



SUB-COMMITTEE ON SHIP DESIGN AND
EQUIPMENT
52nd session
Agenda item 9

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GUIDELINES FOR SHIPS OPERATING IN ARCTIC ICE-COVERED WATERS

Comment on the report of the Correspondence Group

Submitted by CLIA

SUMMARY

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|------------------------------------|---|
| <i>Executive summary:</i> | Recognizing the broad spectrum of vessels and marine operations in the Arctic and Antarctic regions, and that one size will not fit all of these, CLIA proposes a tiered approach to development of the proposed Guidelines based on risk assessment as opposed to simply amending the existing text. |
| <i>Strategic direction:</i> | 5 |
| <i>High-level action:</i> | 5.2 |
| <i>Planned output:</i> | 5.2.1.2 |
| <i>Action to be taken:</i> | Paragraph 10 |
| <i>Related document:</i> | DE 52/9/1 |

1 This document is submitted in accordance with the provisions of paragraph 4.10.5 of the Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environmental Protection Committee and their subsidiary bodies (MSC-MEPC.1/Circ.2) and comments on the report of the Correspondence Group on Guidelines for Ships operating in Arctic Ice-Covered Waters.

2 CLIA has reviewed the report of the Correspondence Group and appreciates the work of the coordinator and members. CLIA submitted comments to the Correspondence Group suggesting that the Guidelines be amended to include a tiered approach based on the vessel type, wind and sea state expected to be encountered, temperatures expected to be encountered and various other factors. While the Correspondence Group coordinator included the CLIA comments as an annex, we take this opportunity to reiterate the proposal and expand on the concept of a tiered approach based on risk assessment.

3 Polar operations are undertaken by a broad spectrum of vessels carrying out a broad spectrum of activities and missions. These types of vessels and associated operations include not only passenger vessels but also oil and chemical tank vessels, break bulk cargo vessels, containerized cargo vessels; exploration vessels and drill ships; offshore supply vessels; research vessels; and fishing vessels.

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4 The Organization differentiates the safety needs of the various types of vessels and is embracing risk-based approaches to achieving safety such as in the probabilistic damage stability requirements and goal-based design standards. CLIA proposes guidelines for tiers of control and mitigation necessary to limit the risk arising from Polar ice operations. This would utilize a qualitative risk-based approach, taking account of relevant and significant factors rather than a blanket deterministic “one size fits all” requirement.

5 CLIA believes that the method will need to take account of the significant factors that influence the risk of operations in ice-covered waters (making maximum use of existing knowledge and information). However, the output or tiered requirements from the method must be sufficiently simple to allow operators to clearly understand and implement the controls and mitigations necessary to control the risk to a tolerable level.

6 In order to achieve the required output, the significant factors must be grouped into a structure that allows the required controls and mitigations to be listed in a table. CLIA proposes three general groupings:

| Group | Characterized by (examples only) |
|----------------------|---|
| Area of Operation | <ul style="list-style-type: none"> - Distance from, and level of, assistance. - Adequacy of charts. - Ice conditions expected to be encountered (a). - Sea state and wind conditions (a). |
| Operational Profile | <ul style="list-style-type: none"> - Ice conditions expected to be encountered (a). - Sea state and wind conditions (a). - Temperature. |
| Ship Characteristics | <ul style="list-style-type: none"> - Vessel size and type and number of persons carried. |

- (a) Note that the time of year will affect the characteristics within an area of operation and will influence the controls and mitigations necessary on a particular type of ship so as to control the risk to a tolerable level.

Vessel design survival characteristics such as: double bottoms, subdivision characteristics and crew training and experience in polar operations would be treated as mitigations.

7 Key steps in method development would be:

- .1 Identify the groupings necessary to provide the most useable output.
- .2 Develop the factors and characteristics within each group.
- .3 Review the current risk controls, best practices and mitigations applicable to operations in ice-covered waters.
- .4 Conduct a qualitative risk-based review of group combinations (e.g., ship characteristics vs. area of operation) to determine the appropriate controls and mitigations for each combination.
- .5 Prepare final guidance.

8 A proposal for the form of output is attached as an annex. CLIA envisions that the most useful output would be a table (as shown) listing the controls and mitigations applicable to a particular vessel type for the defined areas. In this initial development, CLIA has produced the table for cruise vessels only. The method would then be made available through the Sub-Committee for application across the spectrum of vessels for the full range of activities and missions conducted within Polar regions. Population of the table using the method would need to be completed for each vessel type by relevant experts.

9 CLIA also notes that a given mitigating element may vary with differing operations. For example, the “ice navigator” for summer operations non-ice operations in coastal waters would not need the same background and qualifications as an ice navigator on an ice class ship that is expecting to operate in heavy ice in winter conditions which would require actual ice breaker experience.

Action requested of the Sub-Committee

10 The Sub-Committee is invited to review these comments and proposal and to take action as appropriate.

ANNEX

**EXAMPLE OUTPUT FROM THE RISK-BASED APPROACH TO DETERMINE
APPROPRIATE CONTROLS AND MITIGATIONS FOR OPERATION OF CRUISE
SHIPS IN POLAR WATERS**

| | | Tiered Control and Mitigation Requirements for Operation of Cruise Ships in Polar Waters | | |
|---------------------|---|---|---|---|
| | | Local Summer Season Coastal Operations | Local Summer Season Inshore Operations | Local Non Summer Season Operations |
| | | Operational Profile | | |
| Area Profile | Ice Class Operations – Remote Areas | [Examples to be developed] | [to be developed] 1. [100% lifeboats 2. [enclosed life boats] | OPERATION PROHIBITED |
| | Ice Class Operations – Poor Charts | [Examples to be developed] | [to be developed] 1. [100% lifeboats] | OPERATION PROHIBITED |
| | Ice Class Operations – Good Charts | [Examples to be developed] | [to be developed] | OPERATION PROHIBITED |
| | Non Ice Class Operations – Remote Areas | 1. Ice Pilot(s) on board. 2. Formal passage planning with Ice Pilot. 3. Deck Officer Training for broken ice operations. 4. Senior Deck Officers with previous Polar experience. 5. Secondary navigation undertaken to check position. 6. Speed of ship reduced in shallow/icy waters. 7. Extra lookouts at all times. 8. Watertight doors closed at all times. 9. TPA suits carried in lifeboats. 10. Additional stocks of critical consumables. | [same as column one] [plus others to be developed] | OPERATION PROHIBITED |
| | Non Ice Class Operations – Poor Charts * “Icy” waters to be defined | 1. Ice Pilot(s) on board. 2. Formal passage planning with Ice Pilot. 3. Prohibited operational zones. [uncharted Areas?] 4. Deck Officer Training for broken ice operations. 5. Senior Deck Officers with previous Polar experience. 6. Secondary navigation undertaken to check position. 7. Reduced speed in shallow/icy* waters. 8. Extra lookouts at all times. 9. Watertight doors closed at all times. 10. TPA suits carried in lifeboats. 11. Additional stocks of critical consumables. | [Same as column one] [plus others to be developed] | OPERATION PROHIBITED |
| | Non Ice Class Operations – Good Charts | 1. Ice Pilot(s) on board. 2. Deck Officer Training for broken ice operations. 3. Secondary navigation undertaken to check position. 4. Reduced speed in shallow/icy* waters 5. Watertight doors closed at all times. 6. TPA suits carried in lifeboats. 7. Additional stocks of critical consumables. | [same as column one] | OPERATION PROHIBITED |

Note: Coastal operations are meant to be those of a typical large cruise ship. Inshore operations are those of a small or expedition ship.