



SUB-COMMITTEE ON STABILITY AND
LOAD LINES AND ON FISHING
VESSELS SAFETY - 29th session
Agenda item 15

IMO

REPORT TO THE MARITIME SAFETY COMMITTEE

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1 GENERAL

1.1 The Sub-Committee held its twenty-ninth session from 16 to 20 January 1984 under the Chairmanship of Mr. I.A. Manum (Norway).

1.2 The session was attended by representatives from the following countries:

ARGENTINA	JAPAN
BELGIUM	LIBERIA
BRAZIL	MEXICO
CANADA	NETHERLANDS
CHILE	NORWAY
CHINA	POLAND
DENMARK	REPUBLIC OF KOREA
FINLAND	ROMANIA
FRANCE	SPAIN
GABON	SWEDEN
GERMAN DEMOCRATIC REPUBLIC	TRINIDAD AND TOBAGO
GERMANY, FEDERAL REPUBLIC OF	URUGUAY
GREECE	USSR
ICELAND	UNITED KINGDOM
INDIA	UNITED STATES
ITALY	YUGOSLAVIA

and observers from the following non-governmental organizations:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS (IADC)
OIL INDUSTRY INTERNATIONAL EXPLORATION AND PRODUCTION FORUM (E AND P FORUM)
ASSOCIATION OF WEST EUROPEAN SHIPBUILDERS (AWES)

1.3 The agenda adopted by the Sub-Committee, together with a list of documents for the session, is given at Annex 1.

1.4 The Sub-Committee re-elected unanimously Mr. I.A. Manum (Norway) and Professor S. Motora (Japan) as Chairman and Vice-Chairman respectively for 1985.

2 DECISIONS BY THE MARITIME SAFETY COMMITTEE

2.1 The Sub-Committee noted the decisions taken by the Committee at its forty-eighth session pertaining to its work (SLF 29/2) which were taken into account as necessary under relevant agenda items.

2.2 The Sub-Committee noted that the expanded Maritime Safety Committee adopted the 1983 SOLAS Amendments which are expected to enter into force on 1 July 1986.

2.3 The Sub-Committee noted that two conferences are envisaged in 1986 to include the harmonized survey and certification requirements into the 1974 SOLAS Convention and the 1966 Load Line Convention and to readopt the latter Convention including also amendments already adopted by the Assembly and the MSC.

2.4 The Sub-Committee noted the interpretation of the term "any operating draught reflecting actual, partial or full load conditions" contained in Regulation 25(1) of Annex I to the MARPOL Convention, agreed by the MEPC at its eighteenth session for inclusion in the Unified Interpretation of Annex I.

3 SUBDIVISION AND DAMAGE STABILITY OF DRY CARGO SHIPS INCLUDING RO/RO SHIPS

3.1 The Sub-Committee considered:

- .1 documents submitted by Norway (SLF 29/3/3), the USSR (SLF 29/3) and the United Kingdom (SLF 29/3/7) and Annex 3 of SLF 28/13, concerning information to the master;
- .2 documents submitted by Norway (SLF 29/3/2 and SLF/20), Poland (SLF 29/3/5), the USSR (SLF 29/3/1), the United States (SLF 29/3/4), ICS (SLF 29/3/6), France (SLF 28/3/3) and Poland (SLF 28/3) concerning subdivision and damage stability of dry cargo ships including ro/ro ships.

3.2 The Sub-Committee established an ad hoc working group with the following instruction on items to be considered:

- .1 information to the master;
- .2 subdivision and damage stability requirements for all dry cargo ships based on the probabilistic method.

3.3 The Sub-Committee received the report of the group at this session and approved it in general (SLF 29/WP.5). The action taken by the Sub-Committee is given hereunder.

Information to the master

3.4 As requested by the Sub-Committee the group redrafted the Guidelines in Annex 3 of SLF 28/13 in a general manner to make the master more aware of the capability of his ship. The revised draft Guidelines for the preparation of information on the effect of flooding to be provided to masters of dry cargo ships are set out at Annex 2.

3.5 Some delegations held the view that the proposed Guidelines were academic in nature and divorced from real life situations and would place an unjustified burden on shipowners and Administrations.

3.6 Other delegations were of the opinion that such advance information was most appropriate to assist the master to make the appropriate decisions in an emergency.

3.7 As the Sub-Committee was equally divided on the question of whether or not to decide now on the need for such Guidelines, such a decision was deferred to the next session.

3.8 The Sub-Committee noted that the group was not able at this time to make a study of the possible cost involved for the industry.

3.9 It was stressed that this was an important matter and should be resolved at the next session. Members were invited to study this problem and submit possible solutions.

Subdivision and damage stability requirements for all dry cargo ships

3.10 The Sub-Committee accepted the proposal by the group set out at Annex 3 in respect of a draft probabilistic method to be tested on dry cargo ships.

3.11 Members were invited to perform sample calculations on various types and sizes of dry cargo ships in accordance with the proposed probabilistic method. The objective of these sample calculations is to assist the Sub-Committee to determine a preferred level of survival capability. The delegation of Norway agreed to summarize and analyse the calculations. Members were invited to submit their calculations by 1 September 1984 to the Norwegian Maritime Directorate, P.O. Box 8123 Dep, Oslo 1, Norway.

3.12 In order to facilitate a cost benefit study, Members were requested to submit information on the time consumed and the costs involved in performing the calculations for each ship as outlined in Annex 3 and also the estimated time for development of such a method for dry cargo ships including the time necessary to adapt it.

3.12 In case Members encounter difficulties in the application of relevant parts of resolution A.265(VIII) to dry cargo ships these should also be reported.

3.14 Bearing in mind that the development of a probabilistic damage standard may require a period of many years, the delegations of France and the United States indicated their satisfaction with the one-compartment deterministic standard, such as provided in SLF 29/3/4, as an optional standard to be used by those Administrations desiring a standard prior to the completion of an equivalent probability based subdivision standard for dry cargo ships. This one-compartment

standard is reproduced in SLF 29/WP.2. The delegations of France and the United States invited Administrations to submit comments as to items in square brackets in SLF 29/WP.2.*

4 INTACT STABILITY

4.1 The Sub-Committee referred to the ad hoc working group on intact stability for consideration the following documents on:

- .1 weather criterion submitted by Japan (SLF/23 and SLF/25), Norway (SLF 29/4/2), Poland (SLF 29/4/3 and SLF 29/4/4) and the USSR (SLF/29);
- .2 stability of ships in breaking waves submitted by Norway (SLF 29/4) and the USSR (SLF/28);
- .3 stability of ships in following waves submitted by China (SLF 29/4/6), the German Democratic Republic (SLF/17), Japan (SLF/24), Norway (SLF 29/4/2) and the USSR (SLF 29/4/1);
- .4 external forces caused by fishing gear and other adverse effects specific to fishing vessels submitted by China (SLF/30 and SLF/31), the Netherlands (SLF 29/4/7) and Norway (SLF/22);
- .5 intact stability casualty records submitted by Norway (SLF/16 and SLF/21);
- .6 work programme on intact stability submitted by Poland (SLF 29/4/5) and the USSR (SLF 29/4/1).

4.2 Having received the report of the group (SLF 29/WP.7) the Sub-Committee agreed in general with the report of the group. Action taken by the Sub-Committee with regard to the subjects considered by the group is reflected hereunder.

Weather criterion

4.3 The Sub-Committee reiterated its view that the weather criterion given in MSC/Circ.346 is a minimum standard and that Administrations may supplement this criterion with additional appropriate stability criteria as is deemed necessary.

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The Sub-Committee agreed that research in ship sea behaviour should continue to provide additional information which may be taken into account in the development of an improved weather criterion.

4.4 The Sub-Committee agreed to the group's proposal for test calculations with the weather criterion and to their submission together with comments to the next session. The Sub-Committee also agreed that drafting of a final text of the weather criterion (MSC/Circ.346) should be done at the next session of the Sub-Committee to take account of comments submitted to this session and comments to the next session on the basis of calculation referred to in this paragraph and that editorial corrections proposed by Poland (SLF 29/4/3) and further improvements and corrections identified during this session including rounding off should be finalized at that session of the Sub-Committee.

4.5 With regard to the application of the weather criterion to fishing vessels the Sub-Committee noted the opinion of the group that the validity of certain parameters (wind pressure, heeling arm, radius of gyration, etc.) may require re-evaluation.

4.6 The Sub-Committee considered that single deck vessels between 24 m and 45 m in length should be more closely studied as the application of the criterion appears more stringent to these than to larger vessels with two decks.

4.7 The Sub-Committee was informed, by the Secretariat, of previous information submitted to the former Working Group on Intact Stability on test results of radii of gyration for about 50 coasters and some fishing vessels which were the basis for the f-values recommended in resolution A.167(ES.IV) for rolling period tests. The Secretariat agreed to evaluate the approximation formula proposed for the weather criterion with the previous test data.

4.8 It was recalled that weather criteria used in some IMO codes were referred to in MSC/Circ.346. The Sub-Committee agreed that paragraph 3 of that circular should be interpreted in a general manner, i.e. that Member Governments should be aware of these criteria. However, the weather criterion in MSC/Circ.346 should not be applied to those types of vessels. The Sub-Committee also agreed that those weather criteria should be reviewed with the view of its harmonization with the final version of MSC/Circ.346 having regard to the particular design criteria of different types of vessels.

4.9 Members are invited to submit comments on paragraphs 4.4 to 4.6 above, for consideration at the next session.*

* See paragraph 13.21.

Following waves

4.10 The Sub-Committee noted the group's view on the possibility of combining a new criterion for the ship in following waves with the weather criterion and reiterated its view expressed at the twenty-eighth session that the matter of safety from capsizing in a following sea could be best analysed by separately considering the three modes leading to capsizing as follows:

- .1 pure loss of intact stability due to a wave crest located amidships;
- .2 parametric rolling due to a periodic change in vessel stability in relation to wave frequency and vessel's speed;
- .3 broaching due to the loss of directional control with the waves overtaking the vessel from astern.

4.11 The Sub-Committee agreed that the group should proceed with developing methods of analysis for each of these modes of capsizing, followed by a detailed analysis. In this respect it was recognized that the method presented in document SLF/17 formed a reasonable basis upon which the mode of pure loss of stability could be analysed. Members were invited to submit comments on the matter and proposals for methods of analysing the other two modes of capsize, namely by parametric rolling and broaching as referred to in 4.10.2 and 4.10.3 for consideration at the next session.

4.12 The Sub-Committee agreed that after each of the modes of capsizing have been analysed, efforts should be made to develop a single capsizing criterion or criteria. The delegations of the Federal Republic of Germany and Norway offered to submit model test results to aid in the refinement of an overall capsizing criterion.

External forces caused by fishing gear and other adverse effects specific to fishing vessels

4.13 The Sub-Committee noted from the papers submitted that studies have been made on stability problems which could arise from:

- .1 the dynamic effects of snagged gear (i.e. fouling obstruction on the sea-bed) which is of particular importance for boom trawlers;
- .2 the hauling of nets over the side, e.g. in purse seiners;
- .3 the release of a snagged net from the sea bottom with or without the use of the vessel's engine.

4.14 The Sub-Committee recalled that the 1977 Torremolinos Convention makes reference to these extreme forces and agreed with the group that the formulation of a criterion to account for forces caused by fishing gear was premature. However, the Sub-Committee agreed to keep this matter on the agenda while research work in this area is continuing. The Sub-Committee noted the intention of the Chinese delegation to submit research results on external forces caused by fishing gear. Other members are invited to submit their comments to the next session on the problems given in paragraph 4.13 and on possible stability requirements in this respect.

4.15 The Sub-Committee recalled that the former Sub-Committee on Safety of Fishing Vessels had extensively considered this particular subject. In order to take advantage of the outcome of the work of the former sub-committee, the Secretariat was requested to prepare a list of relevant documents on external forces caused by fishing gear and also prepare a list of relevant extracts from the reports of the former Sub-Committee on Safety of Fishing Vessels in this respect.

Breaking waves

4.16 The Sub-Committee recognized the danger of effect of breaking waves on vessels, in particular in coastal waters, and agreed that Administrations should consider addressing this effect in their national standards where vessels are known to operate in waters subject to breaking waves of predictable frequency.

4.17 The Sub-Committee agreed that the subject of breaking waves was finalized, but this does not preclude submissions which could bring new facts to light.

Stability of pontoons

4.18 The Sub-Committee noted that the Committee had accepted for circulation to Member Governments the Interim guidelines on intact stability requirements for pontoons (MSC/Circ.348) containing criteria used in six countries, with the proviso that the Sub-Committee should eventually propose a single criterion. The Sub-Committee reminded Members to submit information on their experience with these criteria and to comment on a possible single criterion.

Intact stability casualty records

4.19 The Sub-Committee received casualty records submitted by Norway (SLF/16 and SLF/21).

4.20 The Sub-Committee noted that various completed intact stability casualty records had been received since analyses were made by the Federal Republic of Germany and Poland in 1964, on which the criteria in resolution A.167(ES.IV) were partly based.

4.21 The Secretariat was requested to provide a reference list of all intact stability casualty records received by the Organization, indicating briefly the circumstances of the casualties.

4.22 The Sub-Committee agreed that it would be beneficial that the larger data bank now available should be utilized and analyses made to verify the established and envisaged stability criteria. The delegation of Poland volunteered to undertake this task. If the list is received by mid-1984 the study will be submitted to the thirtieth session of the Sub-Committee.

Long-term work programme

4.23 The Sub-Committee noted the group's opinion that in general a probabilistic approach should be adopted in the development of future stability criteria and that as a first step it would be necessary to identify and define only a few of the most dangerous situations of all possible situations which may occur during the whole life of a ship. The situations on which future work of the group should be primarily concentrated could be defined as follows:

- .1 ship in beam seas - severe wind and rolling including effect of shipping water on deck and other possible external forces;
- .2 ship in following seas - pure loss of stability, parametric rolling and broaching, including possible external forces such as water on deck, etc.

4.24 For the above situations, mathematical models should be developed as a second step and systematic calculations performed upon which a probabilistic stability criteria could be developed, taking into account consideration of the results of analysis of casualty records and model tests.

4.25 Members are invited to submit comments on definitions of the dangerous situations referred to in paragraph 4.23 well before the next session and also to submit results of research work which may contribute to the development of the probabilistic criteria as soon as available.*

5 COLLECTION AND ANALYSIS OF DAMAGE CARDS

Although no papers were submitted to this session, the Sub-Committee agreed that the item should be retained as a separate item on the agenda. Members were invited to submit completed damage cards using the form as set out at Annex 4 and any suggestions for an analysis or other evaluation.*

* See paragraph 13.21.

6 STANDARDS AND PRACTICES ON ICING

6.1 The Sub-Committee received information from Japan (SLF 29/6) regarding comparison of calculation results of weight of accumulated ice and of the vertical distances from base line to the centre of gravity of ice based on different standards on icing of vessels. The Sub-Committee noted the difference of weight of accumulated ice calculated in accordance with existing standards as shown in the Japanese paper.

6.2 The Sub-Committee also had before it documents by Iceland (SLF/32) with comments on the Japanese paper (SLF 29/6), by the USSR (SLF/27) on icing reports of fishing vessels and a list by the Secretariat (SLF/19) of documents on standards and practices on icing which had been submitted to the Organization over the years.

6.3 The Sub-Committee noted the information by Iceland (SLF/32) on the existing national practice which is more onerous than the 1977 Torremolinos Conference in respect of calculations of weight of ice on decks, etc., and for profile areas above the waterline, but recalled that the Conference recommendations were minimum standards.

6.4 Members were invited to provide information on their experience with and any national standards on ice accretion of offshore units and vessels other than fishing vessels (i.e. supply vessels, standby vessels, coasters) and on any studies in this field. Members were also invited to submit information on any practical methods of de-icing that have been applied with some success. Viewpoints on the format and content (recommendation 3 of the 1977 Torremolinos Conference) of possible future recommendations on ice accretion of the above-mentioned units and vessels are invited in time for discussion at the next session.*

7 IMPLEMENTATION AND INTERPRETATION OF PARTS A AND B OF CHAPTER II-1 OF THE 1974 SOLAS CONVENTION

Interpretation of the Convention

7.1 The Sub-Committee had before it a document submitted by the Netherlands and the United Kingdom (SLF 29/7/2), and a paper by Italy (MSC 48/21) on their interpretation of the term "conversion of a major character".

* See paragraph 13.21.

7.2 In pursuance of the request of the Committee, the Sub-Committee considered the Italian paper. The Sub-Committee agreed that there was no need for an IMO interpretation with the understanding that Regulation 1(a)(iii) of Chapter II-1 of the 1974 SOLAS Convention (Regulation II-1/1.3 of the 1981 SOLAS Amendments) requires that alterations and modifications of a major character should meet the requirements for new ships as far as the Administration deems reasonable and practicable. The Committee is invited to concur with this decision by the Sub-Committee.

7.3 The Sub-Committee considered the joint proposals by the Netherlands and the United Kingdom (SLF 29/7/2) for a uniform interpretation on minimum acceptable standards of residual stability after damage for passenger ships. Having recalled that in a number of instruments standards of residual stability for tankers were defined, the Sub-Committee agreed in principle to such a development.

7.4 These proposals are set out at Annex 5 but as agreement could not be reached on the particular criteria and other matters quoted, these were left in square brackets. Members were invited to consider these draft standards and to submit comments to the next session when the Sub-Committee intends to finalize it.*

Amendments to the Convention

7.5 The Sub-Committee recalled that at its last session a draft Regulation II-1/12-1 "Double Bottom in Cargo Ships other than Tankers" was tentatively agreed and noted the comments thereon by the United States (SLF 29/7/1). IACS was requested to prepare a more definite text of the draft regulation having regard to the existing practices of classification societies.

8 IMPLEMENTATION AND INTERPRETATION OF THE 1966 LOAD LINE CONVENTION

Implementation of the Convention

8.1 The Secretariat informed that there were now 100 Contracting Governments to the 1966 Load Line Convention of which 37 had ratified the 1971 Amendments, 34 the 1975 Amendments and 26 the 1979 Amendments.

8.2 The Sub-Committee noted that more information was received on implementation of the regulation equivalent to Regulation 27 (resolution A.320(IX)), unified interpretations of the Convention and form of record of conditions of assignment of load lines. The present position on these items was as follows:

* See paragraph 13.21.

- .1 10 Administrations have implemented the regulation equivalent to Regulation 27 of the Convention (resolution A.320(IX));
- .2 11 Administrations have implemented or accepted the unified interpretations of the Convention;
- .3 9 Administrations have in use the form of record of conditions of assignment of load lines.

Interpretations of the Convention

8.3 The Sub-Committee received documents submitted by Norway (SLF 29/8) with comments on the interpretation in SLF 28/7 and by IACS (SLF 29/8/1) concerning further interpretations and revision of previously published interpretations.

8.4 Discussion concerning the provisions for protection of the crew showed a need for several modifications. It was noted that single lifelines as per 'd' and 'e' of the table in SLF 28/7 would not be acceptable. It was also remarked that the proposed width of gangways (600 mm) was too narrow bearing in mind the possible need to carry an injured man by stretcher. IACS was requested to modify their table based on the Sub-Committee's discussion.

8.5 The Sub-Committee agreed on the IACS interpretations (SLF 29/8/1) except Interpretation LL.29/Rev.1, as set out at Annex 6. Annex 6 also contains an interpretation of Article 6 concerning the issue of Load Line Exemption Certificates for ships whose operational features lead to submergence of the load line marks during loading and unloading which was agreed by the Sub-Committee at its twenty-fifth session (STAB XXV/11, paragraph 2.6). The Committee is invited to approve these interpretations of the 1966 Load Line Convention for circulation to Contracting Governments.

8.6 The French delegation reserved its position on the interpretations set out at Annex 6 as they received the paper by IACS too late for study.

8.7 IACS Interpretation LL.29/Rev.1 was referred back for further consideration by IACS as some Members thought that benefit for sheer (which is fundamentally based on reserve buoyancy) should be limited to the first tier of erections above the freeboard deck.

8.8 The Sub-Committee noted that the total number of IACS interpretations is now 52. The Sub-Committee requested information from IACS to what extent their interpretations are covered by IMO interpretations and regarding the number of interpretations not yet submitted.

8.9 With regard to Load Line Exemption Certificates, a question was raised regarding the standards of equivalency used for the intact stability of submersible heavy load ships when their load line marks are submerged during loading or unloading operations. Members are invited to submit comments to the next session.*

9 SYSTEMATIC REVIEW OF THE 1966 LOAD LINE CONVENTION

9.1 The Sub-Committee had before it documents submitted by Norway (SLF 29/9), the USSR (SLF 29/9/2) and the United States (SLF 29/9/1) concerning a systematic review of the 1966 Load Line Convention.

9.2 The Sub-Committee considered these papers and also the general philosophy of the systematic review. The Sub-Committee agreed that any revision should be based on experience with modern types of ships. The general review should also include efforts to develop a simpler and more rational approach to the assignment of freeboards using new calculation and evaluation methods.

9.3 Among the items mentioned as first priority for systematic review are:

- .1 consideration of the adequacy of freeboard tables
 - seaway/ship motion studies
 - reduction of the number of freeboard corrections (block coefficient, sheer, superstructure, trunk, etc.)
 - watertight integrity.
- .2 simplification of zones, areas and seasonal periods
- .3 review of conditions of assignment
 - stability, strength, freeing port areas, doors, hatches, ventilator heights, etc.
- .4 possible alternatives for freeboard calculations
 - stability (intact and/or damaged)
 - others.

9.4 The United States delegation informed the Sub-Committee that a research project in seaway/ship motion with the object of comparison of freeboards for different sizes of ships was in progress. The United States delegation offered to submit information on the results of the project if available in time before the next session.

* See paragraph 13.21.

9.5 The Sub-Committee invited Members to submit comments and proposals on items specified in 9.3 for consideration at the next session.*

10 IMPLEMENTATION AND INTERPRETATION OF THE 1969 TONNAGE CONVENTION

10.1 Further to the interpretation in TM.5/Circ.1 the Sub-Committee received proposals for interpretation of the Convention submitted by the Federal Republic of Germany (SLF 29/10/2), Japan (SLF 29/10) and the Netherlands (SLF 29/10/1). The Sub-Committee reiterated its agreement that interpretation of the Convention would not be desirable, but if found necessary should be limited to those of a substantive nature.

10.2 An ad hoc working group on tonnage measurement was established to deal with the subject which was requested to consider in detail the paper by Japan which was received in time. The Sub-Committee agreed that the group might also consider the papers by the Federal Republic of Germany and the Netherlands, however they should report thereon to the next session of the Sub-Committee.

10.3 Having received the report of the group (SLF 29/WP.3) the Sub-Committee noted the clarifications by the group on the Japanese proposal and decided that no further action was needed by the group on papers SLF 29/10/1 and SLF 29/10/2.

10.4 Taking into account the view of the group that some points raised in documents SLF 29/10/1 and SLF 29/10/2 were common for both papers, the Sub-Committee invited the Federal Republic of Germany and the Netherlands to prepare a joint paper containing only the interpretations of a significant nature for consideration at the next session. Members are invited to submit comments on the forthcoming document.*

11 IMPLEMENTATION AND INTERPRETATION OF THE 1977 TORREMOLINOS CONVENTION AND RELATED CODE AND GUIDELINES

11.1 The Sub-Committee was informed that at present 11 States have ratified the Convention which covers about 20 per cent of the total number of the world fleet of fishing vessels. In this regard information on the number of fishing vessels of 24 m in length and above submitted by Japan (SLF/18) was noted.

11.2 The Icelandic delegation informed the Sub-Committee that a number of provisions of the Convention have been included in national regulations and that ratification of the Convention is envisaged soon.

* See paragraph 13.21.

11.3 The Sub-Committee noted information by the United Kingdom that within their national regulations they adopted certain provisions of the Convention and of the Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels.

11.4 The Sub-Committee considered a proposal by Poland (SLF 29/11) to amend the "Guidance on a method of calculation of the minimum distance from the deepest operating waterline to the lowest point of the top of the bulwark or to the edge of the working deck" contained in Recommendation 9 of the 1977 Torremolinos Conference.

11.5 Having discussed the proposal the Sub-Committee could not agree to relate the formulae for the "calculation of the minimum distance from the deepest operating water line to the lowest point on top of the bulwark" to the wind force. However, since the Polish delegation had convinced the Sub-Committee that Recommendation 9 of the 1977 Torremolinos Conference was based on an incorrect assumption, the Sub-Committee agreed that the recommendation needs to be amended and the Polish delegation agreed to submit an improved proposal to the next session for consideration as a possible future amendment of the above Recommendation.

12 REVIEW OF EXPERIENCE OF APPLYING THE SUBDIVISION AND DAMAGE STABILITY REGULATIONS FOR PASSENGER SHIPS (RESOLUTION A.265(VIII))

12.1 The Sub-Committee considered a paper by Poland (SLF/26) connected to its previous papers on the subject (SLF/1 and STAB/89) in which a new formula for calculating the p_1 factor for the case of combined longitudinal and transverse subdivision of ships was proposed.

12.2 The Sub-Committee then considered whether there was a need for amending the resolution A.265(VIII). A number of delegations stated that resolution A.265(VIII) was tested against a number of passenger ship designs and that the probabilistic standards were more severe than the present requirements of the SOLAS Convention.

12.3 Having recalled that the Assembly at its eighth session recommended that Governments should exchange experience gained as a result of using resolution A.265(VIII) the Sub-Committee agreed that as a first step it would be useful to collect information on implementation of resolution A.265(VIII) and on results of the calculations carried out in accordance with the resolution.

12.4 The Sub-Committee agreed to consider the matter in detail at the next session. Members were invited to submit relevant information for consideration.*

* See paragraph 13.21.

13 ANY OTHER MATTERS

Review of the MODU Code

13.1 The Sub-Committee noted that the Committee at its forty-eighth session decided that periodic review would be appropriate to update the Code in the light of experience gained and having regard to the lessons learned from the disaster with the rigs "Alexander Kielland" and "Ocean Ranger". The United States delegation notified the Sub-Committee that the casualty report on the "Ocean Ranger" was recently issued and is to be submitted to IMO at the forthcoming twenty-seventh session of the Sub-Committee on Ship Design and Equipment.

13.2 The Sub-Committee had before it documents submitted by Norway (SLF 29/14/3) as a continuation of arguments contained in SLF 28/12/2 and by the USSR (SLF 29/14). The Sub-Committee was informed that a number of documents covering inter alia subjects on intact stability, subdivision and damage stability of MODUs were submitted to the Sub-Committee on Ship Design and Equipment for consideration at its forthcoming twenty-seventh session.

13.3 Norway drew attention to events which might lead to damage as described in SLF 28/12/2. The collision between a semi-submersible unit and a fixed installation, a drifting supply vessel, a cruising supply vessel and a drifting tanker were considered in the paper. The main conclusion from the study of these scenarios was that the assumed damages were far in excess of what is covered by the MODU Code and for one scenario even in excess of the proposed amendments to the MODU Code submitted by Norway.

13.4 The Sub-Committee agreed that pending concurrence by the Sub-Committee on Ship Design and Equipment papers on the subject of stability and subdivision submitted to that Sub-Committee should be considered in this Sub-Committee. It was also agreed that the matter should be considered in detail under a separate agenda item at the next session. Members were invited to submit proposals and comments for consideration at the next session, taking into account any further information from the Sub-Committee on Ship Design and Equipment.

13.5 The Secretariat was requested to bring this section to the attention of the Sub-Committee on Ship Design and Equipment.

Information to the master

13.6 The Sub-Committee received comments on the proposal by the United States (SLF 28/2/3) concerning information on ship's stability to the master submitted by Norway (SLF 29/14/2), the USSR (SLF 29/14/1) and the United Kingdom (SLF 29/14/6).

13.7 It was recognized that information as at present outlined in resolution A.167(ES.IV) and the 1977 Torremolinos Convention providing the master with the most essential information should be simplified as much as possible so that the master could estimate with minimum expenditure of time whether the stability of the ship is sufficient.

13.8 The Sub-Committee agreed that development of the content for intact stability information should be undertaken. The delegation of the United States agreed to submit a draft text for consideration at the next session, which might eventually replace the provisions in resolution A.167(ES.IV) and the 1977 Torremolinos Convention.

Interpretation of the International Bulk Chemical Code

13.9 The Sub-Committee noted the request by the Sub-Committee on Bulk Chemicals in regard to interpretation of the survival provisions of the International Bulk Chemical Code (SLF 29/14/4) which were agreed by this Sub-Committee. The Sub-Committee considered points raised by the Sub-Committee on Bulk Chemicals. The outcome of the discussion is given below.

13.10 With regard to the interpretation of paragraph 2.8.2 of the IBC Code the Sub-Committee considered it unnecessary to:

- .1 specify a minimum length of ship below which the ship survival requirements of the Code would not be practical;
- .2 decide what dispensation from the prescribed standard of damage could be allowed for small Type 2 and 3 ships; and
- .3 stipulate a relaxation of the survival requirements of paragraph 2.9 as a dispensation for such small ships.

The Sub-Committee considered that the present text of paragraph 2.8.2 is adequate and that Administrations should decide the merits of each case on the particular circumstances that apply - such as the type of cargo, the density of population in the ports or waterways the ship will use, the number of other ships likely to be operating in the same area, etc.

13.11 In respect of interpretation of paragraph 2.5.2.2 of the IBC Code, the Sub-Committee shared the view of the Sub-Committee on Bulk Chemicals, that paragraph 2.5.2.2 is redundant. The standard of damage for Type 1 and 2 ships is stated in paragraph 2.8.1; lesser damage is covered in paragraph 2.5.2.1 and the separation of cargo tanks from the shell by at least 760 mm is stated in paragraph 2.6.1. Paragraph 2.5.2.2 is, therefore, no longer necessary. The Sub-Committee agreed that paragraph 2.5.2.2 of the IGC Code is also no longer necessary.

13.12 The Sub-Committee agreed that the proposed interpretation on the treatment for damage purposes of a stepped forward machinery space bulkhead in BCH 12/19, Annex 9 was in harmony with paragraph 2.7.4 of the IGO Code and Regulation 25(2)(c) of Annex I of MARPOL 73/78.

13.13 The Sub-Committee confirmed the validity of the Guidelines for the uniform application of survival requirements of the BCH and GC Codes (MSC/Circ.286) for inclusion in the final text of the guidelines on interpretations.

13.14 The Secretariat was requested to inform the Sub-Committee on Bulk Chemicals accordingly. The Committee is invited to note the action taken.

Calculation of stability curves for ships carrying timber deck cargoes

13.15 The Sub-Committee noted a paper submitted by Poland (SLF 29/14/5) concerning the method of calculation of stability curves where the buoyancy of the timber deck cargo is taken into account as in resolution A.167(ES.IV), which refers only to a permeability of 25 per cent of the volume occupied by timber deck cargo without further specification.

13.16 The Polish delegation was of the opinion that if the requirement is interpreted by the introduction of an effective height of the deck cargo, the actual righting arms could be significantly less than the calculated righting arms.

13.17 The Sub-Committee agreed that the matter should be considered at the next session as a separate agenda item. Members are invited to submit their national experience concerning method of calculation of stability curves for ships carrying timber deck cargoes.*

Work programme

13.18 The Sub-Committee agreed on its work programme as set out at Annex 7. The Committee is invited to approve the revised work programme.

Arrangements for the next session

13.19 The Sub-Committee noted that one session is envisaged for this Sub-Committee in 1985. The Sub-Committee tentatively agreed to hold its thirtieth session in January 1985 subject to concurrence by the Committee.

* See paragraph 13.21.

13.20 The Sub-Committee agreed on items to be included in the agenda for the next session as set out at Annex 8. It was agreed to establish ad hoc working groups at the next session:

- .1 subdivision and damage stability of dry cargo ships;
- .2 intact stability; and
- .3 the 1969 Tonnage Convention.

13.21 Members of the Sub-Committee were reminded of the decision by the Committee on the submission of documents which is that bulky documents and documents which require action or decision should be received by the Secretariat not later than three months before the opening of the session. Other non-bulky documents should be received by the Secretariat not later than two months before the session. Non-bulky documents containing comments to basic documents, and documents of a purely informative nature may be accepted provided that they are received by the Secretariat not later than one month before the opening of the session.

14 ACTION TO BE TAKEN BY THE COMMITTEE

The Committee is invited to consider and approve the report in general and in particular to:

- .1 concur with the decision of the Sub-Committee that there is no need for an interpretation of the term "conversion of a major character" in Chapter II-1 of the 1974 SOLAS Convention as referred to in paragraph 7.2;
- .2 approve the interpretations of the 1966 Load Line Convention and agree to their circulation to Contracting Governments as an LL circular as referred to in paragraph 8.5 and set out at Annex 6;
- .3 note the action taken by the Sub-Committee in respect of interpretations of the IBC Code as referred to in paragraphs 13.9 to 13.14;
- .4 approve the revised work programme of the Sub-Committee as referred to in paragraph 13.18 and set out at Annex 7;
- .5 allocate a meeting week to this Sub-Committee in 1985 as referred to in paragraph 13.19.

ANNEX 1

AGENDA FOR THE TWENTY-NINTH SESSION, INCLUDING
LIST OF DOCUMENTS CONSIDERED

- 1 Adoption of the agenda
SLF 29/1 Provisional agenda

- 2 Decision by the Maritime Safety Committee
SLF 29/2 Secretariat

- 3 Subdivision and damage stability of dry cargo ships including ro/ro ships
 - .1 information to the master

SLF 29/3	USSR	SLF 28/13,	
SLF 29/3/3	Norway	Annex 3	Report to the MSC
SLF 29/3/7	United Kingdom		
SLF 29/WP.5	Ad Hoc Group		
 - .2 subdivision and damage stability of dry cargo ships including ro/ro ships

SLF 29/3/1	USSR	SLF/20	Norway
SLF 29/3/2	Norway	SLF 28/3	Poland
SLF 29/3/4	United States	SLF 28/3/2	France
SLF 29/3/5	Poland		
SLF 29/3/6	ICS		
SLF 29/WP.2	France and United States		
SLF 29/WP.5	Ad Hoc Group		

- 4 Intact stability
 - .1 stability of ships in breaking waves

SLF 29/4	Norway	SLF/28	USSR
SLF 29/WP.7	Ad Hoc Group		
 - .2 stability of ships in following waves

SLF 29/4/1	USSR	SLF/5	German Democratic Republic
SLF 29/4/2	Norway		
SLF 29/4/6	China	SLF/17	German Democratic Republic
SLF 29/WP.7	Ad Hoc Group		
		SLF/24	Japan
		SLF 28/13,	
		Annex 6	Report to the MSC
		STAB XXVI/4/7	German Democratic Republic and Poland

- .3 weather criterion
- | | | | |
|-------------|--------------|---------------------|-------|
| SLF 29/4/2 | Norway | SLF/23 | Japan |
| SLF 29/4/3 | Poland | SLF/25 | Japan |
| SLF 29/4/4 | Poland | SLF/29 | USSR |
| SLF 29/WP.7 | Ad Hoc Group | MSC/Circ.346 | |
| | | MSC/Circ.346/Corr.1 | |
- .4 external forces caused by fishing gear and other adverse effects specific to fishing vessels
- | | | | |
|-------------|--------------|--------|-------------|
| SLF 29/4/7 | Netherlands | SLF/3 | Netherlands |
| SLF 29/WP.7 | Ad Hoc Group | SLF/11 | USSR |
| | | SLF/22 | Norway |
| | | SLF/30 | China |
| | | SLF/31 | China |
- .5 intact stability casualty records
- | | | | |
|-------------|--------------|--------|--------|
| SLF 29/WP.7 | Ad Hoc Group | SLF/16 | Norway |
| | | SLF/21 | Norway |
- .6 work programme on intact stability
- | | | | |
|-------------|--------------|--|--|
| SFL 29/4/1 | USSR | | |
| SLF 29/4/5 | Poland | | |
| SLF 29/WP.7 | Ad Hoc Group | | |
- 5 Collection and analysis of damage cards
- 6 Standards and practices on icing
- | | | | |
|----------|-------|-----------------------|-------------------|
| SLF 29/6 | Japan | SLF/19 | Secretariat |
| | | SLF/27 | USSR |
| | | SLF/32 | Iceland |
| | | PFV/273 | USSR |
| | | SLF 28/13,
Annex 7 | Report to the MSC |
- 7 Implementation and interpretation of Parts A and B of Chapter II-1 of the 1974 SOLAS Convention
- | | | | |
|-------------|-----------------------------------|-----------------------|-------------------|
| SLF 29/7 | Secretariat | SLF 28/13,
Annex 8 | Report to the MSC |
| SLF 29/7/1 | United States | MSC 48/21 | Italy |
| SLF 29/7/2 | Netherlands and
United Kingdom | | |
| SLF 29/WP.4 | Drafting Group | | |
- 8 Implementation and interpretation of the 1966 Load Line Convention
- | | | | |
|------------|--------|----------|------|
| SLF 29/8 | Norway | SLF 28/7 | IACS |
| SLF 29/8/1 | IACS | | |

- 9 Systematic review of the 1966 Load Line Convention
SLF 29/9 Norway
SLF 29/9/1 United States
SLF 29/9/2 USSR
- 10 Implementation and interpretation of the 1969 Tonnage Convention
SLF 29/10 Japan TM.5/Circ.1
SLF 29/10/1 Netherlands TM.5/Circ.2
SLF 29/10/2 Federal Republic
of Germany
SLF 29/WP.3 Ad Hoc Group
- 11 Implementation and interpretation of the 1977 Torremolinos
Convention and related Code and Guidelines
SLF 29/11 Poland SLF/18 Japan
- 12 Review of experience of applying the subdivision and damage
stability regulations for passenger ships (resolution A.265(VIII))
SLF/26 Poland
- 13 Election of Chairman and Vice-Chairman for 1985
- 14 Any other matters
.1 review of the MODU Code
SLF 29/14 USSR SLF 28/12/2 Norway
SLF 29/14/3 Norway DE 27/7 Liberia
.2 information to the master
SLF 29/14/1 USSR SLF 28/12/3 United States
SLF 29/14/2 Norway Res.A.167(ES.IV)
SLF 29/14/6 United Kingdom Res.A.168(ES.IV)
.3 interpretation of the International Bulk Chemical Code
SLF 29/14/4 Secretariat MSC/Circ.286
SLF 29/WP.6 United Kingdom BCH 12/19, Annex 9
.4 calculation of stability curves for ships carrying timber deck
cargoes
SLF 29/14/5 Poland Res.A.206(VII)
.5 work programme
SLF 29/WP.1 Secretariat
- 15 Report to the Maritime Safety Committee
SLF 29/WP.8 Secretariat
SLF 29/WP.8/
Add.1 Secretariat
SLF 29/15 Sub-Committee

ANNEX 2

DRAFT GUIDELINES FOR THE PREPARATION OF INFORMATION ON THE EFFECT
OF FLOODING TO BE PROVIDED TO MASTERS OF DRY CARGO SHIPS

- 1 The information provided, together with the damage control plan and any associated booklet, is to assist the Master in exercising his judgement in cases of serious flooding of the ship. It is not meant to replace his judgement but to make him aware of the capabilities of the ship.
- 2 Cases to be investigated and provided in this information should include the flooding of the machinery space and each cargo compartment individually. The cases to be investigated for cargo ships with unusual compartmentation may require special consideration.
- 3 For these investigations the ship should be considered, before flooding, as floating on even keel at two separate draughts, i.e. the summer load line draught and a mid-draught which equates approximately to the mean of the summer load line and light ship draughts. In these investigations the centre of gravity of the ship (KG) should be taken as follows:
 - .1 when sailing at the summer load line draught the KG equating to the homogeneously loaded condition, and
 - .2 when sailing at the mid-draught the KG should be a realistic figure for the corresponding displacement.
- 4 When considering flooding of the machinery space, a permeability of 0.85 should be used. For flooding of cargo compartments a range of anticipated permeabilities should be applied. These permeabilities need not be lower than 0.60 nor be greater than 0.95.
- 5 The results of these flooding investigations should be presented in a concise, easily assimilated form for each condition. Critical factors could be presented in tabular format. A description of the assumptions made in compiling the information should also be given.

ANNEX 3DRAFT PROBABILISTIC METHOD TO BE TESTED ON
DRY CARGO SHIPS*

1 Dry cargo ships are to have watertight subdivision such that the Attained Subdivision Index A is not less than the Required Subdivision Index R.

The Required Subdivision Index R to be evaluated and tested is:

$$R = 1 - \frac{1000}{4 L_s + 1500}$$

where:

L_s is as defined in resolution A.265(VIII)

2 The Attained Subdivision Index A to be calculated according to the following:

$$A = \sum a.p.s$$

where a and p are to have the same meaning and are to be calculated in accordance with resolution A.265(VIII).

Calculations are to be carried out for all compartments and groups of compartments which contribute to the Index A.

3 $s = 1$ if the criteria set out in paragraph 6 are fulfilled, otherwise $s = 0$.

4 Calculations are to be carried out for the following draughts:

.....
.....
.....

5 The following permeabilities are to be used in the calculations:

0.85 for machinery spaces

0.95 for tanks

The permeability used for cargo compartments is to reflect the anticipated values in the vessel's service.

6 The following criteria are to be used for intermediate and final

* The following assumptions should be made in performing the sample calculations:
 .1 permeability for cargo compartments to be taken as 0.7;
 .2 full load arrival conditions to be considered only; and
 .3 the results of the stability calculations should correspond to the constant displacement method.

stages of flooding:*

- .1 the damage waterline before and/or during equalization should be below the lower edge of any opening through which progressive flooding may take place.
- .2 transverse metacentric height $GM_T \geq 0.05$ m at angle of equilibrium.
- .3 angle of heel $\phi < 25$ degrees.
- .4 righting arm $GZ \geq 0.10$ m within 20 degrees from equilibrium.
- .5 range of positive stability ≥ 20 degrees from equilibrium.

* When more results of calculations are available, some, or all, of the criteria may apply to the final stage of flooding only.

1. Damage cards should be completed for decked, steel sea-going ships 25 m. in length and over, for all breaches of the hull causing flooding of any compartment above double bottom (collisions, stranding, etc.).
2. The term "damaged ship" refers to the ship for which this card is being completed.
3. A sketch showing location of damage and of main transverse bulkheads would be desirable.
4. Depth D should be measured to the bulkhead deck in passenger ships and to the freeboard deck in non-passenger ships (or to the uppermost completed deck, if bulkhead or freeboard deck are not specified).
5. In the case of collision with another ship, it is desirable to fill in damage cards for both ships.
6. All measurements should be given in metres.
7. Data marked with an asterisk (*) are the most important.
8. The provision of data marked (*) is optional.

Additional data to be supplied if available

1. Wind and sea (Beaufort scale) at time of casualty.....
.....
2. Speed at time of impact, in knots $\frac{\text{damaged ship } v_1 =}{\text{second ship } v_2 =}$
.....
3. Angle of encounter.....
4. Did the ship to which this card refers sink?.....
If not, give draught after damage.....
If so, indicate time taken to sink after collision..... and manner of sinking.....
.....
5. Appropriation of breached compartment(s) (e.g. machinery room, cargo hold, etc.).....
.....
6. Type and quantity of cargo in damaged compartment, if any.....
.....
7. Total number of persons on board ship before damage.....
8. Total number of persons lost.....
9. Were there any special circumstances which influenced the results of damage (e.g. open watertight doors, manholes, side-scuttles, or pipes, fractures, etc.)?.....
.....
10. Position of watertight bulkheads in vicinity of damage (distance from AP to each of them).....
.....
11. Number of compartments flooded.....
12. Was there a double bottom in the damaged area?.....
If so, indicate whether the inner bottom was breached.....
13. Any additional information considered useful (details of construction, year built, etc.).....
.....
.....
.....
.....

ANNEX 5

DRAFT INTERPRETATION OF THE REQUIREMENTS FOR ADEQUATE
RANGE OF STABILITY IN THE DAMAGE CONDITION
(REGULATION 7 OF CHAPTER II-1 OF THE 1974 SOLAS CONVENTION)

1 Scope

1.1 The interpretation provides the stability criteria which are appropriate in determining the adequacy of the residual stability after damage. Stability criteria are provided for both the intermediate and final stages of flooding, after equalization if fitted.

2 Recommended criteria

2.1 Regulation 7(b)(iii) - Range of stability in the final condition.

The curve of residual stability after the assumed maximum extent of damage or any lesser extent of damage in any position as required in Regulation 7 should have a range of not less than:

- .1 [7° in association with a GZ of not less than 0.05 metres within this range.] [This minimum criteria should be permitted only in a limited number of damage positions in any ship]; or
- .2 [20° in association with a GZ of not less than 0.10 metres within this range.]

Notwithstanding the above criteria the reserve of residual stability should be adequate to withstand anticipated heeling moments which the ship may reasonably be expected to be subject to after damage, e.g. the unsymmetrical distribution of persons.

2.2 Regulation 7(e) - Maximum heel before equalization

The maximum angle of heel before and during equalization should not exceed [20°] [except that a lesser angle may be permitted in ro/ro ships where the margin line should not be submerged in any stage of flooding or equalization].

2.3 Regulation 7(f)(ii) - Heel in the final condition

The angle of heel in the final condition after damage should be 7° and the relaxation in special cases should be regarded as an exceptional measure which is not to be adopted in ships engaged in normal passenger carrying

operations. Ships should not be considered for such exceptional treatment unless all passengers are adult with some familiarity with sea-going conditions in their employment.

2.4 Regulation 7(f)(iii) - Stability in intermediate stages

The curve of residual stability at any intermediate stage of flooding after the assumed maximum extent of damage or any lesser extent of damage in any position as required in Regulation 7 should have a range of not less than $[5^{\circ}]$ in association with a GZ of not less than 0.03 metres within this range.] $[20^{\circ}]$ in association with a GZ of not less than 0.1 metres within this range.]

Where the margin line is submerged during the intermediate stages of flooding and partial bulkheads are provided to limit the spread of water along the bulkhead deck so that the buoyancy of the superstructure outside the damage zone may be taken into account, then the curve of residual stability should have a range of not less than $[5^{\circ}]$ before the immersion point of the inner edge of the effective partial bulkheads at the level of the bulkhead deck and within this $[5^{\circ}]$ range a GZ of not less than $[0.03]$ metres should be provided.

ANNEX 6

DRAFT UNIFIED INTERPRETATIONS OF THE PROVISIONS
OF THE 1966 LOAD LINE CONVENTION
(Fourth set)

Exemptions (Article 6)

An exemption certificate according to Article 6 should be granted by the Administration for ships whose operational features lead to submergence of the load line mark during loading or unloading, to avoid contravention of Article 12(1).

Freeboards greater than Minimum (Regulation 2(5))
(IACS Interpretation LL.51)

Where freeboards are required to be increased, because of such considerations as strength (Regulation 1), location of shell doors (Regulation 21) or side scuttles (Regulation 23) or other reasons, then:

1. the height of
 - door sills (Regulation 12)
 - hatchway coamings (Regulation 15(1))
 - sills of machinery space openings (Regulation 17)
 - miscellaneous openings (Regulation 18)
 - ventilators (Regulation 19)
 - air pipes (Regulation 20)
2. the scantlings of hatch covers (Regulations 15 and 16)
3. freeing arrangements (Regulation 24) and means for protection of crew (Regulation 25)

on the actual freeboard deck may be as required for a superstructure deck, provided the summer freeboard is such that the resulting draught will not be greater than that corresponding to the minimum freeboard calculated from an assumed freeboard deck situated at a distance equal to a standard superstructure height below the actual freeboard deck. Similar considerations may be given in cases of draught limitation on account of bow height (Regulation 39).

Moulded Depth (Regulations 3(5)(c) and 3(9))
and Freeboard Calculation (Regulation 40(1))

Discontinuous Freeboard Deck, Stepped Freeboard Deck
(IACS Interpretation LL.48/Rev.1)

- 1 Where a step exists in the freeboard deck, creating a discontinuity extending over the full breadth of the ship, and this step is in excess of one metre in length, Regulation 3(9) should apply (Figure 1). A step one metre or less in length should be treated as a recess in accordance with paragraph 2.
- 2 Where a recess is arranged in the freeboard deck, and this recess does not extend to the side of the ship, the freeboard calculated without regard to the recess is to be corrected for the consequent loss of buoyancy. The correction should be equal to the value obtained by dividing the volume of the recess by the waterplane area of the ship (AW) at 85 per cent of the least moulded depth (Figure 2):
 - .1 The correction should be a straight addition to the freeboard obtained after all other corrections have been applied, except bow height correction.
 - .2 Where the freeboard, corrected for lost buoyancy as above, is greater than the minimum geometric freeboard determined on the basis of a moulded depth measured to the bottom of the recess, the latter value may be used.
- 3 Recesses in a second deck, designated as the freeboard deck, may be disregarded in this interpretation provided all openings in the weather deck are fitted with weathertight closing appliances.
- 4 Due regard is to be given to the drainage of exposed recesses and to free surface effects on stability.
- 5 This interpretation is not intended to apply to dredgers, hopper barges or other similar types of ships with large open holds, where each case should require individual consideration.

Figure 1 (paragraph 1)

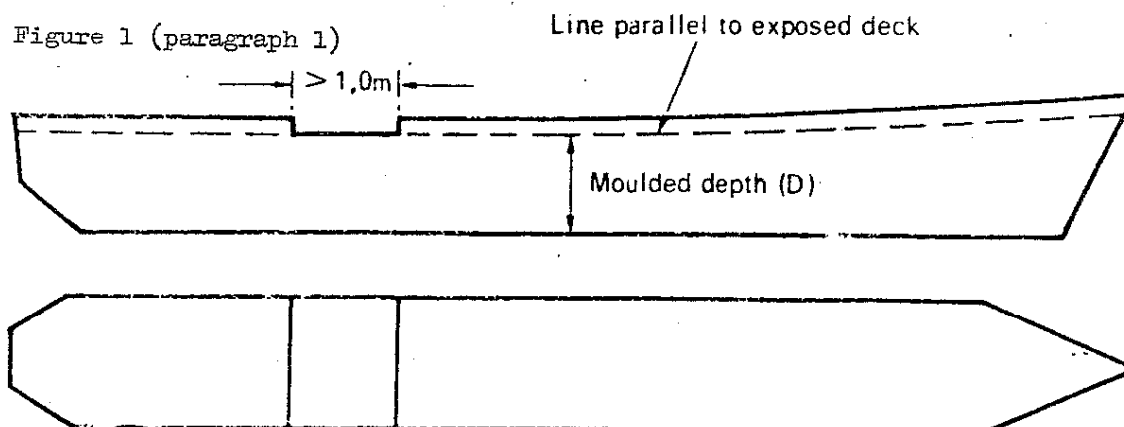
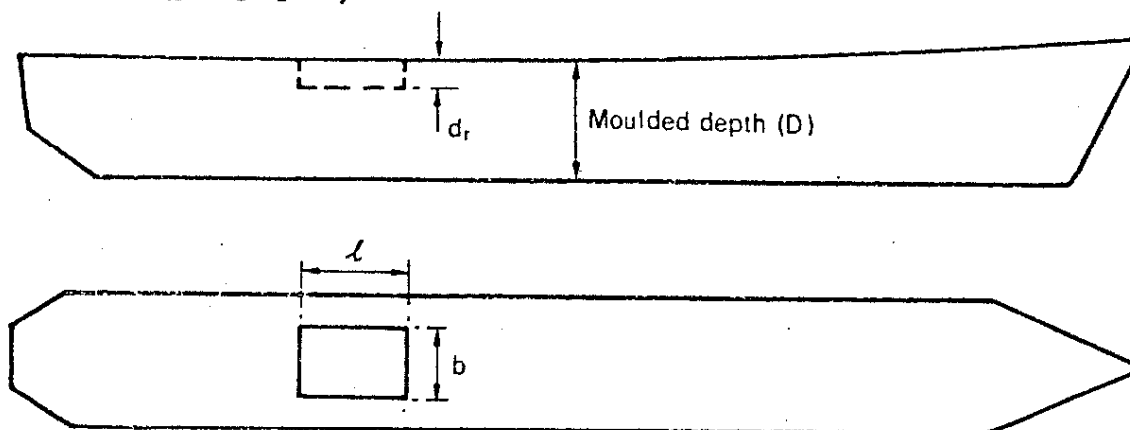


Figure 2 (paragraph 2)



Correction is addition to freeboard equal to :

$$\frac{l \times b \times d_r}{Aw0.85D}$$

Weathertight Closing Appliances for Ventilators
(Regulation 19(4))
(IACS Interpretation LL.52)

- 1 Where required by Regulation 19, weathertight closing appliances for all ventilators in positions 1 and 2 are to be of steel or other equivalent materials.
- 2 Wood plugs and canvas covers are not acceptable in these positions.

Treatment of Superstructures with Sloping End Bulkheads
(Regulations 34, 35 and 38(12))
(IACS Interpretation LL.37/Rev.1*)

When taking account of superstructures which have sloping end bulkheads, in the calculations of freeboards, such superstructures should be dealt with in the following manner:

Length of Superstructure (Regulation 34)

- 1 When the height of superstructure, clear of the slope, is equal to or smaller than the standard height, the length (S) is to be obtained as shown on Figure 1.
- 2 When the height is greater than the standard, the length (S) is to be obtained as shown on Figure 2.
- 3 The foregoing should apply only when the slope, related to the base line, is 15° or greater. Where the slope is less than 15° , the configuration should be treated as sheer.

Effective Length of Superstructure (Regulation 35)

When the height of the superstructure, clear of the slope, is less than the standard height, its effective length (E) should be its length (S) as obtained from paragraph 1 above, reduced in the ratio of its actual height to the standard height.

Sheer (Regulation 38(12))

When a poop or a forecastle has sloping end bulkheads, and sheer credit may be allowed on account of excess height, the formula given in Regulation 38(12) should be used, the values of (y) and (L') being as shown on Figure 3.

* Rev.1 adds paragraph (3) to Interpretation LL.37 of Regulation 34 in the "Supplement relating to the International Convention on Load Lines, 1966" which was published in 1981.

Figure 1. *Height of superstructure equal to or smaller than the standard height (h)*

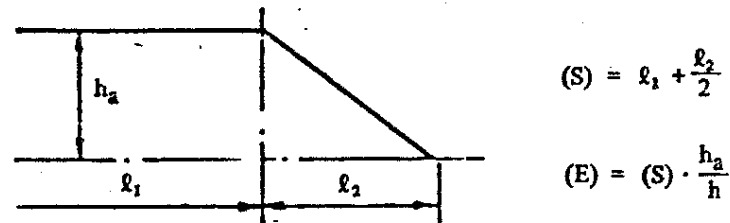


Figure 2. *Height of superstructure greater than the standard height*

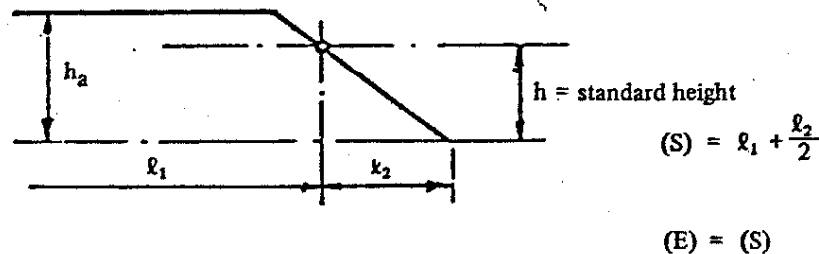
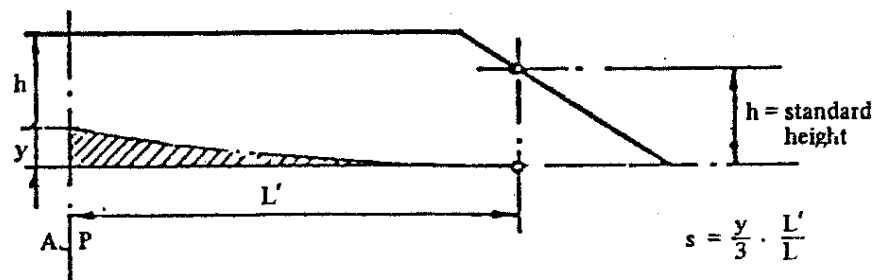


Figure 3. *Shear credits for excess height*



Continuous Hatchways as Trunks (Regulation 36)
(IACS Interpretation LL.26/Rev.1*)

It is recommended that continuous hatchways may be treated as a trunk in the freeboard computation provided Regulation 36 is complied with in all respects.

The trunk deck stringer referred to in Regulation 36(1)(b) may be fitted outboard of the trunk side bulkhead in association with the following:

* Rev.1 consists of a rewording of paragraph (3) of Interpretation LL.26 in the "Supplement relating to the International Convention on Load Lines, 1966" which was published in 1981.

1. The stringer so formed is to provide a clear walkway of at least 450 mm in width on each side of the ship.
2. The stringer is to be of solid plate efficiently supported and stiffened.
3. The stringer is to be as high above the freeboard deck as practicable. In the freeboard calculation, the trunk height is to be reduced by at least 600 mm or by the actual difference between the top of the trunk and the stringer, whichever is greater.
4. Hatch cover securing appliances are to be accessible from the stringer or walkway.
5. The breadth of the trunk is to be measured between the trunk side bulkheads.
6. Regulation 36 is to be complied with in all other respects.

Bow Height (Regulation 39(2))
(IACS Interpretation LL.28/Rev.1)

1 When calculating the bow height, the sheer of the forecastle deck may be taken into account, even if the length of the forecastle is less than $0.15L$, but greater than $0.07L$, provided that the forecastle height is not less than one half of standard height of superstructure as defined in Regulation 33 between $0.07L$ and the forward terminal.

2 Where the forecastle height is less than one half of standard height of superstructure, as defined in Regulation 33, the credited bow height may be determined as follows (Figures 1 and 2 illustrate the intention of 2.1 and 2.2, respectively):

- .1 when the freeboard deck has sheer extending from abaft $0.15L$, by a parabolic curve having its origin at $0.15L$ abaft the forward terminal at a height equal to the midship depth of the ship, extended through the point of intersection of forecastle bulkhead and deck, and up to a point at the forward terminal not higher than the level of the forecastle deck. However, if the value of the height denoted h_t on Figure 1 is smaller than the value of the height denoted h_b , then h_t may be replaced by h_b in the available bow height.
- .2 When the freeboard deck has sheer extending for less than $0.15L$ or has no sheer, by a line from the forecastle deck at side at $0.07L$ extended parallel to the base line to the forward terminal.

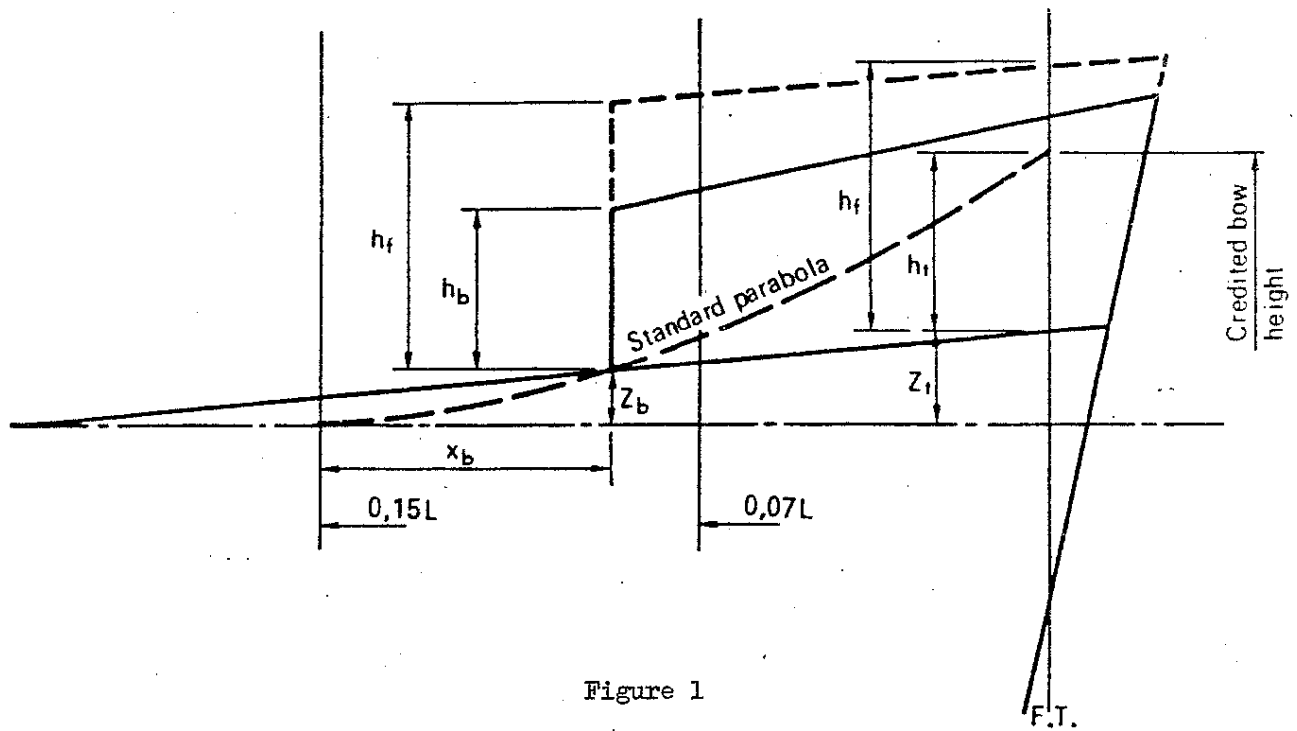


Figure 1

h_f = Half standard height of superstructure as defined in Regulation 33.

$$h_t = Z_b \left(\frac{0,15L}{x_b} \right)^2 - Z_t$$

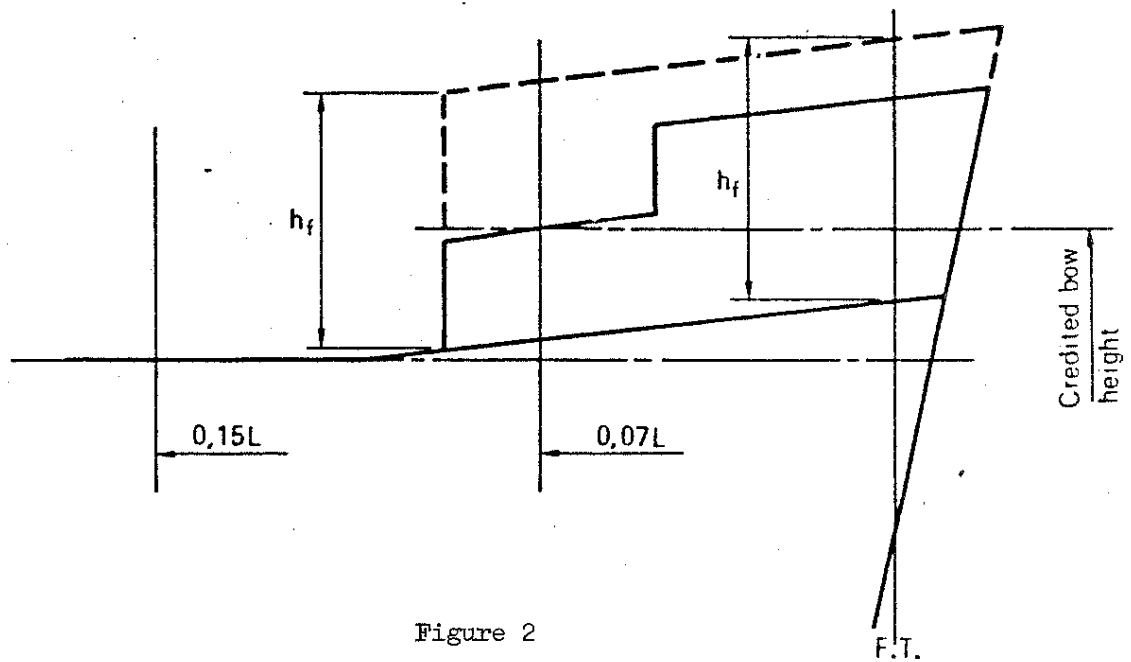


Figure 2

ANNEX 7

FUTURE WORK PROGRAMME OF THE SUB-COMMITTEE

- *1 Subdivision and damage stability of dry cargo ships including ro/ro ships:
 - .1 probabilistic concept of survival
 - .2 information to the master
 - 2 Intact stability:
 - ***.1 review of IMO criteria (resolutions A.167(ES.IV) and A.168(ES.IV)) taking into account the weather criterion including harmonization of the latter for different types of ships
 - ***.2 improved criteria taking into account the effect of following and quartering seas, external forces and other factors affecting stability as well as systematic model tests
 - ** .3 stability of pontoons - evaluation of experience to set single standard
 - ***.4 collection and analysis of intact stability casualty records
 - ** .5 information to the master on intact stability
 - ** .6 calculation of stability curves for ships carrying timber deck cargoes
 - ***3 Collection and analysis of damage cards
 - *4 Standards and practices on icing
 - ***5 Implementation and interpretation of Part B of Chapter II-1 of the 1974 SOLAS CONVENTION
 - ***6 .1 Implementation and interpretation of the 1966 Load Line Convention
 - *** .2 Systematic review of the 1966 Load Line Convention
 - ***7 Implementation and interpretation of the 1969 Tonnage Convention
 - ***8 Implementation and interpretation of the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels
 - ***9 Implementation and interpretation of the FAO/ILO/IMO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels
 - ***10 Review of experience of applying the subdivision and damage stability regulations for passenger ships (resolution A.265(VIII))
 - **11 Periodic review of the stability and subdivision requirements of the MODU Code
 - **12 Implementation and interpretation of the 1977 Torremolinos Convention including harmonization with the 1981 and 1983 SOLAS Amendments
- ***
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- * Items of higher priority
 - ** Items of lower priority
 - *** Items under continuous review