MARITIME SAFETY COMMITTEE
78th session
Agenda item 24

MSC 78/24/5
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WORK PROGRAMME

Reconsideration of the International Tonnage Convention (ITC 69) with regard to open-top containerships

Submitted by Germany

	SUMMARY
Executive summary:	This document presents a short summary of observations and recent developments made with regard to open-top containerships and their tonnage figures in view of recent developments in amending existing interpretations of the TM.5/Circ.4. It proposes in accordance with the Guidelines on the method of work (MSC Circ.1099) to amend the existing interpretation to include the practice adopted by some Administration unilaterally
Action to be taken:	Paragraph 14
Related documents:	ITC 69; TM.5/Circ.4; and SLF 46/16, paragraph 15.2

Background

1   Tonnage measurement is widely used for many kinds of fees in the maritime trade and also for defining ship sizes for the purpose of safety measures in most international conventions. Historically (prior to the ITC 69), it had been done in accordance with national formulae, which were developed by national authorities who decided to what extent any vessel's hull was to be included in either the "grt" or "nrt" values. Due to the non-existence of harmonized internationally accepted rules in this context, many vessels maintained more than one tonnage certificate on board, since the differences between the individual rules were rather significant and therefore most certificates would not be uniformly accepted. Port state officers had difficulties in understanding which figures to use.

2   In the 1960's, the Organization undertook a major exercise in trying to develop a uniform international standard for tonnage measurement. The result is today's ITC 69, which provides an easy and transparent tonnage calculation procedure which basically includes all enclosed volumes of the ship hull in a number representing the gross tonnage (gt) and in another figure volumes representing the net tonnage (nt). The resulting tonnage figures are non-dimensional. They are considered to be good representation of the enclosed volumes.

3   The major advantages of this international Convention remain to be the simplicity of the formulae (giving virtually no room for interpretations) and the included international tonnage

certificate where the two resulting figures are to be included on the front page. Any later circulated guidance as to possible internationally accepted instructions were agreed to be shown on the certificates second page or last page, respectively.

4   These principles have been widely accepted since the Convention entered into force in 1982, even though the ship types that were built and subsequently admeasured have changed substantially. For example, at the time of development of the Convention only limited amounts of deck cargoes were carried. Therefore the authors of the Convention decided to neglect the volumes of such transporting capacities when designing the yardstick for transportation fees in the marine sector.

Open-top interpretation

5   Remarkable in this context seems to be the development of a formula addressing open-top containerships, because this ship type can be looked at as having no separation of "on deck" cargoes from cargoes carried in the hold. This specific ship type has admittedly complicated life for those involved in rule development for some time. For example, load line matters, fire control measures, flood control measure, carriage of dangerous goods etc. have been addressed in the IMO in recent years trying to define safety standards for all of these hazards similar to those conventional ships have.

6   In 1993, IMO circulated a relevant measure with regard to the ITC 69: circular TM.5/Circ.4. The covering text invites Member States to make use of such formulae when admeasuring open-top containerships. The proposed formulae was related to ship sizes foreseen at the time of its development (not more than 30 000 gt) (particulars are shown in the annex) and did not solve the problem of the missing differentiation between inner and outer cargo carrying capacities.

Recent developments

7   Most recently it was internationally recognised that the current status was not acceptable: Open-top containerships, with their larger moulded depth, have a tonnage exceeding that of comparable closed-hatch container ships by up to 20%, at about identical main dimensions.

8   The economical impact of this difference was considered unacceptable. Thus tonnage certificates as defined in ITC 69 were issued by a flag Administration even though the prescribed procedure for entries on the certificates front page was not followed. It is presumed that the respective information on this new interpretation will be submitted to IMO in due course.

Proposal

9   Meanwhile and in order to maintain the advantages of a transparent and simple harmonized system of issuing internationally acceptable tonnage certificates, Germany - in the understanding that the flag State Administration had good reasons for the course of action that was taken - would like to support the need for amending the calculation instrument of the Tonnage Convention to better address open-top containerships. It would be much appreciated if at this occasion the more recent type vessels with large quantities of deck cargoes could be solved.

Acceptance criteria defined in IMO methods of work

10   Compelling need for this proposal was demonstrated by showing the economical impact of any different interpretation than the existing interpretation contained in TM.5/Circ.4. Since there already exists a common interpretation - said TM.5/Circ.4 - within the framework of IMO Conventions, it is considered beyond any doubt that this matter is within the scope of the IMO's objectives.

11   While adequate industry standards do not exist, Germany thinks that a more relevant interpretation or amendment to the International Tonnage Convention would indeed enhance maritime safety. The safety advantages that are observed for open-top containerships increases with increasing sizes of containerships, in particular above a tonnage (30,000 gt) where the existing interpretations of the TM.5/Circ.4 does not allow competitiveness.

12   The cost increase for Industry of an amendment to the tonnage admeasurements of open-top containerships is expected to be negative in the short run, because it would bring the fees related to larger open-top containerships more in the margin of comparable closed-hatch container ships. In the longer run, this effect would most probably been smoothened out by amended fairway dues and other fees.

13   The proposal Germany wishes to make could be taken up by amending the current interpretation (amending the TM.5/Circ.4.) only. This could, most probably, be developed, based on the attached proposal, with two sessions of the SLF Sub-Committee. If, however, the proposal was taken forward to be achieved in the context of a more binding character (i.e. an amendment to the International Tonnage Convention), the exercise would probably involve more sessions. It should, however, still be achievable in four sessions.

Action requested of the Sub-Committee

14   The Committee is invited to take note of the information provided and take action as deemed appropriate.

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I. **Reduced GT for open-top Containerships (comparison IMO-formula / BSH GT' draft)**

IMO provis.: $\quad$ **GT' IMO = GT x [1 - ((30000 - GT)/1000) x 0,007]**

BSH draft: $\quad$ **GT' draft = 0,272 x V - 825**

		present	comp. with	reduction	reduction	GT' IMO	GT' draft	GT' draft /
	V [m³]	GT (o)	GT (c)	GT' IMO	**GT' draft**	red. in %	red. in %	GT (c)
Examples:	1	2	3	4	**5**	6 = 4:2	7 = 5:2	8 = 5:3
A Sietas T160	22150	6360	5200	5300	**5200**	16.7	18.2	0.0
B Sietas T168	34400	10000	8300	8600	**8500**	14.0	15.0	2.4
C 'Shire'Fleet	84400	25200	21000	24350	**22000**	3.4	12.7	4.8
D HDW Dole	115500	34800	29500	34800	**30500**	0.0	12.4	3.4
E HDW Norasia	139650	42300	36000	42300	**37100**	0.0	12.3	3.1
F MHI Nedlloyd	158000	48500	41000	48500	**42200**	0.0	13.0	2.9

o = open-top $\qquad$ c = closed (with hatch covers)

GT reduction for open-top Containerships
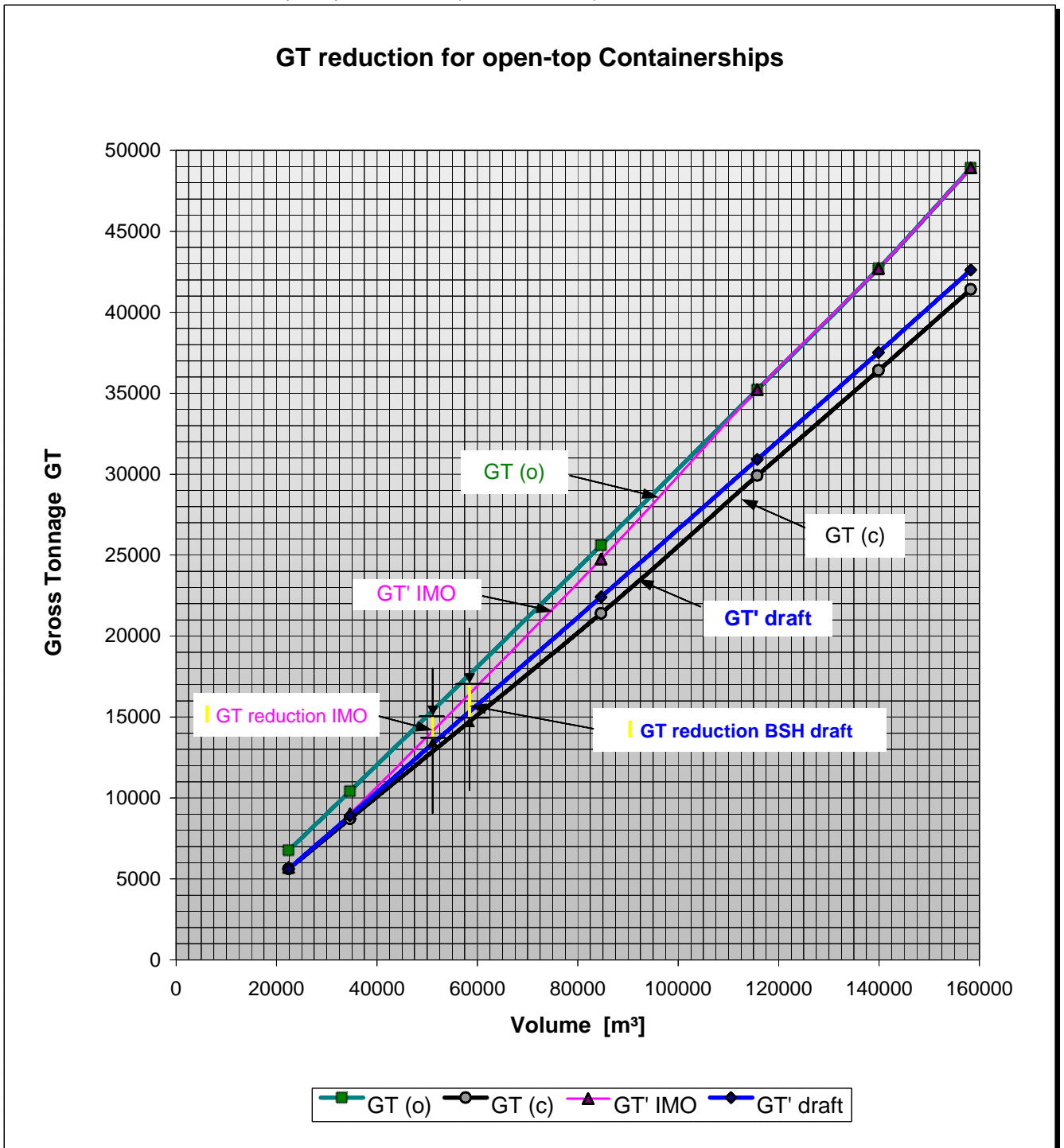
II. **Ships data of closed container ships in comparison with open-top ships**

	Name	Year b.	Type	L oa	B	D	tdw	TEU	GT resp.GTo
A	SVEN	1996	opentop	121.94	18.20	6.69	6950	700	6350
	ANTJE	1997	closed	118.25	17.90	7.08	6650	658	5050
	TANGER	1981	closed	120.54	18.40	6.49	7826	607	5370
	CARINA	1990	closed	122.02	18.70	6.95	7562	697	5800
B	M.FALMOUTH	2001	opentop	134.40	22.50	8.70	11150	862	10000
	CH.L.AMERICAS	1997	closed	138.50	21.75	8.36	11400	864	8000
	UMFOLOZI	1982	closed	133.40	20.20	8.65	11700	891	8390
	AURORA	1995	closed	132.90	22.90	7.70	9200	907	8600
C	ShireFleet	1998	opentop	201.86	26.66	9.40	14310	1388	25200
	U.RICKMERS	1997	closed	184.00	25.30	9.88	22990	1730	16800
	KOTA PERMASAN	1993	closed	182.00	28.40	11.54	30000	1750	21000
	P&O NEDLL. ORI.	1996	closed	182.09	29.80	11.55	29700	2060	21500
	SEA JAGUAR	1996	closed	205.85	27.40	10.10	21700	2100	24000
D	DOLE CHILE	1999	opentop	205.00	32.24	10.21	30000	2000	34800
	MERKUR STAR	1995	closed	203.00	30.60	11.55	39500	2480	29100
	ZIM SYDNEY	1995	closed	201.50	32.24	12.20	29800	2517	30300
	CONTSHIP	1996	closed	209.50	32.20	12.50	38450	2890	31200
E	NORASIA SINGA	1996	opentop	241.95	32.24	11.98	44500	2780	42300
	BERLIN EXPRESS	1990	closed	234.00	32.20	12.50	42026	2716	35300
	NOR.DIVINITY	1997	closed	244.90	32.20	12.00	45217	3600	36600
	ZIM KOREA	1991	closed	236.00	32.20	12.00	43600	2402	37200
F	MHI NEDLLOYD	1991	opentop	266.30	32.20	12.50	45000	3600	48500
	MARE SICULUM	1998	closed	260.66	32.24	12.50	52350	3987	40300
	VILLE d TAURUS	1997	closed	259.34	32.20	12.00	49000	3753	40500

■ Reference value most coincident

3   EXPLANATIONS

IMO Formula of 1993

1   The preliminary IMO formula can be used for open-top containerships up to max GT 30,000. With respect to practical operation, it was assumed that from this size there would be no difference between open and conventional container ships with hatch covers.

2   The reduced-value curve GT' IMO (red) is still clearly below the actual tonnage measurement curve (GT (o), green) in its lower section, and almost parallel to the curve of conventional vessels (GT (c), black) up to about GT 10,000. In the upper section, however, the reduction continues to decrease with increasing vessel size and finally drops to zero at about GT 30,000.

3   The formula fails when applied to vessels over GT 30,000 , where a reduction is no longer achieved and such vessels remain at a disadvantage as compared to conventional closed vessels.

Development of a new formula

Current status

4   Open-top containerships, with their larger moulded depth, have a tonnage exceeding that of comparable closed-hatch containerships by up to 20%, at about identical main dimensions. The economic disadvantage to such vessels is to be adjust by a GT reduction.

Aim

5   Aim is to increase the attractiveness of open-top containerships, therefore:

     .1   the new formula should cover a wider GT range than the current IMO formula;
     .2   the new formula should be simple in use (linear dependence if possible);
     .3   the new formula should be based on the volume of all enclosed spaces, analogous to GT=k*V, not on the deadweight tonnage; and
     .4   the curve derived from the new formula should be above and about parallel to the curve of conventional vessels in order to ensure that the reduced tonnage measurement result is not smaller than that of comparable vessels.

Approach

6   The constants of the existing formula were changed in such a way that up to GT 50,000 the curve is almost parallel to the GT(c) curve, with a tendency toward a slightly steeper slope.

Disadvantage

7   In the upper section, its shape would be similar to the existing IMO curve and, consequently, no reduction values would be obtained above GT 50,000.

Result

8   The curve thus obtained was simplified by linear regression, so that the formula is expressed as:

$$GT' = 0.272 * V - 825$$
$$(\text{with } V = \text{total volume in } m^3).$$

It is found that the shape of this curve (GT' draft, blue) is perfectly suitable to achieve the aim.

Advantages

9   The new formula is independent of a particular tonnage size and can be applied to all open-top container ships.

Remarks

10   This new formula has been developed from the existing (preliminary) IMO formula of 1993 and, for the time being, should serve as a basic for discussion.

11   It can be refined later by taking into account more comparative data of built open-top container ships. It is not recommended to derive the comparative data for a new formula from the deadweight tonnage exclusively but also from the main dimensions as well as the container capacity (in TEU), because the approaches are not directly comparable. Besides, it must be taken into account that, with equal main dimensions, open-top container ships have a slightly smaller TEU capacity than conventional vessels.

12   The GT reduction achieved range between about 18% for smaller vessels and about 12% for larger vessels. The difference is due to the fact that smaller ships have a relatively higher moulded depth than larger ships (which is reflected by a steeper shape of the GT' draft curve than the GT (c) curve).

13   Considering the fact that open-top containerships have enclosed spaces whose volume exceeds that of comparable conventional vessels by about 15 to 20%, the results of the GT reduction are quite satisfactory.

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