

**DEVELOPMENT OF OPTIONS TO IMPROVE EFFECT ON SHIP DESIGN AND  
SAFETY OF THE 1969 TM CONVENTION**

**Report of the Correspondence Group**

**Submitted by the United States**

**SUMMARY**

**Executive summary:** This document provides the Correspondence Group's report on the work to further develop and finalize options to improve the effect on ship design and safety of the 1969 TM Convention.

**Strategic direction:** 2

**High-level action:** 2.1.1

**Planned output:** 2.1.1.2

**Action to be taken:** Paragraph XXX [this is corresponding paragraph of this document]

**Related documents:** SLF 48/12; SLF 50/19, SLF 50/6/1; SLF 51/17 section 6, SLF 51/6, SLF 51/6/1; MSC 85/23/6; MSC 85/23/6/Corr.1; STW 40/13/1, STW 40/14; STW 41/7/11; STW 41/16; SLF 52/5, SLF 52/5/1, SLF 52/5/2, SLF 52/5/3, SLF 52/19 section 5

**Introduction**

1 At its fifty-second session, the Sub-Committee re-established the Correspondence Group (CG) on the tonnage work programme item (SLF 52/19 paragraph 5.11) under the co-ordination of the United States, with the following terms of reference (TOR):

- .1 consider further and finalize the information provided in annex 2 to document SLF 52/5/2 (Report of the Correspondence Group) with respect to improving the effect of the 1969 TM Convention on the design of ships and in particular with reference to the effect on safety;
- .2 examine, in relation to the options listed in annex 2 to document SLF 52/5/2:
  - .1 improvement of crew accommodation; and
  - .2 the tonnage measurement of ships carrying deck cargoes and, in particular, of containerhips;
- .3 identify and investigate the benefits and disadvantages of the options listed in annex 2 to document SLF 52/5/2; and
- .4 submit a report to SLF 53.

2 Participants in the work of the group included representatives from the following Member States participated in the work of the correspondence group:

AUSTRALIA	MARSHALL ISLANDS
CANADA	MEXICO
CHINA	NETHERLANDS
DENMARK	NORWAY
FRANCE	PANAMA
GERMANY	REPUBLIC OF KOREA
INDIA	SPAIN
IRAN (ISLAMIC REPUBLIC OF)	SWEDEN
ITALY	UNITED KINGDOM
JAPAN	UNITED STATES

Participants in the group also included representatives of the following United Nations specialized agency:

INTERNATIONAL LABOUR ORGANIZATION (ILO)

And observers from the following non-governmental organizations:

INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES  
INTERNATIONAL CHAMBER OF SHIPPING  
INTERNATIONAL FEDERATION OF SHIP MASTERS' ASSOCIATIONS  
INTERNATIONAL MARINE CONTRACTORS ASSOCIATION  
INTERTANKO  
INTERNATIONAL TRANSPORT WORKERS' FEDERATION

3. This report describes the work done by the correspondence group as required under the terms of reference. In view of the 2011 target completion date (MSC 81/25, extended by MSC 85/26), the group included in its report a draft proposal for a new work programme item to implement its single recommended option.

### **Method of work**

4 **General** The group developed an action plan issued on 12 March 2010. The plan provided for three rounds of participant input and associated deadlines. A summary of the work conducted during each round follows.

.1 **Round 1 - Finalize Options and Variants** This round involved four separate elements focused on finalizing the four options identified in annex 2 to document SLF 52/5/2, identifying any variants, and collecting additional information. These elements are described individually as follows:

.1 **Option A questionnaire** The group developed and issued a questionnaire to collection additional information on Option A (Improve Integrity / Uniform Application), for which there was general agreement by the Sub-

Committee (SLF 52/19 paragraph 5.6). The group identified 28 separate issues for inclusion in this questionnaire for which specific text within the TM Convention or Circular TM.5/Circ.5 requires interpretation, or which otherwise should be addressed when expanding or updating Circular TM.5/Circ.5.

- .2 **Option B questionnaire** The group developed and issued a questionnaire for Option B (Promote Net Tonnage), which after Option A had received the most support during the Sub-Committees work (SLF 52/5/2 annex 2). This questionnaire focused on identifying specific points to be offered in support of this option, with the view to developing a circular or resolution to promote use of the net tonnage parameter.
  - .3 **Identification of variants** The group was invited to identify any variants of the existing options that would address deck cargo and crew accommodation concerns, per discussions in plenary at the fifty-second session of the Sub-Committee and the associated terms of reference (TOR, paragraphs 1.1 and 1.2 above).
  - .4 **Rules and interpretations** The group was invited to circulate copies of rules or interpretations which governments or organizations have developed and/or published.
- .2 **Round 2 - Evaluate Options and Variants** The group was invited to offer general comments on the options and variants under consideration, proposed approaches to implementing the options or variants, thoughts on additional questionnaires to address the variants, and proposed formats for comparison of options and variants. Identification of benefits and disadvantages of each option and variant was included in the Round 2 work. Based on the input received, the group developed an additional questionnaire addressing all options and variants, which was circulated to the group.
  - .3 **Round 3 - Develop Report to SLF 53** During this round, the report the Sub-Committee was developed and finalized. The coordinator developed and issued an initial draft report, with a three week comment period. After incorporating or otherwise resolving the comments, the coordinator issued a second draft report, with again a three week comment period. These comments were incorporated or similarly resolved when developing the final report.

5 **Tonnage CG website** To facilitate exchange of information among the group, the group created a website ([www.uscg.mil/imo/slf/tonnagecg](http://www.uscg.mil/imo/slf/tonnagecg)), incorporating elements of websites that have been used by the SLF Fishing Vessel Safety and Subdivision and Damage Stability correspondence groups. The group agreed to not post individual responses, in order to ensure comments were not taken out of context and to facilitate more open discussion on a topic involving subjectivity due to its complex nature. Instead, responses and summaries of responses were posted without specific attribution. In deference to privacy concerns, detailed information on participants (e.g., phone numbers and email addresses) was made available on the website only through a document which was password protected.

## Results Obtained by the Group

6 A discussion of the results obtained by the Group follows:

- .1 **Round 1 Results - Finalize Options and Variants** Nine participants representing six Member States and 3 non-governmental organizations provided input during this round. The results are summarized below.
  - .1 **Option A** Various degrees of support were expressed for the need for and impact of the 28 issues identified by the group. There was reasonably broad consensus that: 1) for seven of the issues, the impact on the gross and/or net tonnage assignments of affected ships was moderate to high, 2) for six of the issues, the effect on ship design, safety, and/or crew accommodation on ships of various types was large, and 3) for eleven of the issues, the overall importance of resolving the issue was moderate to high.
  - .2 **Option B** Overall, consensus was lacking regarding the extent to which net tonnage was used for tonnage duties and customs and harbor fees, as well as its usage for assessing corporate income taxes and vessel registration size limits. There was moderate to broad consensus that a circular or resolution, if developed, should highlight the fact that net tonnage: 1) reflects cargo spaces and number of passengers, 2) is used in assessing corporate income taxes and tonnage-based fees, 3) cannot be less than 0.3 times the gross tonnage, and 4) generally does not penalize crew space. There was little consensus that net tonnage should be promoted on the basis of improving ship safety through higher freeboards. There was moderate consensus that any circular or resolution should be issued at the Assembly level.
  - .3 **Consideration of variants** The group identified two variants for further evaluation, both of which were associated with Option D (Maritime Real Estate ( $GT_{MRE}$ ) Parameter). The first variant, labeled D1, is an alternate net tonnage parameter ( $NT_{DWT}$ ) based on deadweight tonnage volume.  $NT_{DWT}$  is calculated by substituting into the existing net tonnage formula a “maritime real estate” cargo volume that corresponds to the vessel’s deadweight tonnage. The second variant, labeled D2, is a third tonnage parameter ( $GT_{CbMRE}$ ) similar to  $GT_{MRE}$ .  $GT_{CbMRE}$  is calculated in the same manner as  $GT_{MRE}$ , except that the vessel’s block coefficient ( $C_b$ ) and a coefficient based on the vessel’s type are included in the formula.
  - .4 **Rules and interpretations** Several participants noted that related rules or interpretations had been issued, but unrestricted release of this material was authorized only in two cases. The releasable material was posted on the Tonnage CG website.

- .2 **Round 2 Results - Evaluate Options and Variants** Eleven participants representing nine Member States and two non-governmental organizations provided input during this round. The results are summarized below.
- .1 **Overall assessment summary** Annex 1 presents the group's overall assessment of the options provided in annex 2 of document SLF 52/5/2, and associated variants, as finalized by the group. The scores were compiled from questionnaire responses. The rankings are based on these scores, along with comments of group participants. One participant suggested that the group's final report include a draft work programme proposal for Option A, based on the support for this option expressed in the Round 1 questionnaires.
- .2 **Crew accommodation and deck cargoes** These issues were examined with respect to each and variant, and addressed separately in the questionnaire. Benefits and disadvantages related to both of these issues are addressed under the next paragraph. [possibly include a summary of the principal comments related to these two subjects]
- .3 **Benefits and disadvantages** Annex 2 provides a description of each option and variant as finalized by the group, along with a listing of associated benefits and disadvantages. The benefits and disadvantages were derived from earlier documents under this work programme item (SLF 52/5/2 and SLF 52/19), along with general comments and questionnaire responses circulated among the group.
- .4 **General comments of the group** General comments and concerns identified by the group during this round include the following:
- .1 **Combinations of options and variants** [include discussion of different combinations of options/variants offered by group, acknowledging that some could be, but that time did not permit further evaluation]
- .2 **Viability of gross tonnage related parameters** [capture the ideas expressed by a number of participants that the most viable options for basing fees are those that will give a number that looks like GT but that is higher than GT, and that will appear the ITC, due to widespread recognition and acceptance of GT.]
- .3 **Implementation considerations** [include a general discussion regarding increased viability of options that are easy to implement, both from a perspective of amending the convention, and administrative and cost burdens on Administrations and owners.]
- .4 [Include any others issues of significance under the TOR that were identified by the group in Round 1 / Round 2 and were not captured elsewhere in this report.]

- .3 **Additional Round 3 Work** Based on the considerable support expressed within the group for Option A, and the previous support for this approach as described in document SLF 52/19, the group developed and included as annex 3 a draft work programme item proposal to implement this option, for possible use by the Sub-Committee. In support of this proposal, the group additionally developed a listing of the 28 issues identified in association with Option A during the Round 1 work. This listing is included as annex 4, and offered to the Sub-Committee for its consideration.

### **Conclusions of the Group**

7 With broad consensus, the group concludes that of the four options and two variants examined under its TOR, Option A (Improve Integrity / Uniform Application) was the best option to address the ship design and safety concerns behind this work programme item without risk of unintended consequences. Of the remaining options and variants, the group concludes with moderate consensus that Option B (Promote Net Tonnage) is the next best option, but that the disadvantages outweigh the benefits of moving forward with this option. The consensus of the group, with some dissent, is no other options or variants warrant further development at this time.

### **Action requested of the Sub-Committee**

8 The Sub-Committee is invited to consider the information provided by the group in this report, and take action as appropriate.

\*\*\*

## ANNEX 1

## OVERALL ASSESSMENT SUMMARY

<b>Option A - Ensure integrity and uniform implementation of existing gross tonnage (GT) and net tonnage (NT) parameters</b>		
<i>Ranking</i>	<i>Scores</i>	<i>Description of Option/Variant</i>
1	7 Strongly Favor 2 Favor 2 Neutral	Expand and strengthen the recommendatory interpretations of Circular TM.5/Circ.5, <i>Interpretations of the Provisions of the International Convention on Tonnage Measurement of Ships, 1969</i> . Identify any associated amendments to the TM Convention along with implementation approaches.
<b>Option B - Promote use of existing net tonnage (NT) parameter</b>		
<i>Ranking</i>	<i>Scores</i>	<i>Description of Option/Variant</i>
2	4 Favor 5 Neutral 2 Disfavor	Promote use of the existing net tonnage parameter (NT) through issuance of a circular or resolution.
<b>Option C - Establish a new tonnage parameter: adjusted net tonnage (NT<sub>Adj</sub>)</b>		
<i>Ranking</i>	<i>Scores</i>	<i>Description of Option/Variant</i>
6	1 Neutral 6 Disfavor 4 Strongly Disfavor	Establish a new third tonnage parameter, NT <sub>Adj</sub> , that reflects the volume of deck cargo.
<b>Option D - Establish a new tonnage parameter: maritime real estate gross tonnage (GT<sub>MRE</sub>)</b>		
<i>Ranking</i>	<i>Scores</i>	<i>Description of Option/Variant</i>
5	1 Strongly Favor 1 Favor 1 Neutral 8 Strongly Disfavor	Establish a new third tonnage parameter, GT <sub>MRE</sub> , based on the ship's actual maritime real estate (product of the length, breadth, draught, and a single gross tonnage conversion factor derived from ships of all types).
<b>Variant D1 - Establish an alternate tonnage parameter: deadweight net tonnage (NT<sub>DWT</sub>)</b>		
<i>Ranking</i>	<i>Scores</i>	<i>Description of Option/Variant</i>
3	3 Favor 4 Disfavor 4 Strongly Disfavor	Establish an alternate net tonnage parameter, NT <sub>DWT</sub> , for use when NT <sub>DWT</sub> exceeds that of the existing net tonnage (NT) parameter. NT <sub>DWT</sub> is calculated by substituting the volume corresponding to the deadweight tonnage for the cargo volume (V <sub>c</sub> ) in the existing net tonnage (NT) formula.
<b>Variant D2 - Establish a new tonnage parameter: block coefficient maritime real estate gross tonnage GT<sub>CbMRE</sub></b>		
<i>Ranking</i>	<i>Scores</i>	<i>Description of Option/Variant</i>
4	3 Favor 3 Disfavor 5 Strongly Disfavor	Establish a new third tonnage parameter, GT <sub>CbMRE</sub> , based on the ship's block coefficient maritime real estate (product of the length, breadth, draught, block coefficient (C <sub>b</sub> ) and a gross tonnage conversion factor derived from ships of the same type).

## ANNEX 2

**BENEFITS AND DISADVANTAGES  
OF OPTIONS AND VARIANTS**

**Option A - Ensure integrity and uniform implementation of existing gross tonnage (GT) and net tonnage (NT) parameters**

This option seeks to ensure the integrity and uniform implementation of the existing GT (overall size) and net tonnage NT (useful capacity) volumetric parameters, by expanding and strengthening the interpretations of Tonnage Measurement Circular TM.5/Circ.5. It includes a review of treatment of semi-open spaces which cause the tonnage disparities between containerships of open and closed designs, as well as treatment of deck cargo. Under this option, possible amendments to the TM Convention related to the existing GT and NT parameters are identified and further developed, as necessary, along with appropriate approaches for their implementation (e.g., unanimous acceptance vs. conference).

<i>Benefits</i>	<i>Disadvantages</i>
<ol style="list-style-type: none"> <li>1. Improves ship design by allowing greater flexibility in meeting the tonnage rules through development of alternative approaches to existing interpretations (e.g., may reduce or eliminating tonnage disincentives for open-top containerships).</li> <li>2. Improves ship safety by helping to ensure ships are regulated to the appropriate size-based ship safety, crew accommodation, security and environmental protection standards.</li> <li>3. Provides an opportunity for a comprehensive review of the rules of the TM Convention, which has not been undertaken its inception in 1969.</li> <li>4. Establishes a mechanism to systematically identify gaps for which amendments of the Convention may be deemed necessary, and to evaluate implementation approaches.</li> <li>5. Facilitates international commerce through consistent application of the TM Convention by avoiding uncertainties in tonnage assignments when ships change flag, and provides for more consistent port State control actions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Will not be effective if the updated and expanded interpretations are not voluntarily implemented.</li> <li>2. Does not remove the incentive to minimize the size of crew accommodation spaces in order to reduce GT, for all ship types.</li> <li>3. Only partially addresses the underlying deck cargo concerns (e.g., the tonnage disincentive for carrying cargo in fully enclosed spaces remains, as is typically the case for RO-RO ships).</li> </ol>

<b>Option B - Promote use of the existing net tonnage (NT) parameter</b>	
<p>This option seeks to promote use of the existing net tonnage parameter (NT), in lieu of gross tonnage (GT), as the basis for assessing fees. NT is calculated using the ship's cargo space volume, number of passengers, and the ship's draft to depth ratio, but in no case may NT be less than 0.3 GT. Implementation of this option can be accomplished through issuance of an IMO circular or resolution at the appropriate level.</p>	
<b>Benefits</b>	<b>Disadvantages</b>
<ol style="list-style-type: none"> <li>1. Facilitates the incorporation of larger crew accommodation spaces and other beneficial non-revenue spaces (such as pollution control spaces) for many cargo ship designs.</li> <li>2. Encourages the design of ships of all kinds with greater freeboards (higher depth to draft ratios) that are, arguably, safer, due to favorable treatment under the NT formula.</li> </ol>	<ol style="list-style-type: none"> <li>1. Relies on voluntary implementation of NT as the basis for assessing fees, over which IMO has no control.</li> <li>2. Could drive designs in the direction of excessively high freeboards, leading to ungainly ships with excessive wind profiles that are difficult to steer.</li> <li>3. Does not remove the incentive to minimize the size of crew accommodation spaces for some ship types (e.g., towing vessels), where the NT is "capped" at 0.3 GT.</li> </ol>
<b>Option C - Establish a new tonnage parameter: adjusted net tonnage (NT<sub>Adj</sub>)</b>	
<p>This option seeks to establish a new net tonnage parameter, adjusted net tonnage (NT<sub>Adj</sub>), that reflects the volume of deck cargo and would be used as the basis for assessing fees. NT<sub>Adj</sub> is calculated by summing the maximum volume that will be occupied by deck cargo loads <u>and</u> the total volume of all enclosed cargo spaces (V<sub>c</sub>), and entering that sum into the existing net tonnage formula. Under this option, the method of calculating gross tonnage is unchanged (i.e., deck cargo volume remains "exempt" from gross tonnage (GT)).</p>	
<b>Benefits</b>	<b>Disadvantages</b>
<ol style="list-style-type: none"> <li>1. Facilitates the incorporation of larger enclosed cargo spaces, thereby avoiding undesirable design features such as reduced freeboards and excess deck cargo that are driven by the desire to minimize the vessel's GT.</li> </ol>	<ol style="list-style-type: none"> <li>1. Relies on voluntary implementation of NT<sub>Adj</sub> as the basis for assessing fees, over which IMO has no control.</li> <li>2. Involves difficult and complex calculations to establish the maximum volume associated with deck cargo loads. This can be problematic even for containerships, and is especially so for specialized ships such as heavy lift ships, hopper barges, and timber carriers.</li> <li>3. Introduces confusion and potential compliance difficulties arising from the owner's incentive to frequently change the NT<sub>Adj</sub> assignment for certain ships where deck cargo loads vary.</li> </ol>

	4 Does not remove the incentive to minimize the size of crew accommodation spaces for some ship types (e.g., towing vessels) where the NT is “capped” at 0.3 GT.
<p><b>Option D - Establish a new tonnage parameter: maritime real estate gross tonnage (GT<sub>MRE</sub>)</b></p> <p>This option seeks to establish an alternative parameter to gross tonnage (GT) or net tonnage (NT) for use in assessing fees. The alternate parameter, referred to as GT<sub>MRE</sub>, is based on the ship’s actual maritime real estate (i.e., volume of length x breadth x draught), modified by a factor such that the total aggregate GT<sub>MRE</sub> tonnage of the world’s shipping approximately equals the total aggregate gross tonnage (GT) of the world’s shipping. GT<sub>MRE</sub> effectively excludes the volume of all parts of the ship (freeboard, superstructures, deckhouses, hatches, sheer, etc) above the summer waterline that are included in GT.</p>	
<p><b><i>Benefits</i></b></p> <ol style="list-style-type: none"> <li>1. Facilitates the incorporation of larger enclosed cargo spaces, thereby avoiding undesirable design features such as reduced freeboards and excess deck cargo that are driven by the desire to avoid high fees based on GT.</li> <li>2. Facilitates the incorporation of larger crew accommodation spaces and other beneficial non-revenue spaces (such as pollution control spaces).</li> </ol>	<p><b><i>Disadvantages</i></b></p> <ol style="list-style-type: none"> <li>1. Relies on voluntary implementation of GT<sub>MRE</sub> as a basis for assessing fees, over which IMO has no control.</li> <li>2. Encourages high block coefficients and ungainly vessel proportions that may be detrimental to safety in terms of maneuverability, seakeeping, efficiency, and crew comfort/fatigue.</li> <li>3. Discourages certain novel designs (e.g., some high speed craft designs with large breadth measurements).</li> <li>4. Provides an incentive to minimize full load displacement (draught), which could lead to reduced scantlings, removal of ballast, and otherwise adversely affect ship design and safety.</li> </ol>

**Variant D1 - Establish an alternate tonnage parameter: deadweight net tonnage (NT<sub>DWT</sub>)**

This option seeks to establish an alternate net tonnage parameter reflective of a vessel's "seawater equivalent net tonnage" with the recommendation that fees be assessed using the larger of: 1) the alternate parameter, or 2) the existing net tonnage parameter. The alternate parameter, referred to as NT<sub>DWT</sub>, is calculated by substituting the volume associated with the vessel's deadweight tonnage (expressed in metric tons of seawater) for the total volume of all cargo spaces (V<sub>c</sub>) in the existing net tonnage formula. For some types of vessels, especially specialized ships like dockships which carry large volumes of above deck cargo relative to hull/superstructure volume, NT<sub>DWT</sub> may yield higher tonnages than the current parameter.

***Benefits***

***Disadvantages***

**Variant D2 - Establish a new tonnage parameter: block coefficient maritime real estate gross tonnage GT<sub>CbMRE</sub>**

This option seeks to establish an alternative parameter to gross or net tonnage for use in assessing fees. The alternate parameter, referred to as GT<sub>CbMRE</sub>, is based on the ship's actual maritime real estate (i.e., volume of length x breadth x draught) modified by both the vessel's block coefficient (C<sub>b</sub>) and a conversion factor calculated using maritime real estate values, block coefficients and gross tonnages for existing vessels of a similar type. It would be assigned to new vessels as an alternate for the GT parameter: current vessels would not be assigned GT<sub>CbMRE</sub>. Use of this parameter for assessing fees would lessen the gross tonnage "penalty" for the volume associated with larger crew accommodation spaces and enclosed cargo spaces (which in turn drive designs to favor larger deck cargo loads)..

***Benefits***

***Disadvantages***

**ANNEX 3****JUSTIFICATION FOR A PROPOSED NEW WORK PROGRAMME ITEM  
(in accordance with SLF 53/?)****ENSURE THE INTEGRITY AND UNIFORM IMPLEMENTATION OF THE EXISTING  
GROSS AND NET TONNAGE PARAMETERS****Scope of the proposal**

1. Under this proposal, the SLF Sub-Committee is tasked with updating, expanding and strengthening the interpretations of Circular TM.5/Circ.5, “Interpretations of the Provisions of the International Convention on Tonnage Measurement of Ships, 1969” to ensure the integrity and uniform implementation of the gross tonnage and net tonnage parameters. This work includes a review of the treatment of semi-open spaces such as those within open-top containerships, and other interpretations related to deck cargo. In conjunction with this work, the SLF Sub-Committee is to identify any changes to the 1969 Tonnage Measurement (TM) Convention that are considered necessary to ensure the integrity and uniform implementation of the gross tonnage and net tonnage parameters, along with associated recommended approaches to amending the Convention.

**Compelling need**

2. The need for this new work programme item stems from work performed by the SLF Sub-Committee between 2006 and 2011 under the work programme item “Development of Options to Improve the Design and Safety of the 1969 TM Convention”, which was assigned a high priority by the Maritime Safety Committee (MSC 81/25). The Sub-Committee developed this new proposed programme item as the best option, and identified a number of specific issues for which there was a need to establish or update interpretations of the TM Convention rules (SLF 53/5/? Annex ?). These issues include the disparate treatment of open-top containerships designs as opposed to conventional designs of similar cargo capacity, which underlies the original work programme item, and related issues associated with deck cargo loads. There is a compelling need for this new item, because of the widespread use of the gross and net tonnage parameters in applying important safety and other regulatory breakpoints and assessing taxes and other fees, coupled with gaps in interpretations created by the continuing evolution of ship designs since updated interpretation were last published in Circular TM.5/Circ.5 in 1994.

**Analysis of the issues involved, having regard to the costs to the maritime industry  
and global legislative and administrative burdens**

3. Under this proposal, the interpretations of Circular TM.5/Circ.5, which are recommendatory in nature, will be updated. As such, it will be up to each Administration as to the extent that these interpretations will be made binding, for current and future ships, and it is likely that most, if not all, of the recommended changes to the interpretations will not be retroactive, unless requested by the vessel owner. Should this work programme item lead the eventual implementation of amendments to the TM Convention that imposed additional binding

requirements, the cost or administrative or legal burden will be the same as for any implementation of amendments to IMO instruments.

### **Benefits which would accrue from the proposal**

4. Benefits include the following:

- 4.1 **Consistency of Application** As indicated in its preamble, the aim of the TM Convention is to “establish uniform principles and rules with respect to the determination of tonnage of ships engaged on international voyages”. This work will further that aim, through the updating of non-binding interpretations, and identification of gaps where changes to existing requirements may be needed through amendment to the Convention. Consistent application of the Convention will help facilitate international commerce, avoiding uncertainties in tonnage assignments when ships change flag, and providing for more consistent port State control actions.
- 4.2 **Improved Ship Design** Development of alternative approaches to existing interpretations may provide designers with greater flexibility in meeting the tonnage rules, resulting in less impact on ship design (e.g., reducing or eliminating tonnage disincentives for open-top containerships).
- 4.3 **Improved Ship Safety** Many international standards related to ship safety (of which crew accommodation, security and environmental protection standards are considered a part in this context) are applied based on parameters determined under this Convention, including a ship’s gross tonnage. Maintaining the integrity of these, and related, parameters by closing potential loopholes in the rules will ensure ships to the appropriate size-based standards, thereby positively affecting ship safety. Safety improvements may also result from development and adoption of acceptable alternate measurement approaches that permit design features which enhance ship safety.
- 4.4 **Systematic Approach to Identifying Amendments** A comprehensive review of the rules of the TM Convention has not been undertaken its inception in 1969. This effort provides an opportunity for such review. It also establishes a mechanism to systematically identify gaps for which amendments of the Convention may be deemed necessary, and evaluate approaches to make associated changes to the Convention.

### **Priority and target completion date**

5 This proposal is in pursuit of “measures aimed at improving the safety and health of ship’s crews or personnel” and “measures to correct significant inadequacies identified in existing instruments”. The item should therefore be accorded high priority within the terms of paragraph 2.11 of MSC/Circ.1099XXX – MEPC/Circ.405XXX.

6 To ensure the most timely completion date, this item should be referred to the SLF Sub-Committee at its next session, scheduled for January 2012. Completion will require three sessions, with a target completion date of 2014.

### **Specific indication of action required**

7. The specific actions under this item are as follows:

- 7.1 **Identify Areas For Improvement** Conduct a comprehensive review of the rules and requirements of the TM Convention, associated interpretations of Circular TM.5/Circ.5, and other interpretations or practice. Identify areas where the TM Convention, as interpreted by TM.5/Circ.5, does not ensure uniform application of the tonnage measurement rules and/or unnecessarily affects ship design or safety (including crew accommodation) when alternate approaches under the rules of the TM Convention could yield a better outcome. This includes treatment of semi-open spaces such as those within open-top containerships, and treatment of enclosed spaces that are associated with deck cargo.
- 7.2 **Update and Revise Interpretations** Update, expand and strengthen the interpretations of Circular TM.5/Circ.5 to address to the maximum extent possible those concerns identified in Paragraph 7.2. Consider and incorporate as appropriate changes to the TM.5/Circ.5 format and content, with the view toward replacing it with an updated version.
- 7.3. **Make Recommendations on Amendments** Make recommendations, as appropriate, to the MSC on amendments to the TM Convention to ensure the integrity and uniform implementation of the existing measurement system of the Convention, and/or would provide for improved safety or design (including crew accommodation) under this measurement system. Include recommendations on possible approaches to implementing such amendments (e.g., protocol vs. unanimous acceptance).

### **Remarks on the criteria for general acceptance**

8 The subject of the proposal is within the scope of IMO's objectives, and the benefits justify the proposed action. [The proposal is in pursuit of "measures aimed at improving the safety and health of ship's crews or personnel" and "measures to correct significant inadequacies identified in existing instruments" within the terms of paragraph 2.11 of MSC/Circ.1099 – MEPC/Circ.405].

### **Identification of which subsidiary bodies are essential to complete the work**

9 The work should be accomplished by the SLF Sub-Committee [, in conjunction with the DE Sub-Committee and STW Sub-Committee as appropriate].

**ANNEX 4****ISSUES IDENTIFIED FOR OPTION A****ENSURE INTEGRITY AND UNIFORM IMPLEMENTATION OF EXISTING GROSS TONNAGE (GT) AND NET TONNAGE (NT) PARAMETERS**

**Issue 1 - Length Definition** There are several areas where neither the TM Convention nor TM.5/Circ.5 provide sufficient information to permit assignment in a consistent manner of the length dimension, which is a determining factor for applicability of the TM Convention, and is widely used for applying design standards and, in some cases, fees. For example, the term “least moulded depth”, which is the basis for the length assignment, is undefined, and various interpretations of the term can lead to length dimensions varying on the order of 5% or more. Further, with the increasing use of trainable water-jet propulsion units and similar combination steering/propelling devices, many ships are no longer fitted with rudder stocks, which is a key input in the length determination. Also, length can vary depending on treatment of bulbous bows, raked bows, raked transoms, sloping transoms, etc.

**Issue 2 - Novel Craft Provisions** Regulation 1(3) has been construed as allowing a flag State to calculate gross tonnage based on economic and safety considerations, “exempting” fully enclosed spaces which would otherwise have been included in tonnage. The result is the assignment of gross tonnage not reflective of a ship’s “overall size” as defined in Article 2(4). As reported to Contracting Governments via TM Circular, the reduction in gross tonnage was approximately 60% in this case. Applying novel craft provisions in this manner can result in assignment of gross/net tonnages that have no relationship to a ship’s overall size/useful capacity.

**Issue 3 - Tonnage Grandfathering** Articles 3(2)(b) and (d) grant grandfathering privileges to certain older ships that have not undergone alterations “deemed by the Administration” to be a “substantial variation in their existing gross tonnage”. This provision allows a qualifying ship’s owner to use the preexisting national tonnage (GRT) to apply older breakpoints in international conventions, including SOLAS and MARPOL. As described in document SLF 38/10/1 dated 16 December 1993, there appeared to be broad agreement that “substantial variation” meant a gross tonnage change on the order of 10%, and that a 1% change was effectively within the limit of calculation accuracy. Nonetheless, TM.5/Circ.5 established a 1% change as the breakpoint for loss of grandfathering privileges, creating confusion among ship owners, presenting difficulties in ensuring compliance, and raising the possibility of legal challenge.

**Issue 4 - Listing of Spaces on the International Tonnage Certificate (ITC)** The reverse side of the ITC form provides for the listing of information on included spaces (both cargo and non-cargo spaces) and excluded spaces. Presumably, this was to permit ready verification that a ship has not undergone changes since the ITC was issued, and that spaces used for carrying cargo and stores had been properly accounted for in tonnage. However, with advances in ship designs and resulting complex hull and superstructure geometries, the practice of listing enclosed spaces by “tiers” is becoming increasingly difficult to maintain and consistently apply. Also, it is unclear whether smaller individual spaces (e.g., masts, deck lockers, settees) should be listed separately

on the ITC. Additional guidance on this subject would help ensure consistency among flag States.

**Issue 5 - Specifying Lengths of Spaces on the International Tonnage Certificate (ITC)** The reverse side of the ITC form provides for specifying the length of all listed spaces, presumably to assist in verification that a ship has not undergone changes since the tonnages were certified. However, in many cases it is difficult to establish the length of a deckhouse or other above-deck space, as the ends of deck structures are frequently stepped, fitted with deck overhangs, have lockers or seating that is built into or otherwise attached to the structure, etc. This has led to inconsistent application, both within and between flag States.

**Issue 6 - Listing Excluded Spaces on the International Tonnage Certificate (ITC)** The reverse side of the ITC form provides a space for listing excluded spaces, but lacks sufficient room for specifying all excluded spaces on larger ships of complex design (e.g. cruise ships). Nor is it clear that the mere listing of an excluded space provides sufficient information to permit meaningful verification without access to associated tonnage calculations. Finally, space limitations on the form, and confusion regarding the need to even list excluded spaces, has resulted in different approaches among flag States, ranging from the attachment of addenda to the ITC, to omitting reference to the spaces altogether. Consideration should be given to either expanding this information (perhaps through use of a “standardized” addendum), or deleting the requirement altogether.

**Issue 7 - Remeasurement Following Alterations** There are no universally accepted criteria for remeasuring a ship following alterations/modifications. Different administrations apply different criteria: tonnage changes of unity, 1%, 2%, 5% and 10% have all been quoted, which can be problematic when a ship changes flag. Even small changes in assigned gross tonnage can cause ships to exceed critical regulatory breakpoints, affecting the design and operating standards that apply to the ship (e.g., SOLAS, MARPOL, and STCW tonnage-based requirements). Further, it is unclear why a decrease in gross or net tonnage does not necessitate the remeasurement of a ship, if these parameters are to remain reflective of the ship’s overall size and useful capacity, respectively.

**Issue 8 - Acceptance of Interpretations of TM.5/Circ.5** Article 13 precludes the claiming of the privileges of the TM Convention unless the ship holds a “valid” certificate under the Convention; however, the term “valid” is not defined in this context. The circumstances under which a port State could consider an International Tonnage Certificate (ITC) invalid, and therefore detain a ship, are unclear. TM.5/Circ.5 provides related interpretative language referring to Article 10(2), which appears to make the interpretations of TM.5/Circ.5 binding if a ship is undergoing a flag change. Consideration should be given to expanding this provision of TM.5/Circ.5 to include all ships, provided the interpretations are not applied retroactively.

**Issue 9 - Requirement for a Deck Above to Bound Enclosed Space** Regulation 2(4) is unclear as to whether a space not within the ship’s hull must be bounded by a deck above, in order for that space to be considered enclosed and therefore included in the total volume of all enclosed spaces (V). The issue was discussed at SLF 30 (document SLF 30/WP 4 dated 27 February 1985), and a decision made that, in effect, a deck above was required to bound an enclosed space, although there was not universal agreement on this interpretation. In theory, under this interpretation, the space

bounded by the high coamings is not enclosed. Subsequently, IMO has taken different approaches, with volumes inside coamings of open-top containerships included in V, while volumes inside of coaming of dockships have been omitted.

**Issue 10 - Treatment of Temporary Deck Equipment** Increasingly, ships in certain services are being fitted with temporary/semi-permanent tanks or modular installations such as portable quarters, seismic trailers, and processing facilities, which are sometimes referred to as “temporary deck equipment”. Per Regulation 2(4), spaces bounded by portable partitions are included in volume measurement for tonnage calculation, yet TM.5/Circ.5 implies that a tank on the upper deck that is connected to ship systems must be “permanent” in order for it to be included in tonnage. While at least one flag State treats temporary deck equipment in the same manner as any other enclosed structure, it is not clear how other flag States are treating such spaces, nor is it clear how such spaces are to be identified on International Tonnage Certificates.

**Issue 11 - Treatment of Deck Cargo Bounded by Enclosing Structure** Neither the TM Convention nor TM.5/Circ.5 specifically addresses treatment of deck cargo. The space associated with deck cargo that is containerized or otherwise bounded by enclosing structure (e.g., portable liquid cargo tanks) appears to meet the definition of “enclosed space” in the sense that the space is bounded by “portable partitions or bulkheads”. Therefore, it is unclear under what authority such enclosed deck cargo space may be ignored when calculating tonnage, as is typically the case, or why such spaces are treated differently from portable quarters and other temporary deck equipment spaces.

**Issue 12 - Treatment of Spaces Underneath Overhangs** Under the enclosed space definition of Regulation 2(4), space bounded by a deck above is considered enclosed space, and can be excluded only if it meets the excluded space requirements of Regulation 2(5). It appears that bridge wings and other overhangs do, in fact, bound enclosed space under this definition, even though as a matter of practice, such spaces are generally ignored. Consideration should be given to developing generalized criteria (possibly under novel craft provisions) that could allow spaces with large height to breadth/depth aspect ratios, such as those bounded from above by bridge wings, to be considered as “unenclosed” and ignored from volume calculations.

**Issue 13 - Definition of Awning** The TM Convention treats spaces bounded by awnings differently than other spaces, but neither the TM Convention nor TM.5 Circ.5 defines what an awning is. For example, is an awning only cloth (e.g., canvas, tarpaulin), or does the term include other flexible solids such as plastic sheeting, or even materials such as Kevlar that have strength properties comparable to steel? Alternatively, should the term “awning” be defined on a functional basis (e.g., as a permanent or movable structure to protect the deck from the sun only)? There have also been differences in interpretations as to whether, by extension, fabric covers and partitions are considered to bound space that would otherwise be enclosed. Depending on how this is interpreted, designers can obtain substantial reductions in tonnage through substitution of materials.

**Issue 14 - Treatment of Space Bounded by Awnings** While Regulation 2(4) indicates that a “permanent or movable awning” is not considered to bound an enclosed space, TM.5/Circ.5 treats space within the bounds of such awnings as enclosed space, which is excluded from

volume calculations only if it meets certain conditions. It is possible that Paragraph 4.2 was referring to spaces bounded on the sides by fabric-like material. Either way, it appears that TM.5/Circ.5 requires clarification.

**Issue 15 - Shelves or Other Means for Securing Cargo or Stores in Excluded Spaces** Under Regulation 2(5), certain qualifying spaces may be excluded from tonnage calculations provided they are not “fitted with shelves or other means for securing cargo or stores”, regardless of whether or not the spaces are appropriated for the carriage of cargo or stores. Consistent application of this provision has proven problematic, as designers have devised ways to effectively secure cargo without the need for the space to be “fitted” with any means of securing it. In addition, there has been disagreement on what constitutes “stores”, as under the equally authentic French version of the TM Convention, the term “provisions” is used. “Provisions” includes food and possibly other items of necessity, but not items such as ropes and life-jackets.

**Issue 16 - Impact of End Opening Obstructions on Excluded Spaces** While Regulation 2(5)(a) addresses obstructions to end openings within a deck structure, neither this regulation nor TM.5/Circ.5 addresses the situation where there is an obstruction external to the opening. For example, gantry structures on fishing trawlers, large cable reels on certain towing and industrial vessels, and excessively high bulwarks extending on either side of the openings may serve to “protect” the openings, and are taken into consideration by some flag States. Guidance on how to address such situations would be helpful to ensure consistent treatment, and prevent exclusion of spaces that are effectively protected from the sea and weather.

**Issue 17 - Excluding Space Opposite an End Opening as a Recess** If an opening in the end of a structure is treated as a “recess” under Regulation 2(5)(e) instead of a “space opposite an end opening” under Regulation 2(5)(a), up to twice the amount of space may be excluded. Various approaches have been used to address this issue, including the establishment of definitions for the term “boundary bulkhead” that would preclude treatment of a “typical” end opening as a recess. Clarification would be helpful to ensure consistency and avoid misuse.

**Issue 18 - Characteristics of End and Side Openings for Excluded Spaces** Under Regulation 2(5), the criteria for excluding space opposite end and side openings are largely prescriptive in nature, and can result in substantively different tonnage assignment on ships for which the physical arrangement varies only on the order of centimeters. Examples include: 1) criteria based on deck beam size under 2(5)(a); 2) requirements for a structure to be “side-to-side” under 2(5)(c); 3) impact of fitting of rails (allowed under 2(5)(b) but not under 2(5)(c)); and 4) prohibition against fitting of fashion plating to stanchions under 2(5)(b). Consideration should be given to development of functional requirements (possible under novel craft provisions). This would provide a more accurate indication of spaces that are sufficiently open to qualify for exclusion from tonnage where prescriptive requirements are inadequate and could adversely affect ship design.

**Issue 19 - Deck Structure Height Requirements for Excluded Space Side Openings** Increasingly, ships of certain types (e.g., cruise ships, car carriers) have spaces opposite large side openings that may not qualify for exclusion as recesses under Regulation 2(5)(e), but could possibly be considered for exclusion under 2(5)(c). However, 2(5)(c) requires side openings to

be at least “one third of the height” of the associated deck structure (erection) in order to allow a qualifying space to be excluded from volume calculations. It is unclear whether this height is taken to the top of the entire structure (the most “conservative” approach), or to an internal deck within the structure (an approach which could lead to fitting of “false” decks within the ship to allow smaller openings).

**Issue 20 - Restrictions on Excluding Space Below Uncovered Openings** The text of Regulation 2(5)(d) and the accompanying figure leave it unclear as to the extent to which a space “immediately below” a deck opening may be excluded. A question along these lines was raised by a flag State in document SLF 29/10 (3 November 1983), but was not resolved. Clarification would be helpful to ensure consistency and avoid misuse.

**Issue 21 - Remeasurement Following Net Tonnage Change** It is unclear how the Regulation 5 language relates to the language in Article 10 of the Convention, which also addresses remeasurement. For example, if a change in the characteristics cited in Regulation 5 causes net tonnage to change by an amount of unity (one unit of net tonnage), does the Regulation 5 language require both gross and net tonnage to be recalculated and recertified, even if the gross tonnage change is not of sufficient magnitude to cause remeasurement?

**Issue 22 - Treatment of Topside Spaces of Complex Shape** Accounting for the volume measurement of miscellaneous topside spaces having complex shape can be problematic in terms of evaluating whether the space may be ignored under TM.5/Circ.5 guidance as “not exceeding 1 m<sup>3</sup>”, and/or in the excessive amount of time involved in calculating the “enclosed volume”. Examples include shore gangway storage, double skin bulwarks, outside moulded seating (which may or may not be part of a bulwark), Jacuzzis and sun lounges, recessed swimming pools and spaces bounded from above by complex roof designs. These features are typically seen on yachts of modern construction, but may also be encountered in other ship types, including passenger ships.

**Issue 23 - Treatment of Hull Spaces of Complex Shape** Column-stabilized units, such as semi-submersible drilling units, and ships of similar design are often fitted with cross-bracing, for which volumes can be extremely difficult to calculate. Consideration should be given to developing guidance on how to treat such volumes in an efficient and consistent manner.

**Issue 24 - Evaluating Accessibility of Mast, Kingposts and Support Structures** TM.5/Circ.5 allows masts, kingposts, cranes, crane and container support structures that are greater than 1 m<sup>3</sup> in volume to be ignored when calculating volume, if they are “completely inaccessible”. In practice, however, the majority of such spaces are accessible in some fashion for survey and maintenance, which brings the “accessibility” constraint into question. This matter should be reviewed in the interest of ensuring consistent measurement treatment of such spaces.

**Issue 25 - Treatment of Spaces Inside the Hull as Open to the Sea** Regulation 6(3) allows volumes of spaces open to the sea to be excluded from tonnage. The degree to which a normally flooded or free-flooding space inside the hull is considered “open” has required interpretation, in view of the criteria of Regulation 2(5) that requires spaces above the upper deck to be reasonably “open” before they may be excluded. Further, designers have sought to reduce tonnage or principal

dimensions through contrivances to treat otherwise enclosed spaces as spaces that are “open spaces to the sea”. Examples include: 1) standpipes in underdeck voids and ballast spaces; 2) holes in bows and sterns of ships of all types; and 3) holes in cross-deck structures on multi-hull ships. Consideration should be given to developing guidance on how to treat such volumes in a consistent manner

**Issue 26 - Treatment of Spaces Outside the Hull as Open to the Sea** Regulation 6(3) allows volumes of spaces open to the sea to be excluded from tonnage. The degree to which a space outside the hull is considered open to the sea has required interpretation in cases where free communication between the space and the sea is in some way restricted. Examples include: 1) “wells” or “pockets” for retractable keels and stabilizers with fairing plates; 2) semi-weatherproof storage spaces in the stern step areas of yachts that are protected from the sea non-watertight closures; 3) bow thrusters tunnels fitted with doors to reduce underwater resistance; and 4) sea valve recesses (“sea chests”) fitted with fine mesh strainers.

**Issue 27 - Treatment of Moon Pools** Moon pools and similar large “through-hull” openings that are sometimes fitted with covers or are otherwise covered from above by enclosing structure within the ship’s hull or above the upper deck. In addition, some moon pool wells are fitted with retractable doors at their lower extremities, or at some distance from the keel, which in some cases serve as non-watertight fairings and in other cases as watertight closures. It is unclear as to whether spaces fitted with such covers or doors may be excluded as open to the sea under Regulation 6(3), and if so, to the extent the space above the doors may be treated as excluded.

**Issue 28 - TM.5/Circ.5 Format and Content** The consolidated interpretations of Annex of TM.5/Circ.5, which is 11 pages long, have grown considerably since such interpretations were initially issued in 1979 as a 3 page document. Further, interpretations established over the years were often developed to address specific situations, rather than providing broader guidance applicable to more general situations. In addition, updating of the Circular is necessary to reflect the action of MSC Resolution 234 on open-top containerships. Consideration should be given to comprehensive review of the TM Circular, with the view toward replacing it with an updated version that is easier to use. This updated version could consolidate interpretations where appropriate, and express them in a more general way.