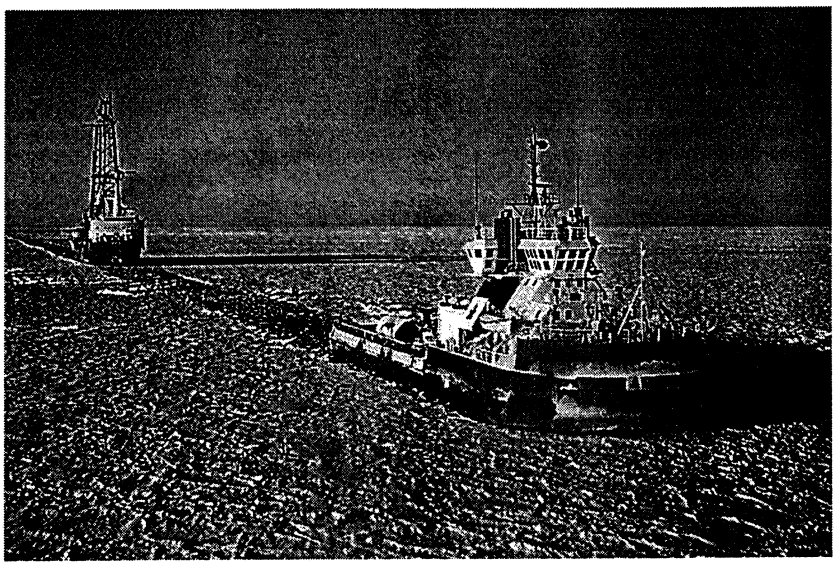

Figure 5. Operations in Polar Regions

Ongoing rationalisation and streamlining of the international polar shipping requirements will enable the industry to provide a more efficient response to Operators' demands.

Whilst the international regulations for polar shipping restructure to meet the challenges arising from commercial pressures, the regulatory bodies are preparing to meet the changing needs.

The UK Merchant Shipping Notice "Navigation in Ice", 1983, states "... Ice should be regarded as a considerable obstacle to a vessel's progress and great care must be exercised. Before encountering ice in any form, careful voyage planning must be observed. ...". What this Notice fails to identify, for obvious reasons, is that political and economical obstacles may remain unmoved.

In the last few years considerable progress has been achieved. Those involved in the process of harmonisation of polar shipping rules have speeded up their response to all issues affecting polar shipping activities, at the same time becoming more open and transparent. It is mainly due to the Russian and Canadian efforts that we are witnessing true signs of progress whilst retaining the underlying intent to preserve the environment, life and property at sea.

Maritime safety is undoubtedly a co-operative venture. The Harmonisation of Polar Shipping Rules reflects safety as envisaged by those currently developing the Polar Code and the IACS Unified Requirements for Polar Ships.

The Harmonisation of Polar Shipping Rules process aims to ensure that ships constructed, maintained and operated in harsh Polar Regions, are able to meet future demands.