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UNIFIED INTERPRETATION TO PROVISIONS OF IMO SAFETY, SECURITY, AND ENVIRONMENT-RELATED CONVENTIONS

Proposed unified interpretation of the amendment to stability/loading information in conjunction with the alterations of lightweight

Submitted by IACS

SUMMARY

Executive summary:	This document proposes a new draft unified interpretation on the amendment to stability/loading information in conjunction with the alterations of lightweight
Strategic direction, if applicable:	6
Output:	6.1
Action to be taken:	Paragraph 10
Related documents:	None

Background

1 In order to comply with certain new IMO regulations, for example, regarding installation of ballast water treatment systems or SO_x scrubbers, it is expected that an increasing number of ships would undergo alterations with changes to their lightweight. These changes may result in performing an inclining test and/or the update of stability information as required by SOLAS regulations II-1/5.4 and II-1/5.5 and stated in the Revised Explanatory Notes to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2).

2 From the experience gained by its members, while assessing the lightweight changes for compliance to the aforementioned SOLAS regulations, IACS has identified the requirements that may need further clarification to facilitate their global and uniform implementation.

3 SOLAS regulations II-1/5.4 and II-1/5.5 state:

"Regulation 5
Intact stability

…

4 Where any alterations are made to a ship so as to materially affect the stability information supplied to the master, amended stability information shall be provided. If necessary, the ship shall be re-inclined. The ship shall be re-inclined if anticipated deviations exceed one of the values specified in paragraph 5.

5 At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the approved stability information, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of L is found or anticipated."

4 The Revised Explanatory Notes to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2) state:

"Regulation 5.4

1 When alterations are made to a ship in service that result in calculable differences in the lightship properties, a detailed weights and centres of gravity calculation to adjust the lightship properties should be carried out. If the adjusted lightship displacement or longitudinal centre of gravity, when compared to the approved values, exceeds one of the deviation limits specified in regulation 5.5, the ship should be re-inclined. In addition, if the adjusted lightship vertical centre of gravity, when compared to the approved value, exceeds 1%, the ship should be re-inclined. The lightship transverse centre of gravity is not subject to a deviation limit.

2 When a ship does not exceed the deviation limits specified in explanatory note 1 above, amended stability information should be provided to the master using the new calculated lightship properties if any of the following deviations from the approved values are exceeded:

.1 1% of the lightship displacement; or
.2 0.5% of L for the longitudinal centre of gravity; or
.3 0.5% of the vertical centre of gravity.

However, in cases when these deviation limits are not exceeded, it is not necessary to amend the stability information supplied to the master.

3 When multiple alterations are made to a ship in service over a period of time and each alternation is within the deviation limits specified above, the cumulative total changes to the lightship properties from the most recent inclining also should not exceed the deviation limits specified above or the ship should be re-inclined."

Discussion

5 The deviation limits for amendment to lightship properties are provided in the above regulations along with explanatory notes. On the other hand, in cases where the lightship properties are amended, it is unclear whether or not the instruments/documents (such as loading manual, loading computer and stability computer) utilizing the lightship properties should be subsequently amended using the new lightship properties.

6 Further, onboard confirmation of lightship calculations in conjunction with the alterations are not mentioned in the regulations or in explanatory notes, therefore some vagueness also remains on this point.

7 For the situation illustrated in paragraphs 5 and 6 above, IACS is of the view that in any case where the lightship properties go beyond the specified deviation limit/s, then the instruments/documents (such as loading manual, loading computer and stability computer) utilizing the lightship properties should be amended, based on the new lightship properties, and that the lightweight calculation should be verified on board.

8 Further, IACS notes that there is no justification to limit the application of the deviation limits to "new" ships and suggest that they can be applied to all ships undergoing modification.

Proposal

9 In this regard, to obtain the clarification as per the discussion in paragraph 7 and for the effective application of SOLAS regulations II-1/5.4 and II-1/5.5, IACS has developed draft unified interpretation, a copy of which is set out in the annex, for the consideration of the Sub-Committee.

Action requested of the Sub-Committee

10 The Sub-Committee is invited to consider the discussion, in particular the proposal in paragraph 9 and draft unified interpretation in the annex, and take action, as appropriate.

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ANNEX

DRAFT UNIFIED INTERPRETATION OF SOLAS REGULATIONS II-1/5.4 and II-1/5.5

Amendment to stability/loading information in conjunction with the alterations of lightweight

SOLAS regulations II-1/5.4 and II-1/5.5 read:

"Regulation 5 Intact stability

…

4 Where any alterations are made to a ship so as to materially affect the stability information supplied to the master, amended stability information shall be provided. If necessary, the ship shall be re-inclined. The ship shall be re-inclined if anticipated deviations exceed one of the values specified in paragraph 5.

5 At periodical intervals not exceeding five years, a lightweight survey shall be carried out on all passenger ships to verify any changes in lightship displacement and longitudinal centre of gravity. The ship shall be re-inclined whenever, in comparison with the approved stability information, a deviation from the lightship displacement exceeding 2% or a deviation of the longitudinal centre of gravity exceeding 1% of L is found or anticipated."

The Revised Explanatory Notes to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2) read:

"Regulation 5.4

1 When alterations are made to a ship in service that result in calculable differences in the lightship properties, a detailed weights and centres of gravity calculation to adjust the lightship properties should be carried out. If the adjusted lightship displacement or longitudinal centre of gravity, when compared to the approved values, exceeds one of the deviation limits specified in regulation 5.5, the ship should be re-inclined. In addition, if the adjusted lightship vertical centre of gravity, when compared to the approved value, exceeds 1%, the ship should be re-inclined. The lightship transverse centre of gravity is not subject to a deviation limit.

2 When a ship does not exceed the deviation limits specified in explanatory note 1 above, amended stability information should be provided to the master using the new calculated lightship properties if any of the following deviations from the approved values are exceeded:

.1 1% of the lightship displacement; or
.2 0.5% of L for the longitudinal centre of gravity; or
.3 0.5% of the vertical centre of gravity."

INTERPRETATION

Definition of lightweight calculation

For the purposes of this interpretation, the term "lightweight calculation" means a detailed calculation of weights on and weights off a ship, resulting from all alterations to the ship since the date of the last approved inclining test, to determine the adjusted lightship properties. Lightship properties include weights and the centre of gravity. The documented weights and their centres of gravity should be verified on board/on site by the attending class surveyor.

When weights are added, removed or relocated the final cumulative change is to be compared to the last approved inclining test.

Definition of stability information

"*Stability information*" includes any document (whether on paper or electronic) or electronic means of calculation of stability which includes lightship properties. This could include, but is not limited to, the approved stability book, computer software for onboard calculation of stability, the approved strength book and the loading instrument.

Amendment of stability information in conjunction with alterations of lightship properties

1 If the lightweight calculation, regardless of keel laying date, shows a deviation in lightweight mass, or the longitudinal or vertical position of the centre of gravity:

.1 beyond any of the tolerance limits specified in the explanatory note 1 to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2), then the ship should be re-inclined and the stability information, as defined above, should be updated to reflect the lightship properties derived from the inclining test and should be approved;

.2 exceeding the tolerance limits specified in the explanatory note 1 and any of the deviations specified in the explanatory note 2 to SOLAS regulation II 1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2), then the stability information should be updated to reflect the lightship properties derived from the lightweight calculation and should be approved; or

.3 within the tolerance limits specified in the explanatory note 2 to SOLAS regulation II-1/5.4 (resolutions MSC.429(98)/Rev.1 and Rev.2), then a copy of the endorsed lightweight calculation report should be provided on board for future reference with no further amendments required to the stability information.

2 A summary of paragraph 1 of this interpretation is provided in the following table. Where stability information is to be updated, it should be approved and provided to the master with instruction that it should now be used for all stability calculations.

Scenario, as calculated by lightweight calculation	Requirement for Inclining Test	Update of Stability Information
Lightweight change > 2%	Yes	Yes, using new incline result
LCG change > 1% of L (either forward or aft)	Yes	Yes, using new incline result

Scenario, as calculated by lightweight calculation	Requirement for Inclining Test	Update of Stability Information
VCG change > 1%	Yes	Yes, using new incline result
1% < Lightweight change ≤ 2%	No	Yes, using lightweight calculation
0.5% of L < LCG change ≤ 1% of L (either forward or aft)	No	Yes, using lightweight calculation
0.5%< VCG change ≤ 1%	No	Yes, using lightweight calculation
Lightweight change ≤ 1%	No	No
LCG change ≤ 0.5% of L (either forward or aft)	No	No
VCG change ≤ 0.5%	No	No

3 Lightship properties should be consistent in all documents which use them, e.g. loading manual, stability manual and computer data.

4 A change in lightweight will result in a change in deadweight. The consequences of the change could have an impact on compliance with other regulations, e.g. MARPOL, Annex VI.