



MARITIME SAFETY COMMITTEE  
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Agenda item 25

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## WORK PROGRAMME

### Damage stability verification of oil, chemical and gas tankers

Submitted by Denmark, Finland, Germany, Norway, Sweden,  
the United Kingdom and INTERTANKO

#### SUMMARY

**Executive summary:** This document proposes a new work programme item to develop guidelines for the verification of damage stability requirements contained in existing instruments for tank vessels, and for consideration of their application on new and existing vessels to ensure the consistent verification of damage stability on such vessels prior to departure.

**Action to be taken:** Paragraph 38

**Related documents:** MSC 82/24, paragraph 18.2 and MSC 82/18/3

#### Introduction

1 This document is submitted in accordance with the provisions of the Guidelines on the Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies (MSC-MEPC.1/Circ.1).

#### Scope of the proposal

2 The United Kingdom previously submitted document MSC 82/18/3 concerning the lack of damage stability verification on tank vessels prior to departure, inviting the Committee to consider the development of a circular on the issue and how global and uniform application of these requirements may be ensured.

3 The co-sponsors propose a new work programme item to examine and develop acceptable methods of damage stability verification for use on tank ships prior to departure to sea and the specification of a definitive calculation method to be used for this purpose.

#### Need for action

4 The United Kingdom, for example, has conducted inspections on ships within its ports, consulted with industry and other flag State Administrations and the co-sponsors remain concerned that provisions relating to compliance with damage stability requirements in IMO instruments are not being met in accordance with approvals granted by flag Administrations and their delegated authorities.

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5 In particular, the co-sponsors believe that compliance with the provisions of:

- .1 MARPOL Annex I, regulation 28 (oil tankers);
- .2 IBC Code, chapter 2.9 (gas tankers); and
- .3 IGC Code, chapter 2.9 (chemical tankers),

are frequently not being verified prior to departure when vessels' load cargoes may not be in accordance with the standard loading conditions in their approved stability information.

6 In this respect, the co-sponsors believe that there is presently an unacceptable increase in the risk of loss of life and/or marine pollution following a damage or grounding to such vessels, and that this requires urgent action to ensure compliance on a global basis.

### **Analysis of issues involved**

7 The co-sponsors have identified inadequacies in the methods currently used to verify that tank vessels comply with damage stability requirements prior to departure. Reliance is often being placed on the use of intact stability computer programs for this purpose, but these do not confirm compliance with damage requirements.

8 During inspections, it has been found that more than 50% of United Kingdom tank vessels regularly operate with loading conditions which are not included in their approved Stability Information Booklet and only use intact stability computers to check these conditions. A similar pattern is seen on foreign vessels calling at United Kingdom ports.

9 The importance and the difference between intact and damage stability requirements does not appear to be fully appreciated by seafarers, and the situation is seen to be confused through mandatory carriage of longitudinal strength computers under classification rules on many tank ships, most of which also incorporate an intact stability assessment module.

10 Taken in conjunction with the low margins of stability often exhibited by the standard loading conditions in approved stability information for tank vessels, there is a probability that these ships are regularly operating in loading conditions with reduced or zero levels of residual stability, even where these loading conditions appear to be closely related to a standard loading condition.

11 Actual conditions of loading previously recorded by ships transferring to the United Kingdom flag have regularly been found to fail the requirements for survivability after application of the extent of damage specified in the regulations.

12 There are currently three possible options for an operator to demonstrate compliance with damage stability:

- .1 to load the vessel only in accordance with standard loading conditions from the approved Intact Stability Information Booklet, as these should also have been approved for damage;
- .2 where there is a significant variation from the standard loading conditions in the approved Intact Stability Information Booklet, to obtain approval from the Administration, or a recognized organization acting on its behalf, for the proposed loading condition (see Note below); or

- .3 to use an approved Stability Programme or other acceptable method to check that all loading conditions comply with damage as well as intact stability, in which case the use of such a stability programme or other method must be specified in the stability book or on the certificate of fitness.

*Note: Even minor changes to a standard loading condition can have significant effects on residual stability following a damage. However, there is no accepted definition as to what “significant variation” means, for the guidance of both seafarers and PSC inspectors.*

13 Having regard to the frequency with which loading conditions vary from the standard conditions in the approved stability information, and the almost total lack of adherence to the safeguard provided by verification through flag Administrations as described in paragraph 12.2 above, this is no longer seen to be a viable option when compared to the possibility of making such verification on board.

14 For maximum operational flexibility it is the opinion of the co-sponsors that the only practical solution is to fit an approved damage stability computer or other acceptable method of damage stability verification on all tank vessels.

15 The development and introduction on tank vessels of acceptable methods to evaluate and verify damage stability compliance of alternative loading conditions from those in the approved stability information (such as stability programmes or simplified critical KG data) would serve to correct the present lack of damage stability verification observed on tank ships.

16 It is noted that IACS have published unified requirement UR L5 concerning approval of stability programmes for fitment to ships contracted after 1 July 2005, and that this contains information on performance and accuracy. It is considered that the development of guidelines for a definitive calculation method to be used for verification of damage stability in conjunction with this approval standard would form a suitable basis for a solution based upon stability programmes or simplified critical KG data.

17 It is recognized that there may be circumstances where mandatory carriage of a damage stability programme or other acceptable method may not be justified, but it considered that moving to mandatory provision with limited conditional omission on a case by case basis with flag State approval, offers the best opportunity for enforcement of current IMO instruments with regard to damage stability compliance.

### **Costs to the maritime industry**

18 Following the introduction of IACS UR L5, and its application to the majority of new tank ships, the additional cost for such vessels would only be that related to the cost of modifying the programmes to suit the guidelines for a definitive standard calculation method developed in accordance with the new work programme. This cost is likely to be low or included as a programme upgrade.

19 If damage stability programmes were made mandatory on existing vessels the cost would be that for purchase of a damage stability module for the existing strength and intact stability programme on board or to buy an entirely new system incorporating strength, intact and damage stability. It is anticipated that the likely range of software costs involved would be between £1,000 and £8,000, to which the associated costs of training personnel must be added.

20 For other methods, such as development of critical KG data, the compliance costs are anticipated to be no more than £5,000 plus associated costs of training personnel.

21 The compliance costs of a stability computer or critical KG data based system are both considered to be negligible compared to potential costs resulting from an incident resulting from non-compliance with existing damage stability provisions within IMO instruments as defined in paragraph 5 above.

### **Benefits**

22 Application of a uniform requirement to undertake damage stability verification on all tank vessels prior to departure would provide a significant increase in maritime safety, and a reduction in risk of loss of life and marine pollution.

23 Compulsory on board verification of damage stability of alternate loading conditions from those in the approved stability information would also ensure that where such checks are required under existing instruments, as defined in paragraph 5 above, these are actually undertaken and records kept in lieu of the general omission seen at present. This aspect will assist during PSC inspection.

### **Legislative and administrative burdens**

24 The legislative and administrative burdens are minor compared to the additional safety gained from the proposed improvements.

### **Priority and completion date**

25 High priority. Target completion date should be 2009.

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

26 Consideration and development of acceptable methods for the verification of damage stability for use on tank vessels prior to departure, noting the need for such methods to provide a simple and effective record for examination by PSC inspectors and others.

27 The consideration and development of guidelines on a definitive calculation method to be used in the preparation and approval of such acceptable methods for the verification of damage stability on tank vessels prior to departure.

### **Is the subject within the scope of IMO's objectives?**

28 Yes – this proposal will improve both industry and seafarer awareness of the issue and will ensure compliance with existing IMO legislation.

### **How is the proposed item related to the scope of the Strategic Plan for the Organization and how does it fit into the High-level Action Plan?**

29 This issue is clearly related to safety and marine environmental protection and the enhancement of seafarer safety and is explicitly, therefore, within the scope of both the Strategic and High-level Action Plans.

**Do adequate industry standards exist?**

30 A range of stability programmes approved by classification societies already exist which can address this issue, and these have been effectively rendered compulsory equipment on new tank vessels by IACS UR L5.

31 However, in order to provide a uniform standard of calculation consideration must be given to developing guidelines on a specific calculation methodology which can be applied by all such programmes.

**Do the benefits justify the actions?**

32 Yes.

**Identification of which committee/subsidiary body(ies) are essential to complete the work**

33 SLF Sub-Committee – potentially including assistance from DE and STW Sub-Committees.

**Estimation of the number of sessions needed to complete the work**

34 It is anticipated that two sessions will be needed by the SLF Sub-Committee to complete the work, with potential for intersessional work.

35 Due to the urgency of addressing this important issue on a global basis, the co-sponsors request that consideration be given to including this proposal in the agenda for SLF 51.

**Human element consideration**

36 Current evidence suggests that seafarers may not always appreciate the significance of issues involved with safe loading of tank ships such that they comply with damage stability requirements.

37 Implementation of corrective action through provision of suitable means of verification and placing responsibility on seafarers to check damage stability prior to departure should greatly increase seafarer awareness of this important aspect of ship operation.

**Action requested of the Committee**

38 The Committee is requested to note the content of this document and to take action accordingly.

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