



SUB-COMMITTEE ON SHIP DESIGN AND
EQUIPMENT
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REPORT TO THE MARITIME SAFETY COMMITTEE

Table of contents

Section	Page
1 GENERAL	4
2 DECISIONS OF OTHER IMO BODIES	6
3 MEASURES TO PREVENT ACCIDENTS WITH LIFEBOATS	7
4 COMPATIBILITY OF LIFE-SAVING APPLIANCES	12
5 REVISION OF RESOLUTION A.760(18)	14
6 PERFORMANCE STANDARDS FOR RECOVERY SYSTEMS	14
7 CARGO OIL TANK COATING AND CORROSION PROTECTION	16
8 DEVELOPMENT OF A NEW FRAMEWORK OF REQUIREMENTS FOR LIFE-SAVING APPLIANCES	20
9 GUIDANCE TO ENSURE CONSISTENT POLICY FOR DETERMINING THE NEED FOR WATERTIGHT DOORS TO REMAIN OPEN DURING NAVIGATION	20
10 PROTECTION AGAINST NOISE ON BOARD SHIPS	22
11 THERMAL PERFORMANCE OF IMMERSION SUITS	23
12 ALTERNATIVE ARRANGEMENTS FOR THE BOTTOM INSPECTION REQUIREMENTS FOR PASSENGER SHIPS OTHER THAN RO-RO PASSENGER SHIPS	24
13 AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES	26
14 SAFETY PROVISIONS APPLICABLE TO TENDERS OPERATING FROM PASSENGER SHIPS	27

15	CLASSIFICATION OF OFFSHORE INDUSTRY VESSELS AND CONSIDERATION OF THE NEED FOR A CODE FOR OFFSHORE CONSTRUCTION SUPPORT VESSELS	29
16	INTERPRETATION ON APPLICATION OF SOLAS, MARPOL AND LOAD LINE REQUIREMENTS FOR MAJOR CONVERSIONS OF OIL TANKERS	30
17	CONSIDERATION OF IACS UNIFIED INTERPRETATIONS	32
18	DEVELOPMENT OF A MANDATORY CODE FOR SHIPS OPERATING IN POLAR WATERS	34
19	APPLICATION OF AMENDMENTS TO SOLAS CHAPTER III AND THE LSA CODE	39
20	GUIDELINES FOR A VISIBLE ELEMENT TO GENERAL ALARM SYSTEMS ON PASSENGER SHIPS	40
21	IMPROVEMENT OF EXISTING POLLUTION PREVENTION EQUIPMENT	41
22	DEVELOPMENT OF GUIDELINES FOR A SHIPBOARD OIL WASTE POLLUTION PREVENTION PLAN	42
23	MANUALLY OPERATED ALTERNATIVES IN THE EVENT OF POLLUTION PREVENTION EQUIPMENT MALFUNCTIONS	43
24	WORK PROGRAMME AND AGENDA FOR DE 54	45
25	ANY OTHER BUSINESS	47
26	ACTION REQUESTED OF THE COMMITTEES	49

LIST OF ANNEXES

ANNEX 1	DRAFT MSC CIRCULAR ON GUIDELINES FOR EVALUATION AND REPLACEMENT OF LIFEBOAT ON-LOAD RELEASE MECHANISMS REFERRED TO IN SOLAS REGULATION III/1.5
ANNEX 2	DRAFT MSC RESOLUTION ON ADOPTION OF AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70))
ANNEX 3	DRAFT MSC CIRCULAR ON DETERMINATION OF THE REQUIRED SAFE WORKING LOAD OF LIFE RAFT LAUNCHING APPLIANCES ON PASSENGER SHIPS

- ANNEX 4 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR CARGO OIL TANKS OF CRUDE OIL TANKERS
- ANNEX 5 DRAFT MSC RESOLUTION ON PERFORMANCE STANDARD FOR ALTERNATIVE MEANS OF CORROSION PROTECTION FOR CARGO OIL TANKS OF CRUDE OIL TANKERS
- ANNEX 6 DRAFT MSC CIRCULAR ON GUIDELINES FOR THE ASSESSMENT OF TECHNICAL PROVISIONS FOR THE PERFORMANCE OF AN IN-WATER SURVEY IN LIEU OF BOTTOM INSPECTION IN DRY-DOCK TO PERMIT ONE DRY-DOCK EXAMINATION IN ANY FIVE-YEAR PERIOD FOR PASSENGER SHIPS OTHER THAN RO-RO PASSENGER SHIPS
- ANNEX 7 DRAFT AMENDMENTS TO THE INTERNATIONAL LIFE-SAVING APPLIANCES (LSA) CODE
- ANNEX 8 DRAFT MSC CIRCULAR ON UNIFIED INTERPRETATIONS OF THE PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS (RESOLUTION MSC.215(82))
- ANNEX 9 BIENNIAL AND POST-BIENNIAL AGENDAS OF THE DE SUB-COMMITTEE
- ANNEX 10 DRAFT PROVISIONAL AGENDA FOR DE 54
- ANNEX 11 REPORT ON THE STATUS OF PLANNED OUTPUTS FOR THE DE SUB-COMMITTEE
- ANNEX 12 DRAFT MSC CIRCULAR ON UNIFIED INTERPRETATION OF SOLAS REGULATION II-1/3-5
- ANNEX 13 DRAFT MSC RESOLUTION ON ADOPTION OF AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008 (2008 SPS CODE)

1 GENERAL

Introduction

1.1 The Sub-Committee held its fifty-third session from 22 to 26 February 2010 under the chairmanship of Mrs. Anneliese Jost (Germany). The Vice-Chairman, Dr. Susumu Ota (Japan), was also present.

1.2 The session was attended by delegations from the following Member Governments:

ALGERIA	LIBERIA
ANTIGUA AND BARBUDA	LIBYAN ARAB JAMAHIRIYA
ARGENTINA	MALAYSIA
AUSTRALIA	MALTA
BAHAMAS	MARSHALL ISLANDS
BELGIUM	MEXICO
BOLIVIA (PLURINATIONAL STATE OF)	MOROCCO
BRAZIL	NETHERLANDS
CANADA	NEW ZEALAND
CHILE	NIGERIA
CHINA	NORWAY
COLOMBIA	PANAMA
COOK ISLANDS	PAPUA NEW GUINEA
CUBA	PERU
CYPRUS	PHILIPPINES
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	POLAND
DENMARK	REPUBLIC OF KOREA
ECUADOR	ROMANIA
EGYPT	RUSSIAN FEDERATION
FINLAND	SAUDI ARABIA
FRANCE	SINGAPORE
GERMANY	SOUTH AFRICA
GHANA	SPAIN
GREECE	SWEDEN
ICELAND	THAILAND
INDONESIA	TURKEY
IRAN (ISLAMIC REPUBLIC OF)	TUVALU
IRELAND	UKRAINE
ITALY	UNITED KINGDOM
JAPAN	UNITED STATES
KENYA	URUGUAY
LATVIA	VANUATU
	VENEZUELA (BOLIVARIAN REPUBLIC OF)

and the following Associate Members of IMO:

FAROE ISLANDS (DENMARK)	HONG KONG, CHINA
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1.3 The session was also attended by observers from the following intergovernmental organizations:

EUROPEAN COMMISSION (EC)
MARITIME ORGANIZATION FOR WEST AND CENTRAL AFRICA (MOWCA)

and by observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
INTERNATIONAL UNION OF MARINE INSURANCE (IUMI)
COMITÉ INTERNATIONAL RADIO-MARITIME (CIRM)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL MARITIME PILOTS' ASSOCIATION (IMPA)
FRIENDS OF THE EARTH INTERNATIONAL (FOEI)
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)
INTERNATIONAL LIFESAVING APPLIANCES MANUFACTURERS'
ASSOCIATION (ILAMA)
COMMUNITY OF EUROPEAN SHIPYARDS' ASSOCIATIONS (CESA)
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS
(INTERTANKO)
INTERNATIONAL MARITIME RESCUE FEDERATION (IMRF)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)
INTERNATIONAL ASSOCIATION OF DRY CARGO SHIPOWNERS
(INTERCARGO)
WORLD WIDE FUND FOR NATURE (WWF)
THE INSTITUTE OF MARINE ENGINEERING, SCIENCE AND TECHNOLOGY
(IMarEST)
THE INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)
THE ROYAL INSTITUTION OF NAVAL ARCHITECTS (RINA)
INTERFERRY
INTERNATIONAL TRANSPORT WORKERS' FEDERATION (ITF)
INTERNATIONAL PAINT AND PRINTING INK COUNCIL (IPPIC)
INTERNATIONAL FUND FOR ANIMAL WELFARE (IFAW)
NACE INTERNATIONAL
THE NAUTICAL INSTITUTE

Opening address of the Secretary-General

1.4 The Secretary-General delivered his opening address, the full text of which is reproduced in document DE 53/INF.7.

Chairman's remarks

1.5 The Chairman, in thanking the Secretary-General, stated that the Secretary-General's words of encouragement as well as his advice and requests would be given every consideration and taken into account under relevant agenda items and that his helpful guidance on the subjects to be considered by the Sub-Committee was very much appreciated, in particular concerning the further work on the improvement of life-saving appliances, the development of the mandatory Polar Code, and also the ongoing work on performance standards for coatings.

Adoption of the agenda

1.6 The Sub-Committee adopted the agenda for the fifty-third session (DE 53/1) and agreed to be guided in its work, in general, by the annotations contained in document DE 53/1/1. The agenda, as adopted, with the list of documents considered under each agenda item, is set out in document DE 53/INF.8.

2 DECISIONS OF OTHER IMO BODIES

Outcome of MSC 86, MEPC 59, FSI 17 and NAV 55

2.1 The Sub-Committee noted the decisions and comments pertaining to its work made by MSC 86 (DE 53/2); MEPC 59 (DE 53/2/1); and FSI 17 and NAV 55 (DE 53/2/2) and took them into account in its deliberations when dealing with relevant agenda items.

Amendment to MSC.1/Circ.1331 proposed by NAV 55

2.2 With regard to the outcome of NAV 55, the Sub-Committee considered document DE 53/2/3 (United Kingdom), highlighting concerns relating to the amendment to paragraph 3.1 of the Guidelines for the construction, installation, maintenance and inspection/survey of means of embarkation and disembarkation (MSC.1/Circ.1331) proposed by NAV 55, aimed at resolving the possible conflict between SOLAS regulation V/23 and the new SOLAS regulation II-1/3-9, and stating that, in their view, the amendment as proposed by NAV 55 defeated the object and purpose of the Guidelines section 3.1, which was to ensure that as far as practicable the means of embarkation is sited clear of the working area, overhead loads and cargo, in order to protect personnel embarking/disembarking during port operations.

2.3 The Sub-Committee shared the concerns of the United Kingdom and decided to inform MSC 87 that it did not agree with the amendment to MSC.1/Circ.1331 proposed by NAV 55; so that this view could be taken into account when the Committee considered the proposed amendment (MSC 87/9, paragraph 2.19). The Sub-Committee agreed to recommend to MSC 87 to request NAV 56 to reconsider the proposed amendment, taking into account this view of DE 53.

Outcome of the twenty-sixth session of the Assembly

2.4 The Sub-Committee noted that the twenty-sixth session of the Assembly (A 26) had adopted the Strategic Plan for the Organization (for the six-year period 2010 to 2015) (resolution A.1011(26)), the High-level Action Plan of the Organization and priorities for the 2010-2011 biennium (resolution A.1012(26)) and the Guidelines on the application of the Strategic Plan and the High-level Action Plan of the Organization (resolution A.1013(26)) and that the effect this had on the agenda management procedure and the work programme of the Sub-Committee would be further discussed under agenda item 24 (Work programme and agenda for DE 54).

2.5 With regard to the Sub-Committee's work at DE 52, the Sub-Committee noted further that the Assembly adopted the Code on Alerts and Indicators, 2009 (resolution A.1021(26)), the Code for the construction and equipment of mobile offshore drilling units, 2009 (2009 MODU Code) (resolution A.1023(26)) and the Guidelines for ships operating in polar waters (resolution A.1024(26)).

Outcome of STW 41 and SLF 52

2.6 The Sub-Committee noted information provided by the Secretariat on the outcome of STW 41, with respect to guidance regarding training of masters and officers for ships operating in polar waters (see also paragraph 18.3); and SLF 52, regarding guidance for the determination by Administrations of the impact of open watertight doors on ship survivability (see also paragraphs 9.2 and 9.3), and safety provisions applicable to tenders operating from passenger ships (see also paragraph 14.3), and agreed to consider this in detail under agenda items 18, 9 and 14, respectively.

3 MEASURES TO PREVENT ACCIDENTS WITH LIFEBOATS

3.1 The Sub-Committee recalled that DE 52 had re-established the LSA Correspondence Group under the coordination of the United States and instructed it to develop an MSC circular on Guidelines for evaluation of lifeboat on-load release mechanisms for poor and unstable characteristics; consider suitable draft amendments to the LSA Code and to the Revised recommendation on testing of LSA to address standardization and the human element with regard to lifeboat on-load release mechanisms; further develop guidelines for failure mode and effect analysis (FMEA); and prepare draft amendments to SOLAS chapter III and the LSA Code concerning the definition of “unfavourable conditions of trim and list”.

3.2 The Sub-Committee noted that MSC 86 had approved the draft amendments to the LSA Code and to SOLAS chapter III concerning on-load release mechanisms, prepared at DE 52, for consideration at MSC 87 with a view to adoption, as well as the following LSA-related circulars prepared at DE 52:

- .1 Clarification of SOLAS regulation III/19 (MSC.1/Circ.1326);
- .2 Guidelines for the fitting and use of fall preventer devices (FPDs) (MSC.1/Circ.1327);
- .3 Measures to prevent accidents with lifeboats (MSC.1/Circ.1206/Rev.1); and
- .4 Guidelines for the approval of inflatable life rafts subject to extended service intervals not exceeding 30 months (MSC.1/Circ.1328).

3.3 The Sub-Committee also noted that MSC 86 had instructed it, following consideration of documents MSC 86/12/1 (Norway) and MSC 86/12/2 (ICS), to develop a schedule and outline of measures to make all or parts of circular MSC.1/Circ.1206/Rev.1 mandatory, taking into account the two documents, and also invited submissions to this session, addressing the issues which were hindering a mandatory application of the provisions of the circular.

Report of the LSA Correspondence Group

3.4 The Sub-Committee considered the report of the LSA Correspondence Group (DE 53/3 and DE 53/3/Add.1, submitted by the United States), noting that the group had discussed:

- .1 a variety of suggestions on how to evaluate lifeboat on-load release mechanisms for poor and unstable characteristics, including sharing of evaluation results of Administrations/ROs, modifications of existing hooks, replacement of hooks, etc., which could form the basis for the development of relevant guidelines;

- .2 guidelines for the standardization of lifeboat control arrangements, set out in annex 1 to their report, and developed draft amendments to the Revised recommendation on testing of LSA to introduce additional tests for improved on-load release mechanisms, set out in annex 2 to their report;
- .3 failure mode and effect analysis (FMEA) as a tool for the evaluation of risks attendant to on-load release mechanisms and, not having received any specific proposals, agreed to await a more detailed proposal by ILAMA; and
- .4 the matter of unfavourable conditions of trim and list in detail but could not agree on relevant amendments to SOLAS chapter III and the LSA Code.

Evaluation of lifeboat on-load release mechanisms for poor and unstable characteristics

3.5 The Sub-Committee noted that the group had discussed several suggestions on how to address the matter of evaluating lifeboat on-load release mechanisms for poor and unstable characteristics, but had not progressed to the development of relevant guidelines. In this connection, the Sub-Committee considered the following two documents:

- .1 DE 53/3/4 (ICS), providing information regarding experience gained to date with the use of FPDs; and
- .2 DE 53/3/5/Rev.1 (China), commenting on the report of the correspondence group (DE 53/3), in particular regarding the addition of safety redundancy protection to on-load release mechanisms.

3.6 The Sub-Committee noted that the report of the correspondence group had received general support in the above documents. It was agreed that a workable solution to the problem needed to be found and that the working group should continue the discussions on deficiencies of on-load release mechanisms. In this regard, the Sub-Committee noted the view of some delegations that the envisioned database of “poor and unstable” release hooks proposed by the correspondence group was considered too bureaucratic.

3.7 Concerning the use of fall preventer devices, differing views were expressed, with some delegations supporting them as a practical temporary measure to alleviate problems with unsafe hooks, while other delegations did not see them as a safe solution.

3.8 Following discussion, the Sub-Committee instructed the LSA Working Group to discuss the issue further and to develop relevant draft guidelines, taking into account the report of the correspondence group (DE 53/3 and Add.1) and documents DE 53/3/4 and DE 53/3/5/Rev.1 and the proposals and comments made in plenary, and in particular considering the proposal by the Bahamas (DE 53/3, paragraph 19) to evaluate individual installations by a relatively simple onboard test, and at the same time continuing the development of criteria for unsafe hooks.

Standardization of lifeboat on-load release mechanisms and relevant test procedures

3.9 The Sub-Committee noted that the correspondence group had discussed draft Guidelines for the standardization of lifeboat control arrangements, set out in annex 1 to the group’s report, and developed draft amendments to the Revised recommendation on testing of LSA to introduce additional tests for improved on-load release mechanisms, set out in annex 2 to the group’s report and instructed the LSA Working Group to finalize the draft Guidelines and the draft amendments, taking into account the report of the correspondence group (DE 53/3, annexes 1 and 2, and Add.1).

Guidelines for failure mode and effect analysis (FMEA)

3.10 The Sub-Committee noted that the correspondence group, not having received any specific proposals, had agreed to await a more detailed proposal by ILAMA. In this connection, the Sub-Committee considered documents DE 53/3/3 and DE 53/INF.5 (ILAMA), proposing to include a new paragraph in the LSA Code which would make it mandatory to carry out an FMEA for all on-load release mechanisms, based on guidelines to be developed; and providing the principles and procedures for an FMEA of on-load release mechanisms.

3.11 While there was some support for the utilization of FMEA as a useful tool, there was no support for its mandatory application and the Sub-Committee agreed that the proposals by ILAMA should be taken into account in the development of the new framework of requirements for LSA (see paragraph 8.3).

Unfavourable conditions of trim and list

3.12 The Sub-Committee noted that the correspondence group had discussed the matter in detail but could not agree on relevant amendments to SOLAS chapter III and the LSA Code. Noting that the Sub-Committee and the LSA Correspondence Group had discussed the issue at length for several sessions without reaching any generally accepted solution, the Sub-Committee agreed to discontinue consideration of the subject.

MSC.1/Circ.1206/Rev.1 on Measures to prevent accidents with lifeboats

3.13 As instructed by MSC 86 (see paragraph 3.3), the Sub-Committee discussed a schedule and outline of measures to make all or parts of circular MSC.1/Circ.1206/Rev.1 mandatory, taking into account the following documents:

- .1 MSC 86/12/1 (Norway), expressing the view that the progress in the establishment of worldwide servicing coverage by manufacturers, the development of circular MSC.1/Circ.1277 (Interim Recommendation on conditions for authorization of service providers for lifeboats, launching appliances and on-load release gear) and the approval of circular MSC.1/Circ.1206/Rev.1 have solved the main problems raised in connection with the question of making the circular mandatory and that, therefore, the Sub-Committee should develop the necessary SOLAS amendments to make the provisions of the circular, and possibly some of the provisions of circular MSC.1/Circ.1277, mandatory;
- .2 MSC 86/12/2 (ICS), stating that the case for mandating circular MSC.1/Circ.1206/Rev.1 has yet to be fully made; that the preconditions agreed by the Committee for further consideration of such mandating, i.e. the establishment of adequate global coverage of suitable service providers as well as information concerning the availability of training for certification of service personnel, have not been achieved; and that, therefore, the long-term recommendatory status of the circular should be confirmed; and
- .3 DE 53/3/1 (China), proposing to amend the circular to encourage shipowners to give preference to the maintenance network provided by manufacturers of life-saving appliances and setting out some points to be taken into account in the discussion on making the circular or parts of it mandatory.

3.14 In the ensuing discussion, several delegations expressed the view that the problem with global coverage by LSA service providers had still not been resolved and would make a mandatory implementation of the provisions of MSC.1/Circ.1206/Rev.1 very difficult, while other delegations supported the view that the provisions or part of them should be made mandatory. It was agreed that the reasons for hindering a mandatory application should be further explored.

3.15 Following discussion, the Sub-Committee instructed the LSA Working Group to consider the matter further, in particular which parts of the circular should be made mandatory; to develop a schedule and outline of measures, taking into account comments and proposals made in plenary and documents MSC 86/12/1, MSC 86/12/2 and DE 53/3/1; and to identify the obstacles that would hinder a mandatory application of the provisions.

Counterfeit LSA products

3.16 The Sub-Committee considered document DE 53/3/2 (ILAMA), providing information on the growing problem of counterfeit LSA products, which they consider are inferior and unsafe since they have not undergone the rigorous testing that manufacturers apply to their products to ensure that they are safe.

3.17 Following discussion, the Sub-Committee agreed that awareness needed to be raised concerning this problem and agreed to bring the matter to the attention of the Committee.

Establishment of the LSA Working Group

3.18 The Sub-Committee established the LSA Working Group and instructed it, taking into account comments, proposals and decisions made in plenary, to:

- .1 finalize the draft Guidelines for evaluation of lifeboat on-load release mechanisms for poor and unstable characteristics, taking into account the report of the correspondence group (DE 53/3 and Add.1) and documents DE 53/3/4 and DE 53/3/5/Rev.1;
- .2 finalize the draft amendments to the Revised recommendation on testing of LSA, concerning additional tests for improved on-load release mechanisms, taking into account the report of the correspondence group (DE 53/3, annexes 1 and 2, and Add.1);
- .3 if time permits, finalize the draft Guidelines for the standardization of lifeboat control arrangements, taking into account the report of the correspondence group (DE 53/3, annexes 1 and 2, and Add.1); and
- .4 consider further the issue of making MSC.1/Circ.1206/Rev.1 mandatory, in particular which parts of the circular should be made mandatory and which issues are hindrances for a mandatory application, and develop a relevant schedule and outline of measures, taking into account documents MSC 86/12/1, MSC 86/12/2 and DE 53/3/1.

Report of the LSA Working Group

3.19 Having considered the report of the LSA Working Group (DE 53/WP.1), the Sub-Committee approved it in general and took action as outlined in the following paragraphs.

Guidelines for evaluation and replacement of lifeboat on-load release mechanisms

3.20 The Sub-Committee agreed to the draft Guidelines for evaluation and replacement of lifeboat on-load release mechanisms referred to in SOLAS regulation III/1.5 and the associated draft MSC circular, as set out in annex 1, for submission to MSC 87 for approval. The Sub-Committee agreed to consider the footnoted reporting procedure further at DE 55.

3.21 The Sub-Committee recommended to the Committee to strongly urge Administrations and shipowners to use the Guidelines to evaluate existing lifeboat on-load release mechanisms at the earliest available opportunity, in advance of the entry into force of new SOLAS regulation III/1.5 and included appropriate paragraph 2 in the aforementioned MSC circular.

3.22 In this respect, the delegation of Norway, supported by the delegations of Finland and Germany, stated that they could not support that IMO, in paragraph 10 of the draft Guidelines, recommended a hook stability test which, due to lack of guidance in the paragraph, may be performed shortly after the annual thorough examination. The shortcomings in the paragraph may reduce the test to a picture of a recently serviced hook and this was the same as asking for a thorough examination some hours before a need for evacuation (abandoned ship) to enhance safety and prevent a possible accident. It should be clearly stated that any test to reveal the possible safety problems with the on-load release hook should be performed before the start of the annual thorough examination. Further, a single test as recommended in paragraph 10.4 of the draft Guidelines was unsuitable and the number of cycles/repeats should at least be five to avoid false results due to static friction.

3.23 The delegation of the United Kingdom, supported by the delegations of France, Germany and the Netherlands, stated that, based on sound technical judgement and experience, it could not support the inclusion of the hook stability test defined in paragraphs 9 to 14, and referred to in paragraph 3, of the draft Guidelines.

3.24 The delegation of the Bahamas explained that the basis for their original proposal was limited to a practical test which was intended to be simple to carry out to provide early information regarding compliance of a release mechanism with the design criteria set out in the amendments to the LSA Code to be adopted by MSC 87. The delegation took the view that the hook stability test should be carried out after the annual thorough examination in order to ensure that the mechanism was in a condition which was as close to the initial design condition as practicable, while performing the test before such an examination introduced the risks that the test would produce a false positive (i.e. compliance) if the hook was in a “seized-closed” condition; or a false negative if the hook components were already out of tolerance. In the absence of a full specification for the design review and to permit a consistent approach by Administrations, the delegation considered the hook stability test to be an important tool in early adoption of the evaluation of non-compliant on-load release mechanisms which would minimize the risk of injury through the provision that all personnel needed to be clear of the lifeboat during the test.

Test procedures for evaluation of release hooks

3.25 The Sub-Committee agreed to draft amendments to the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)) concerning test procedures for evaluation of release hooks against the provisions of the LSA Code, and the associated draft MSC resolution, set out in annex 2, for submission to MSC 87 for adoption.

Guidelines for the standardization of lifeboat control arrangements

3.26 The Sub-Committee noted the group's consideration of the draft Guidelines for the standardization of lifeboat control arrangements, which, due to time constraints, could not be finalized, and, in particular, its invitation to the Sub-Committee to further consider the matter by way of a correspondence group. However, the Sub-Committee agreed to consider the draft Guidelines further at DE 55.

Making MSC.1/Circ.1206/Rev.1 mandatory

3.27 The Sub-Committee noted the outcome of the group's consideration of the issue of making MSC.1/Circ.1206/Rev.1 (Guidelines for periodic servicing and maintenance of lifeboats, launching appliances and on-load release gear and Guidelines on safety during abandon ship drills using lifeboats) mandatory, in conjunction with the relevant Interim Recommendation on conditions for authorization of service providers for lifeboats, launching appliances and on-load release gear (MSC.1/Circ.1277); and invited Member Governments and international organizations to provide information on service providers and their experience gained in the implementation of the Guidelines (MSC.1/Circ.1206/Rev.1 and MSC.1/Circ.1277) to DE 55.

4 COMPATIBILITY OF LIFE-SAVING APPLIANCES

4.1 The Sub-Committee recalled that DE 52 had instructed the LSA Correspondence Group to prepare a draft MSC circular clarifying the application of the new life raft weight criteria with regard to compatibility with passenger ship life raft launching appliances.

4.2 The Sub-Committee noted that MSC 86 had approved the draft amendments to the LSA Code and to the Revised recommendation on testing of LSA, concerning the increase in the assumed weight of persons to be applied to life-saving appliances, prepared at DE 52, for consideration at MSC 87 with a view to adoption.

4.3 The Sub-Committee agreed to consider document DE 53/4/3 (Islamic Republic of Iran), concerning lifeboat exterior colour, under agenda item 17 (Consideration of IACS unified interpretations) together with the IACS UI on the same subject (see paragraphs 17.2 and 17.3).

Report of the LSA Correspondence Group and related matters***Determination of the required safe working load of life raft launching appliances on passenger ships***

4.4 The Sub-Committee considered the report of the correspondence group (DE 53/4, submitted by the United States), noting that the group, as instructed, had prepared a draft MSC circular on Determination of the required safe working load of life raft launching appliances on passenger ships, which clarifies the application of the new life raft weight criteria with regard to compatibility with passenger ship life raft launching appliances.

4.5 Following a brief discussion, the Sub-Committee agreed to the proposed draft MSC circular on Determination of the required safe working load of life raft launching appliances on passenger ships, as set out in annex 3, for submission to MSC 87 for approval.

Guidance on the donning and carriage requirements of different types of life jackets and immersion suits by crew during the actual cargo ship abandonment or abandon ship drills

4.6 The Sub-Committee considered document DE 53/4/4 (China), proposing that the Sub-Committee develops guidance on the donning and carriage requirements of different types of

life jackets and immersion suits by crew during the actual cargo ship abandonment or abandon ship drills and attaching an initial draft of such guidance at annex to the document as the basis for further discussion and development by the Sub-Committee as appropriate.

4.7 The Sub-Committee was of the view that the proposed guidance contradicted certain provisions of circular MSC.1/Circ.1278 (Guidance on wearing immersion suits in totally enclosed lifeboats) and might create confusion among parties applying it and, consequently, did not agree to the proposal by China.

Clarification on certain practical matters in respect of the adoption of 82.5 kg as the standardized mass of occupants accommodated within inflatable life rafts

4.8 The Sub-Committee considered document DE 53/4/6 (ILAMA), requesting clarification on certain practical matters in respect of the adoption of 82.5 kg as the standardized mass of occupants accommodated within inflatable life rafts, mainly concerning the entry-into-force date, appropriate “grandfathering” and marking of newly manufactured life rafts, with a view to making relevant recommendations to the Committee.

4.9 Noting that the issues raised in the document concerned the application of amendments as dealt with under agenda item 19 (Application of amendments to SOLAS chapter III and the LSA Code), the Sub-Committee agreed to consider the document further under that agenda item (see paragraphs 19.3 to 19.7).

Clarification to the requirements of the LSA Code regarding radar transponders

4.10 The Sub-Committee considered document DE 53/4/1 (IACS), referring to the requirements of the LSA Code that life rafts and lifeboats shall be equipped with an efficient radar reflector unless a survival craft “radar transponder” is stowed on board and that a life raft canopy shall be provided with means to mount a survival craft “radar transponder” at a height of at least 1 m above the sea; and considering that, in view of MSC 84’s decision to change the SOLAS terminology from “radar transponder” to “search and rescue locating device” and to accept carriage of an AIS-SART as a search and rescue locating device (resolution MSC.256(84)), this should also be applied to the above-mentioned provisions of the LSA Code, i.e. the terminology “radar transponder” should be changed to “search and rescue locating device” and an AIS-SART should be allowed to be stowed in the survival craft.

4.11 While there was some support for the proposal by IACS, the Sub-Committee, noting that this matter does not fall under the current agenda item, agreed that a separate item would be necessary to consider the issue and invited interested Member Governments and international organizations to submit a relevant proposal to the Committee, in accordance with the Guidelines on the organization and method of work.

Approved carrying capacity of life rafts

4.12 The Sub-Committee considered the following documents:

- .1 DE 53/4/2 (IACS), referring to paragraph 4.1.2.1 of the LSA Code regarding the approved carrying capacity of life rafts and pointing out that applications for type approval certification of life rafts having carrying capacities exceeding 150 persons have recently been made, and questioning whether additional safety measures to address the designs of larger capacity life rafts, such as an upper limit for the carrying capacity of life rafts and any consequential effects, such as the towing and handling of life rafts should be considered; and

- .2 DE 43/4/5 (ILAMA), commenting on document DE 53/4/2 and, while proposing not to restrict the maximum capacity for life rafts to ensure further development and improvement and to allow raft systems to grow with the increasing size of modern cruise ships, suggesting relevant draft amendments to the LSA Code.

4.13 In this respect, the Sub-Committee recalled that the new SOLAS regulation III/38 on Alternative design and arrangements, due to enter into force on 1 July 2010, allows deviations from the requirements of SOLAS chapter III, provided that an engineering analysis, evaluation and approval of the alternative designs and arrangements are carried out.

4.14 While there was considerable support for the introduction of an upper limit for the carrying capacity of life rafts, the Sub-Committee considered that, since this matter does not fall under the current agenda item, a separate agenda item would be necessary to work on the issue. Consequently, the Sub-Committee invited interested Member Governments and international organizations to submit a relevant proposal to the Committee, in accordance with the Guidelines on the organization and method of work.

4.15 Concerning the proposal by ILAMA (DE 53/4/5) not to restrict the maximum capacity for lifeboats, the Sub-Committee did not support the proposal.

Completion of the item

4.16 The Sub-Committee invited the Committee to note that work on the item had been completed.

5 REVISION OF RESOLUTION A.760(18)

5.1 The Sub-Committee recalled that DE 52, noting that the ISO 24409 series “Design, location and use of shipboard signs for fire protection, life-saving appliances and means of escape”, which was to be taken into account in the revision of Symbols related to life-saving appliances and arrangements (resolution A.760(18)), was not completed at that time, had postponed further consideration of the item to this session; had invited Member Governments and international organizations to actively participate in the meeting of ISO/TC 8/SC 1; had invited ISO to submit information on the outcome of the above meeting to this session as early as possible; and had invited Member Governments and international organizations to submit concrete proposals for changes to the symbols related to life-saving appliances and arrangements adopted by resolution A.760(18) to this session.

5.2 The Sub-Committee noted information provided by the observer from ISO regarding the revision of the aforementioned ISO standard, in particular that Part 1 of the ISO 24409 series was expected to be finalized in mid-2010, while Parts 2 and 3 were expected to be finalized in early 2011.

5.3 In view of the above information, the Sub-Committee agreed to postpone consideration of the matter to DE 55 and invited Member Governments and international organizations to submit relevant proposals to that session.

6 PERFORMANCE STANDARDS FOR RECOVERY SYSTEMS

6.1 The Sub-Committee recalled that DE 52 had instructed the LSA Correspondence Group to develop amendments to the LSA Code introducing performance standards for recovery systems for all types of ships and to review the draft SOLAS regulations III/17-1 and III/26.4, as set out in document MSC 81/WP.6, and prepare the final text of the regulations.

6.2 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/6 (report of the correspondence group, submitted by the United States), where the group, after extensive discussions, proposes to amend draft new SOLAS regulation III/17-1 (Recovery arrangements for rescuing persons) as set out in annex 1 to the report, requiring a recovery capability which can be met either by a practical demonstration using existing installed equipment, or carriage of dedicated recovery equipment complying with recommendatory guidelines (draft performance standards for recovery systems) set out in annex 2 to the report, to be finalized at DE 53, with a view to development of suitable mandatory requirements in the future as experience is gained and the available technology matures; and
- .2 DE 53/6/1 (Iceland), commenting on the report of the correspondence group (DE 53/6) and providing information on experiences with manually operated “recovery equipment”, presently a mandatory requirement on board all Icelandic fishing vessels of 15 metres in overall length and over, which has proven to provide for successful recovery of persons from the water under the harsh environmental conditions to be expected in the North Atlantic Ocean.

6.3 The Chairman recalled the opening speech of the Secretary-General, where he had stated that, building on the substantial progress achieved intersessionally by the LSA Correspondence Group, there was a reason for optimism that the Sub-Committee would be able to bring this particular task to a successful conclusion by the 2012 deadline set by the MSC; and had stressed that the rescue of persons from the water and from survival craft was of vital importance, particularly in the light of the spectacular growth, over the past decade, in both the size of passenger ships and the number of persons they carry on board.

6.4 The Sub-Committee had an extensive debate on the issue during which a majority of the delegations and observers from all of the industry organizations, representing both owners and seafarers, that spoke expressed serious concerns about the fitting of dedicated recovery systems as a mandatory requirement. In this context, the delegation of the Bahamas, supported by others, pointed out that such requirement may oblige crew members to undertake recovery attempts under danger for their own lives and that most recovery systems were only suitable for ships with a low freeboard and, as such, their use from ships with a high freeboard would be difficult, if not impossible.

6.5 Notwithstanding the above, there was general agreement with the proposed way forward as outlined in paragraph 18 of the report of the correspondence group, i.e. to finalize SOLAS regulation III/17-1 to require a recovery capability, which can be met either by a practical demonstration using existing installed equipment, or by carriage of dedicated recovery equipment complying with recommendatory guidelines to be finalized at this session, with a view to developing mandatory requirements for dedicated recovery systems in the future, as experience is gained and the available technology matures.

Instructions to the LSA Working Group

6.6 Following discussion, the Sub-Committee instructed the LSA Working Group established under agenda item 3 (Measures to prevent accidents with lifeboats) to finalize draft new SOLAS regulation III/17-1 (Recovery arrangements for rescuing persons) (DE 53/6, annex 1) and the draft Performance standard for recovery systems (DE 53/6, annex 2), taking into account document DE 53/6/1 and comments and proposals made in plenary.

Report of the LSA Working Group

6.7 The Sub-Committee, having considered the part of the report of the LSA Working Group (DE 53/WP.1) dealing with the agenda item, noted that the group, due to time constraints, had not been able to consider the draft new SOLAS regulation III/17-1 (Recovery arrangements for rescuing persons) and the associated draft Performance standard for recovery systems and had recommended that the matter be further dealt with by way of a correspondence group. However, the Sub-Committee agreed to consider the matter at DE 54 and invited Member Governments and international organizations to submit relevant proposals to that session.

6.8 The delegation of Germany stated that, since the matter had not been discussed in the LSA Working Group, the position of the delegation of the Bahamas, stated in paragraph 6.4, covered only present rescue and recovery equipment; and that the performance standards which had been submitted to this session were dedicated to avoid the consequences described by that delegation. The experience gained from extensive tests carried out in Germany showed that the recovery systems described in the report of the LSA Correspondence Group were safe and did not present any danger for the lives of the crew applying them.

7 CARGO OIL TANK COATING AND CORROSION PROTECTION

7.1 The Sub-Committee recalled that DE 52 had established a correspondence group and instructed it to finalize the draft Performance standard for protective coatings for cargo oil tanks of crude oil tankers, including the Test procedures for coating qualification for cargo oil tanks of crude oil tankers; to develop a draft Performance standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers; and to develop draft Guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers.

7.2 The Sub-Committee noted that MSC 86 had approved the draft new SOLAS regulation on Corrosion protection of cargo oil tanks of crude oil tankers, prepared at DE 52, for consideration at MSC 87, with a view to adoption together with the aforementioned draft Performance standards.

Performance standard for protective coatings for cargo oil tanks of crude oil tankers

7.3 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/7 (report of the correspondence group, submitted by Japan), containing a draft Performance standard (PS) for protective coatings for cargo oil tanks of crude oil tankers (annex 1) and a draft PS for alternative means of corrosion protection for cargo oil tanks of crude oil tankers (annex 2), including relevant test procedures, and informing that, due to time constraints, the group could not prepare draft Guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers, but included some preliminary views on the matter in paragraph 19 of the report;
- .2 DE 53/7/1 (NACE International), proposing amendments to footnote 4 of the draft PS for protective coatings for cargo oil tanks of crude oil tankers, in order to introduce an alternative method to measure the conductivity of water soluble salt equivalent to NaCl;

- .3 DE 53/INF.6 (NACE International), containing the text of the alternative standard “Standard practice methods of validating equivalence to ISO 8502-9 on measurement of the levels of soluble salt” referred to in document DE 53/7/1, for the information of the Sub-Committee;
- .4 DE 53/7/2 (China), proposing amendments to the draft Test procedures for coating qualification for cargo oil tanks of crude oil tankers (appendix to the draft PS for protective coatings) concerning test liquids and immersion tests;
- .5 DE 53/7/3 (China), proposing that a list of equivalent training and examination schemes of marine coating inspectors as approved by Administrations be established and maintained, following the practice of FP.1/Circ.36 (List of recognized test laboratories);
- .6 DE 53/7/4 (IACS), providing comments with regard to the draft Test procedures for coating qualification for cargo oil tanks of crude oil tankers, and tables 1.1 (Selection of the coating system) and 1.3 (Secondary surface preparation) of the draft PS for protective coatings;
- .7 DE 53/7/5 (China), commenting on the draft PS for corrosion resistant steel annexed to the draft PS for alternative means of corrosion protection and presenting China’s view that more test data should be provided and experience gained during practice to further verify and validate the safe usage of corrosion resistant steel and that, were the performance standard agreed at this session, it should be entitled “Interim Performance Standard”; and
- .8 DE 53/INF.4 (China), providing a report on the results of testing work on nine marine coatings conducted by China for comparison and evaluation on the protective coatings for cargo oil tanks of crude oil tankers.

7.4 The Sub-Committee further noted information provided by IPPIC, presenting the results of tests for coating qualification for cargo oil tanks carried out by them and completed only very recently, in February 2010, and agreed that the test results presented by IPPIC should be taken into account by the working group when finalizing the Performance standard. IPPIC informed the Sub-Committee, in particular, that in the latest tests, IPPIC had investigated the effect of the oil’s acidity, the effect of the concentration of aromatic compounds as well as the effect of hydrogen sulphide and that the tests had provided interesting results.

7.5 The Sub-Committee noted during the discussion that there was general support for the report of the correspondence group and the progress achieved was welcomed. Several delegations made detailed comments on issues such as salt determination, substitute test fluids and shop primers. Subsequently, the Sub-Committee agreed that all these issues should be taken into account by the working group.

Guidelines associated with the provisions for cargo oil tank coating

7.6 The Sub-Committee recalled that the draft new SOLAS regulation II-1/3-11 (Corrosion protection of cargo oil tanks of crude oil tankers) approved at MSC 86 for adoption at MSC 87 (MSC 87/3, annex 2) refers, in paragraph 5, to the guidelines on exemptions for crude oil tankers solely engaged in the carriage of cargoes and cargo handling operations not causing corrosion, to be developed by the Organization.

7.7 The Sub-Committee also recalled that the Guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers, as referred to in the Performance standards, needed to be developed.

7.8 Noting that no drafts for either of these guidelines were available at this point in time, the Sub-Committee agreed that Member Governments and international organizations should be invited to submit proposals for such guidelines to DE 54 (see also paragraph 7.17).

List of equivalent training and examination schemes of marine coating inspectors

7.9 Concerning China's proposal (DE 53/7/3) that a list of equivalent training and examination schemes of marine coating inspectors as approved by Administrations be established and maintained, the Sub-Committee did not come to a unanimous position and invited further proposals on the matter to DE 54.

Establishment of a working group

7.10 The Sub-Committee established a Working Group on Cargo oil tank coating and instructed it, taking into account comments, proposals and decisions made in plenary, to:

- .1 finalize the draft Performance standard for protective coatings for cargo oil tanks of crude oil tankers, based on annex 1 to document DE 53/7, and taking into account documents DE 53/7/1, DE 53/7/2, DE 53/7/4, DE 53/INF.4 and DE 53/INF.6, and prepare an associated draft MSC resolution for its adoption;
- .2 finalize the draft Performance standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers, based on annex 2 to document DE 53/7, and taking into account documents DE 53/7/4 and DE 53/7/5, and prepare an associated draft MSC resolution for its adoption; and
- .3 if time allows, prepare draft Guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers.

Report of the working group

7.11 The Sub-Committee, having considered the report of the working group (DE 53/WP.2), approved the report in general and took action as described in the following paragraphs.

Draft Performance standard for protective coatings for cargo oil tanks of crude oil tankers

7.12 In considering the draft Performance standard for protective coatings for cargo oil tanks of crude oil tankers prepared by the group, the Sub-Committee, having noted:

- .1 IPPIC's intention to submit a document to MSC 87, containing information on coating test development, to be considered in conjunction with the adoption of the draft Performance standard for protective coatings for cargo oil tanks of crude oil tankers; and
- .2 that the NACE Standard for alternatives to testing the salt limit was inserted in square brackets, as a footnote in table 1.2.2 (DE 53/7, annex 1), for consideration in conjunction with the adoption of the Performance standard for protective coatings for cargo oil tanks of crude oil tankers by MSC 87,

agreed that the aforementioned Performance standard should be reviewed, after adoption, when experience has been gained in the application of the Performance standard, including the introduction of the scribe test.

7.13 Subsequently, the Sub-Committee agreed to the draft Performance standard for protective coatings for cargo oil tanks of crude oil tankers, and the associated draft MSC resolution, as set out in annex 4, for submission to MSC 87 for adoption in conjunction with the adoption of the associated SOLAS amendments (MSC 87/3, annex 2), taking into account the square brackets in footnote 5 (table 1.2.2).

7.14 The delegation of China stated that, concerning their proposal to replace benzene with xylene for laboratory tests (DE 53/7/2), they still believed that xylene should be used for tests instead of benzene for the sake of the laboratory personnel's health and safety, as there was no distinguishable difference in their impact on coatings, an assumption that was supported by test results (DE 53/INF.4). The delegation informed the Sub-Committee that they would conduct further tests in this regard and would report the results to the Organization. They invited other interested Member Governments and international organizations to further compare the results of the tests using benzene and xylene.

7.15 In this context, the Sub-Committee noted the group's views regarding the need to review the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)), in order to keep the Performance standard updated.

Draft Performance standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers

7.16 The Sub-Committee agreed to the draft Performance standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers, and the associated draft MSC resolution, as set out in annex 5, for submission to MSC 87 for adoption in conjunction with the adoption of the associated SOLAS amendments (MSC 87/3, annex 2). It was further agreed that the Performance standard should be reviewed after adoption, when experience with its application has been gained.

Further work on the matter

7.17 Noting that further work was needed to support the aforementioned Performance standards, the Sub-Committee agreed to invite Member Governments and international organizations to submit proposals on the draft Guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers to DE 54 and established a correspondence group under the coordination of the United Kingdom*, with the following terms of reference:

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- .1 to develop draft guidelines on procedures for in-service maintenance and repair of coating systems for cargo oil tanks of crude oil tankers;
- .2 to develop draft Guidelines on exemptions for crude oil tankers solely engaged in the carriage of cargoes and cargo handling operations not causing corrosion; and
- .3 to submit a report to DE 54.

8 DEVELOPMENT OF A NEW FRAMEWORK OF REQUIREMENTS FOR LIFE-SAVING APPLIANCES

8.1 The Sub-Committee recalled that DE 52 had considered document DE 52/16 (Japan), providing draft goals and functional requirements for the regulations for life-saving appliances based on the goal-based concept and sorting the existing requirements in SOLAS chapter III, the LSA Code and the Code of practice for the evaluation, testing and acceptance of prototype novel life-saving appliances and arrangements (resolution A.520(13)) by functional requirements. DE 52 had supported the goal-based approach proposed by Japan as a sound basis for the further work on the item; had invited submissions on the matter to this session; and had encouraged the delegation of Japan to continue its work on the review of SOLAS chapter III and the LSA Code, based on the development of goals and functional requirements for the regulations for life-saving appliances using the goal-based concept, in cooperation with other interested Member Governments and international organizations, as appropriate.

8.2 The Sub-Committee was informed by the delegation of Japan that they were further reviewing their work in the matter based on the discussions at DE 52 and intended to submit a further developed version of their document DE 52/16 to DE 54.

8.3 Noting that no relevant documents had been submitted to this session, the Sub-Committee decided to postpone further consideration of the issue to DE 54 for an in-depth discussion and agreed that a working group could be established at that session to start substantive work on the matter. In this connection, the Sub-Committee recalled the discussion on document DE 53/3/3 by ILAMA concerning FMEA (see paragraph 3.11) which might also be taken into account under this item.

9 GUIDANCE TO ENSURE CONSISTENT POLICY FOR DETERMINING THE NEED FOR WATERTIGHT DOORS TO REMAIN OPEN DURING NAVIGATION

9.1 The Sub-Committee recalled that DE 52, when considering the draft Guidance for Administrations to ensure a consistent policy for determining the need for watertight doors to remain open during navigation [on all ships] developed by a correspondence group (DE 52/15/1), had noted that there were still a number of unresolved issues and that the draft Guidance as presented needed further thorough consideration. Consequently, DE 52 had re-established the correspondence group and instructed it to develop draft Guidance for Administrations to ensure a consistent policy for determining the need for, and circumstances wherein, watertight doors may remain open during navigation when it is considered essential to the safe and effective operation of the ship's machinery or to permit passengers normally unrestricted access throughout the passenger area, in the context of the SLF Sub-Committee's work on guidance on the impact of open watertight doors on existing and new ships survivability.

Outcome of SLF 52

9.2 In this connection, the Sub-Committee noted information by the Secretariat on the outcome of SLF 52, in particular that SLF 52 had considered the Guidance for the determination by Administrations of the impact of open watertight doors on ship survivability under SOLAS regulation II-1/22.4 and previous SOLAS regulation II-1/15.9.3, prepared by its SDS Working Group (SLF 52/WP.3) and, following consultation with the Chairman of this Sub-Committee, requested the DE Sub-Committee to further consider it at DE 54. At the same time, SLF 52 had invited Member Governments and international organizations to bring their stability experts to DE 54, so that the Guidance could be further considered and finalized at that meeting.

9.3 The Sub-Committee also noted that SLF 52 had agreed to issue the Guidance together with the Guidance for Administrations to ensure consistent policy for determining the need for watertight doors to remain open during navigation on passenger ships, under consideration by this Sub-Committee, in a single MSC circular and that, for user-friendliness, the Guidance developed by the SLF Sub-Committee, once finalized, should be incorporated in the Guidance under preparation by this Sub-Committee as an annex.

Report of the correspondence group

9.4 The Sub-Committee considered the report of the correspondence group (DE 53/9 and DE 53/9/Corr.1, submitted by Sweden), in particular that the group had finalized draft Guidance for Administrations to ensure consistent policy for determining the need for watertight doors to remain open during navigation on passenger ships, attached at annex to their report, which also included a draft checklist as a tool to help Administrations validate the technical standards for watertight doors and a flowchart describing the different steps to be considered.

9.5 In discussing the report of the correspondence group and, in particular, annex 1 (Guidance for Administrations to ensure consistent policy for determining the need for watertight doors to remain open during navigation on passenger ships), annex 2 (Technical standards for watertight doors on passenger ships) and annex 3 (Flowchart on guidance for Administrations to ensure consistent policy for determining the need for watertight doors to remain open during navigation), the Sub-Committee was of the view that the following matters needed further consideration:

- .1 category A and B doors and the differences between them;
- .2 time frames;
- .3 references included in the Guidance; and
- .4 the different approaches used by the SLF Sub-Committee (more deterministic) and DE Sub-Committee (more risk-based) in the preparation of their respective guidances.

Work planned for DE 54

9.6 Recalling the outcome of SLF 52, as reported in paragraphs 9.2 and 9.3 above, in particular that SLF 52 had requested that the Guidance prepared by them (SLF 52/WP.3, annex) be further considered by the DE Sub-Committee at DE 54, and taking into account that no group had been planned for this session to consider the issue, the Sub-Committee agreed to finalize the Guidance on open watertight doors, including the Guidance developed by the SLF Sub-Committee in the matter, at DE 54, and earmarked a working group for that session to complete the work.

9.7 In order to facilitate completion of the work at DE 54, the Sub-Committee invited Member Governments and international organizations to bring their stability experts to that session and to submit comments and proposals in the matter to DE 54.

Proposal for a single MSC circular

9.8 The Sub-Committee considered document DE 53/9/1 (Sweden), proposing that, in order to enable end users to easily find guidance both with respect to the impact on survivability as well as the policy for determining the need for watertight doors to remain open during navigation in one document, the Guidance developed by the Sub-Committee and the Guidance on the impact of open watertight doors on existing and new ships survivability developed by SLF 52 (see paragraph 9.2), are issued in one MSC circular.

9.9 Noting that SLF 52 had concurred with the proposal (SLF 52/19, paragraph 7.6.3), the Sub-Committee agreed that the guidance developed by the DE and SLF Sub-Committees should be issued in a single MSC circular (see also paragraph 9.3).

10 PROTECTION AGAINST NOISE ON BOARD SHIPS

10.1 The Sub-Committee recalled that MSC 83 had considered a proposal by Austria *et al.* (MSC 83/25/13), to develop mandatory noise level limits for machinery spaces, control rooms, workshops, accommodation and other spaces on board ships, based on a revised Code on Noise Levels on Board Ships (resolution A.468(XII)) and to introduce mandatory requirements to mandate noise level limits in other work and living spaces, and had included in the work programme of the Sub-Committee a high-priority item on “Protection against noise on board ships”, with two sessions needed to complete the item, and that DE 52 had included the item in the provisional agenda for this session.

10.2 The Sub-Committee had for its consideration document DE 53/10 (Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, European Commission), proposing amendments to the Code on Noise Levels on Board Ships and the incorporation of mandatory noise level limits in the SOLAS Convention through amendments to regulation II-1/36 (Protection against noise) and attaching, in the annex to the document, preliminary proposals for relevant draft amendments to the SOLAS regulation and the Code.

10.3 The Sub-Committee, while supporting the principles of the proposal, since it would improve the working conditions on ships and the health of seafarers, had an extensive debate on the issue during which the following views, *inter alia*, were expressed:

- .1 the suggested 5 dB reduction in noise levels proposed by the submitters of the document was significant and more background information should be provided on how this value had been determined;
- .2 a retrospective application of new noise levels was technically and cost-wise neither realistic nor feasible and, therefore, any new provisions should only apply to new ships;
- .3 different noise levels and/or exemptions should be considered for different ship types and sizes;

- .4 a mandatory application of the Code on Noise Levels on Board Ships, amended as appropriate, especially in view of its age, should be considered after experience has been gained in its application;
- .5 personal protection measures should also be included in the considerations, also with respect to standards of ear protectors;
- .6 extraneous noise levels, e.g., caused by propulsion or entertaining activities on cruise ships, should be taken into account; and
- .7 an update of the Code on Noise Levels on Board Ships would be in line with the principles of the International Labour Convention, and ILO should be consulted in the course of the work.

10.4 Following discussion, the Sub-Committee agreed, as a first step, to revise the Code on Noise Levels on Board Ships, bearing in mind that it should not be applied to existing ships and that differences in ship types and sizes should be taken into account, with a view to possibly making the provisions of the Code mandatory as a second step. The Sub-Committee invited Member Governments and international organizations to submit comments and proposals to DE 54 with a view to commencing substantive work.

11 THERMAL PERFORMANCE OF IMMERSION SUITS

11.1 The Sub-Committee recalled that MSC 84 had considered a proposal by Japan (MSC 84/22/5) to amend the requirements of the LSA Code and the Revised recommendation on testing of life-saving appliances relevant to the evaluation of the thermal performance of immersion suits, with a view to introducing a new test procedure based on the “reference test device” concept, and had included, in the work programme of the Sub-Committee, a high-priority item on “Thermal performance of immersion suits”, with two sessions needed to complete the item, and that DE 52 had included the item in the provisional agenda for this session.

11.2 The Sub-Committee had for its consideration documents DE 53/11 and DE 53/INF.3 (Japan), proposing to introduce the “reference test device” (RTD) concept, already used for the evaluation of the performance of life jackets, for the evaluation of the thermal performance of prototype insulated and non-insulated immersion suits, based on the test results described in document DE 53/INF.3, and the relevant proposals for draft amendments to the LSA Code and to the Revised recommendation on testing of life-saving appliances, in the annex to the document.

11.3 In the course of a brief discussion of the item, concerns were expressed regarding the use of human test subjects which would have to be submersed in cold water. In this context, the delegation of Japan informed the Sub-Committee that it would review its proposal accordingly and would explore alternatives, taking into account ongoing work in ISO regarding the conduct of tests of immersion suits.

11.4 Consequently, the Sub-Committee invited the delegation of Japan to submit a revised proposal to introduce the RTD concept for the evaluation of the thermal performance of immersion suits and to prepare relevant draft amendments to the LSA Code and to the Revised recommendation on testing of life-saving appliances for consideration at DE 54 and also invited Member Governments and international organizations to provide information on the specifications of RTDs for the evaluation of the thermal performance of insulated and non-insulated immersion suits.

12 ALTERNATIVE ARRANGEMENTS FOR THE BOTTOM INSPECTION REQUIREMENTS FOR PASSENGER SHIPS OTHER THAN RO-RO PASSENGER SHIPS

12.1 The Sub-Committee recalled that DE 52, as instructed by MSC 85, had considered under the agenda item on “Any other business” documents DE 52/20/4 and DE 52/INF.3 (Bahamas, Marshall Islands, CLIA, ICS), proposing a draft circular on Guidelines for the assessment of technical provisions for the acceptance of one bottom inspection in dry-dock in five years for passenger ships other than ro-ro passenger ships, so that, if this matter could be finalized at the session, FSI 17 could develop related amendments to the Survey Guidelines under the HSSC (resolution A.997(25)) for approval by MSC 86 and MEPC 59, before consideration by A 26 for adoption.

12.2 The Sub-Committee also recalled that DE 52, following discussion, had agreed that further consideration of the matter was necessary and had included the item on “Alternative arrangements for bottom inspection requirements for passenger ships other than ro-ro passenger ships” in the provisional agenda for this session.

12.3 In this connection, the Sub-Committee noted document DE 53/12 (Secretariat), informing it of the outcome of FSI 17, MSC 86 and MEPC 59 in the matter, in particular that:

- .1 FSI 17, being advised of the outcome of DE 52, had agreed to amend paragraph 5.10 of the Survey Guidelines under the HSSC as follows, for MSC 86 to decide as appropriate:

“5.10 Where acceptable to the Administration, the minimum number of inspections in dry-dock of the outside of the bottom of a passenger ship (which is not a ro-ro passenger ship) in any five-year period may be reduced from two to one*. In such cases the interval between consecutive inspections in dry-dock shall not exceed 60 months.

* In accordance with guidance to be developed by the Organization.”.

- .2 MSC 86 had considered the aforementioned amendment and, noting views that the DE Sub-Committee should first complete the technical review of this issue, agreed not to amend paragraph 5.10 of the Survey Guidelines, while recognizing that, if approved by the Committee, the technical guidelines to be developed by the DE Sub-Committee, possibly at this session, would, thereby, become available for implementation.
- .3 MEPC 59 concurred with the action taken by MSC 86.

12.4 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/12/1 (Bahamas, Malta, Marshall Islands, CLIA, ICS) containing, at annex, a revision of the draft Guidelines for the assessment of technical provisions for the acceptance of one bottom inspection in dry-dock in five years for passenger ships other than ro-ro passenger ships, as submitted to the last session (DE 52/20/4), developed following further consideration of the issues involved and taking into account comments made at DE 52 and MSC 86; and

- .2 DE 53/12/2 (United States), providing comments on the revised draft Guidelines presented in document DE 53/12/1, in particular on application, areas for technical consideration by the Administration, conditions for in-water survey and maintenance considerations.

12.5 During the following discussion, in which delegations expressed general support for the proposed guidelines, the following views were, *inter alia*, expressed:

- .1 some definitive marking regime for ships hulls and underwater fittings for in-water survey work should be part of the Guidelines;
- .2 the role of the attending surveyor and the approval of individual divers should be clarified;
- .3 references to coatings should be reconsidered; and
- .4 the provisions of the ISM Code should be taken into account.

12.6 With respect to the proposals by the United States (DE 53/12/2), while there was support for the suggestions regarding application and areas for technical consideration by the Administration, some delegations expressed concern that the proposals in respect of visibility in water and the removal of valves for inspections were too onerous and should not be included in the guidelines. Accordingly, these proposals were not further considered.

Establishment of a working group

12.7 Following discussion, the Sub-Committee established a working group with the following terms of reference:

- .1 to finalize the Guidelines for the assessment of technical provisions for the acceptance of one bottom inspection in dry-dock in five years for passenger ships other than ro-ro passenger ships, based on document DE 53/12/1, and taking into account document DE 53/12/2 and comments, proposals and decisions made in plenary; and
- .2 to prepare an associated covering draft MSC circular.

Report of the working group

12.8 Having received the report of the working group (DE 53/WP.4), the Sub-Committee agreed to the proposal of the delegation of the United States to include in paragraph 3.4 of the draft Guidelines, after the first sentence, a new second sentence as follows:

“In general, for example, a significant portion of the propeller or rudder should be clearly observed from a single view.”.

12.9 The Sub-Committee also agreed to a proposal by CLIA that, in order to provide better clarity of the purpose of the Guidelines, their title be amended as follows:

“Guidelines for the assessment of technical provisions for the performance of an in-water survey in lieu of bottom inspection in dry-dock to permit one dry-dock examination in any five-year period for passenger ships other than ro-ro passenger ships”.

12.10 Subsequently, the Sub-Committee agreed to the draft Guidelines for the assessment of technical provisions for the performance of an in-water survey in lieu of bottom inspection in dry-dock to permit one dry-dock examination in any five-year period for passenger ships other than ro-ro passenger ships and the associated draft MSC circular, as set out in annex 6, for submission to MSC 87 for approval.

12.11 The Sub-Committee requested the Secretariat to inform FSI 18 of the finalization of the draft Guidelines so that the FSI Sub-Committee could take action accordingly within the context of the work on the review of the Survey Guidelines under the HSSC (see paragraph 12.3.2).

Completion of the item

12.12 The Sub-Committee invited the Committee to note that the work on this item had been completed.

13 AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES

13.1 The Sub-Committee noted that MSC 84 had considered a proposal by Japan (MSC 84/22/6) to rectify errors and inconsistencies in the Revised recommendation on testing of life-saving appliances, as amended by resolutions MSC.200(80) and MSC.226(82) and had included in the work programme of the Sub-Committee a high-priority item on “Amendments to the Revised recommendation on testing of life-saving appliances”, with two sessions needed to complete the item. Consequently, DE 52 included the item in the provisional agenda for this session.

13.2 The Sub-Committee had for its consideration document DE 53/13, where Japan had examined the amendments to the Revised recommendation on testing of life-saving appliances, adopted by resolutions MSC.200(80) and MSC.226(82) and was drawing the attention of the Sub-Committee to some editorial errors and possible discrepancies in the requirements for life-saving appliances. The document also contains, provided in the annex, a list of discussion points and subsequent proposals for preliminary draft amendments to the Revised recommendation.

13.3 The Sub-Committee acknowledged the meticulous work carried out by Japan and considered the points raised in the annex to document DE 53/13. While accepting most of the proposed amendments, the Sub-Committee agreed, with regard to:

- .1 the proposed amendments to paragraphs 2.4 and 2.10.4.1, that paragraph 2.4 might need further work and should therefore be placed in square brackets, and that the relevant footnote to paragraph 2.4.1 should also be added;
- .2 the proposal to replace the word “points” in the sixth sentence of paragraph 2.10.4.7.1 with the words “should be pointed”, that the words “be pointed” should be used instead;
- .3 the proposed amendments to paragraph 4.8.3, that the words “is attained” should be deleted from the added sentence and the term “8.75 YR 6/14” in paragraph 4.8.3.2 should be placed in square brackets for further consideration; and that, in this connection, it should also be considered to replace the word “blown” in the first sentence of paragraph 4.8.3.1 with the word “drawn”; and
- .4 the proposed amendment to paragraph 5.11, that the paragraph should be placed in square brackets for further consideration of the proposal.

13.4 Subsequently, the Sub-Committee requested the Secretariat to prepare a list of amendments derived from the proposals by Japan, taking into account the above outcome of the discussions at this session, for consideration and final decision at DE 54.

13.5 Referring to the proposed amendments, the observer from ILAMA pointed out that, in their experience, there was little wrong with the swamp test requirements as specified in resolution MSC.81(70), and that the significance of the wave action was that this was the dynamic element designed to challenge the stability of the life raft structure whilst it was in a swamped state. In its absence, this test would be effectively static in nature and would fail to provide the intended validation of the design. They suggested to replace the words “that the life raft is fully swamped” with “that, with the life raft fully swamped”; the words “supporting” with “providing for”; and the words “tested in” with “subjected to”.

14 SAFETY PROVISIONS APPLICABLE TO TENDERS OPERATING FROM PASSENGER SHIPS

14.1 The Sub-Committee noted that MSC 84 had considered a proposal by the United Kingdom and IACS (MSC 84/22/8) to develop provisions for the design, equipment and operation of tenders carrying passengers and crew from passenger ships to shore, to ensure that a consistent approach is adopted, together with document MSC 84/22/24, in which CLIA pointed out that its members had conducted, without serious incidents, numerous tender vessel operations each year involving tens of thousands of passengers and that, therefore, CLIA could not support the proposal without the consideration of details of tender vessel casualties and more specific guidance as to the scope of the work to be undertaken, bearing in mind that the proposal might result in over-regulation of an already safe operation.

14.2 The Sub-Committee also noted that MSC 84, following discussion, had included, in the work programmes of the DE, FP, COMSAR, NAV, SLF and STW Sub-Committees, a high-priority item on “Safety provisions applicable to tenders operating from passenger ships”, with three sessions needed to complete the item, assigning the DE Sub-Committee as the coordinator; and that DE 52 had included the item in the provisional agenda for this session.

14.3 With regard to the outcome of SLF 52 in the matter, the Sub-Committee noted that SLF 52, noting that DE 53 would consider draft guidelines for tenders and that the outcome would be reported to SLF 53, and recognizing the need for more information, had invited Member Governments and international organizations to submit their proposals and comments on the item to SLF 53, taking into account the outcome of DE 53.

14.4 The Sub-Committee, having considered documents:

- .1 DE 53/14 (CLIA), providing, in the annex to the document, draft Guidelines for passenger ship tenders and advising the Sub-Committee of their intention to submit to DE 54 draft operator guidelines consistent with the STCW format concerning operator Knowledge, Understanding and Proficiency (KUPs) for review and further transmission to the STW Sub-Committee as appropriate; and
- .2 DE 53/14/1 (United Kingdom), providing, in the annex to the document, draft Guidelines for passenger ship tenders, prepared taking into account discussions with the cruise industry on best practices and national regulatory frameworks applied to tender operations,

noted the various views expressed on the matter and agreed that consolidated draft Guidelines should be prepared at this session, for referral to the cooperating sub-committees for comments.

Establishment of a drafting group

14.5 The Sub-Committee, recalling that the comments of the FP, COMSAR, NAV, SLF and STW Sub-Committees would be needed for the finalization of the Guidelines (see paragraph 14.2), consequently established a drafting group and instructed it, taking into account comments and proposals made in plenary, to prepare the consolidated draft Guidelines for passenger ship tenders, on the basis of documents DE 53/14 and DE 53/14/1, as well as a draft list of matters to be addressed by DE 54.

Report of the drafting group

14.6 Having received the report of the drafting group (DE 53/WP.3), the Sub-Committee approved it in general and, in particular, noted the consolidated draft Guidelines for passenger ship tenders, as set out in annex 1 to document DE 53/WP.3, which are subject to further input from the cooperating sub-committees, for further consideration at DE 54.

14.7 Consequently, the Secretariat was requested to forward the report of the drafting group (DE 53/WP.3), to all cooperating sub-committees, for their consideration and comments, so that such comments could be taken into account in the finalization of the draft Guidelines.

14.8 In considering the report, the Sub-Committee agreed that:

- .1 the Guidelines should represent a level of international best practice, but should not include the requirements of individual coastal States that might otherwise be applicable, and to include a statement in the preamble text of the Guidelines to this effect; and
- .2 “tendering” is deemed limited to the transfer of passengers from a passenger ship to shore and back. Longer voyages, such as coastal sightseeing excursions, are not part of the Guidelines.

14.9 The Sub-Committee noted the view of the group that fuel used in propulsion systems in lifeboats is required to have a flash point of more than 43°C (LSA Code, paragraph 4.4.6.1), while fuel used in propulsion systems for SOLAS passenger ships is required to have a flash point of more than 60°C (SOLAS, regulation II-2/4.2.1), and that the group had agreed to include a provision for fuels used on tenders under the heading of propulsion and manoeuvrability in section 3 of the draft Guidelines, but had not been able to determine whether to use either lifeboat or passenger ship flash point requirements. The Sub-Committee, therefore, agreed to refer the matter to the FP Sub-Committee for comments (see paragraph 8 of document DE 53/WP.3).

14.10 The Sub-Committee also noted that CLIA intended to submit draft operator guidelines consistent with the STCW format to the STW Sub-Committee.

14.11 In concluding, the Sub-Committee noted the following list of matters prepared by the group:

- .1 inclusion of the LSA Code, chapter IV, as a reference standard, in section 1.2 of the draft Guidelines, providing for flag Administrations to consider the structure and arrangements of a tender not certified as a lifeboat;
- .2 equipping of tenders with one lifebuoy with line, to be replaced by one lifebuoy with light in case of night operations, but not both; and

- .3 inclusion of provisions in the draft Guidelines for accessibility for persons with reduced mobility,

and, having agreed to consider these further at DE 54, invited Member Governments and international organizations to take the above matters into account when preparing their comments and proposals for DE 54.

15 CLASSIFICATION OF OFFSHORE INDUSTRY VESSELS AND CONSIDERATION OF THE NEED FOR A CODE FOR OFFSHORE CONSTRUCTION SUPPORT VESSELS

15.1 The Sub-Committee noted that MSC 85 had considered a proposal by Germany and IMCA (MSC 85/23/4) to investigate the need for clarification of classification of vessels in the offshore industry with regard to guidance provided in relevant IMO codes and guidelines, with a view to, *inter alia*, exploring the possibility of developing a safety code for offshore construction support vessels, and had included in the work programme of the Sub-Committee a high-priority item on “Classification of offshore industry vessels and consideration of the need for a code for offshore construction support vessels”, with two sessions needed to complete the item. In doing so, the Committee instructed the Sub-Committee to consider all other relevant codes with a view to avoiding duplication. Consequently, DE 52 had included the item in the provisional agenda for this session.

15.2 In this connection, the Sub-Committee recalled that DE 52 had noted document DE 52/INF.8 (IMCA), pointing out that, taking into account the variety of issues, technical and practical, a clarification of the existing IMO instruments would appear to be far more beneficial than the development of a specific new code, since the current situation could present industry and flag and coastal States with problems when trying to categorize some vessels into a specific classification. IMCA had further informed that an industry working group was currently considering the various issues, such as, for example, the basis of factors used in stability calculations and any other inconsistencies that are identified, including studying definitions used in existing IMO instruments, as well as, but not limited to, definitions of personnel working aboard offshore construction support vessels. DE 52 had noted IMCA’s view and had agreed to take document DE 52/INF.8 into account when the item was considered by the Sub-Committee.

15.3 The Sub-Committee considered document DE 53/15 (IMCA), providing the outcome of an IMCA work group which had been considering the various issues related to the classification of offshore construction support vessels, with particular reference to the 2008 SPS Code, including the identification of apparent practical obstacles to trying to design and build such vessels to the 2008 SPS Code, a possible inconsistency in the application of SOLAS regulations II-2/21 to 23 to special purpose ships, and other areas of potential confusion. The work group had also considered the challenges of selecting appropriate sets of rules for such a diverse fleet, and the different approaches taken by administrations, and had provided the outcome of an initial study of the various relevant IMO instruments, set out in the annex to the document, suggesting that the outline methodology on the use of alternative design and arrangements might prove an appropriate starting point for clarifying the classification of offshore construction support vessels. IMCA had further suggested to establish a correspondence group to consider these matters further.

15.4 The Sub-Committee noted the information on the practical obstacles to applying the 2008 SPS Code to new build and converted offshore construction support vessels presented in the document and also that, although the SPS Code was not mandatory, the 2008 revision was not intended for retrospective application.

15.5 The Sub-Committee then considered the issues raised in paragraphs 47 and 48 of document DE 53/15 and, having noted the following concerns: the possible inconsistency in the application of SOLAS regulations II-2/21 to 23 to special purpose ships; the potential for confusion caused by references to different casualty thresholds and the use of the different terms “certified” and “constructed” in defining the application of the 2008 SPS Code; the information contained in the annex to the document on the range of IMO instruments that relate to the classification of offshore vessels; and the suggestion that the outline methodology in MSC.1/Circ.1212 on alternative design and arrangements might prove an appropriate starting point for the clarification of the classification of offshore construction support vessels; agreed that there was no need to develop a new code covering offshore construction vessels and that the issues raised by IMCA could be resolved by means of guidelines or interpretations, in particular concerning the application of the provisions of the 2008 SPS Code to offshore construction vessels, since the transport of industrial personnel is not explicitly covered by the Code.

15.6 In this connection, the Sub-Committee welcomed and accepted the offer from the observer of IACS to develop relevant unified interpretations, in particular, concerning the certified/constructed date, near coastal voyages, safe return to port, explosives stowage, scope of LSA to be fitted, and applicable SOLAS chapter V requirements, for the consideration of the Sub-Committee at DE 55, when the matter will be further discussed.

16 INTERPRETATION ON APPLICATION OF SOLAS, MARPOL AND LOAD LINE REQUIREMENTS FOR MAJOR CONVERSIONS OF OIL TANKERS

16.1 The Sub-Committee noted that MSC 85 had considered a proposal by the Republic of Korea and IACS (MSC 85/23/7) to develop an interpretation on the extent of the application of the SOLAS, MARPOL and Load Line Conventions to major conversions of oil tankers, from a holistic point of view, and had included in the work programme of the Sub-Committee a high-priority item on “Interpretation on application of SOLAS, MARPOL and Load Line requirements for major conversions of oil tankers”, with two sessions needed to complete the item. Consequently, DE 52 had included the item in the provisional agenda for this session.

16.2 In this connection, the Sub-Committee recalled that DE 52, when considering document DE 52/17/1 (IACS), containing the text of IACS Unified Interpretations for the application of SOLAS regulations to major conversions of single-hull tankers to double-hull tankers or bulk carrier/ore carriers, had recalled that this issue had been added to the work programme of the Sub-Committee as a new item by MSC 85 and had deferred consideration of the interpretations to this session.

16.3 The Sub-Committee also noted that MEPC 59, noting a proposal by the Republic of Korea and IACS (MEPC 59/20) to develop unified interpretations on the extent of the application of the SOLAS, MARPOL Annex I and Load Line Conventions to major conversions of oil tankers in a holistic manner and its inclusion as a new work programme in the DE Sub-Committee, had concurred with the decision of MSC 85 (see paragraph 16.1) to include the new item in the work programme of the Sub-Committee.

Interpretations for the application of SOLAS requirements to major conversions of single-hull oil tankers

16.4 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/16 (IACS), presenting an update of document DE 52/17/1 and containing, in addition to the text of the interpretations contained in IACS UI 226 on

application of SOLAS requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers/ore carriers, also the technical background/explanation relating to each of the interpretations; and

- .2 DE 53/16/2 (Republic of Korea), commenting on the IACS interpretations (DE 53/16) of the provisions for protective coatings of dedicated seawater ballast tanks as set out in SOLAS regulation II-1/3-2 in the case of major conversions of single-hull tankers to double-hull tankers or bulk carrier/ore carriers and proposing relevant modifications.

16.5 There was agreement that the IACS UI was practical and realistic and presented guidance that could be beneficial for Administrations. Concerns were voiced regarding the date of contract for a conversion and, in this regard, it was agreed that the three-date system used in recent years for MARPOL and SOLAS amendments (i.e. placement of building contract; or, in the absence of a building contract keel laying date; or delivery date) could alleviate such concerns.

16.6 The delegation of Spain expressed its concern regarding some of the interpretations included in the proposal by IACS (DE 53/16) which would be referred to a drafting group and suggested that the establishment of a working group instead would help to deal with those issues.

Interpretations for the application of Load Line requirements to major conversions of single-hull oil tankers

16.7 The Sub-Committee considered document DE 53/16/1 (IACS), presenting an as yet incomplete draft UI on application of LL requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers/ore carriers and seeking clarification from the Sub-Committee regarding certain freeboard-related questions (DE 53/16/1, paragraph 6).

16.8 In considering the questions posed by IACS in paragraph 6 of document DE 53/16/1, the Sub-Committee agreed as follows:

- .1 a bulk or ore carrier which is converted from a single-hull tanker should be regarded as a major conversion even if there is no magnitude change of freeboard after conversion;
- .2 Load Line regulations in effect at the “date of conversion” should be applied to a bulk or ore carrier which is converted from a single-hull tanker if the freeboard remains unchanged after conversion; and
- .3 the requirements for bow height in regulation 39(1) and for reserve buoyancy in regulation 39(5) of the amended 1988 Load Line Protocol should only be applied for a newly installed forecastle.

16.9 The Sub-Committee further agreed that the three-date system (see paragraph 16.5) should also be utilized for the application of Load Line requirements to major conversions.

16.10 The delegation of Spain suggested that the Administration should be consulted regarding all major conversion projects.

16.11 The Sub-Committee decided that any interpretations of the application of Load Line requirements to major conversions of single hull oil tankers should be referred to the SLF Sub-Committee for comments and requested the Secretariat to act accordingly.

Interpretations for the application of MARPOL requirements to major conversions of single-hull oil tankers

16.12 Noting that no submissions regarding MARPOL interpretations for major conversions of single-hull oil tankers had been received for the session, the Sub-Committee recalled that MEPC 52 had already agreed on such an interpretation, as set out in Unified Interpretation 37 to MARPOL Annex I (Major conversion in respect of regulation 20.4), stating that conversions of single-hull to double-hull oil tankers should not be considered to be major conversions in cases of replacement of the forebody, including the entire cargo carrying section.

16.13 The Sub-Committee was of the view that this interpretation covered the issue with regard to MARPOL requirements and that it should be included in any guidance on major conversions of single-hull to double-hull oil tankers.

Establishment of a drafting group

16.14 The Sub-Committee established a drafting group to prepare a draft MSC-MEPC circular containing interpretations of the application of SOLAS, MARPOL and LL requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers/ore carriers, on the basis of documents DE 53/16 and DE 53/16/1 and existing interpretation 37 to MARPOL Annex I, taking into account document DE 53/16/2 and comments and proposals made in plenary.

Report of the drafting group

16.15 Having received the report of the drafting group (DE 53/WP.5), the Sub-Committee approved it in general and took action as described in the following paragraphs.

16.16 The Sub-Committee noted the draft MSC-MEPC circular on Unified interpretations on the application of SOLAS, MARPOL and Load Line requirements to conversions of single-hull tankers to double-hull tankers or bulk carriers/ore carriers, as set out in the annex to document DE 53/WP.5 and, having agreed that further work was necessary, in particular with regard to the unified interpretations to SOLAS chapter XII (see paragraph 10 of document DE 53/WP.5) and to the Load Line Convention (see paragraph 14 of document DE 53/WP.5) decided to keep those parts of the draft unified interpretations in square brackets for further consideration at DE 54.

16.17 The Sub-Committee also agreed to include the following sentence in square brackets as an alternative to the respective last sentences of paragraphs 2.1 and 2.2 of the unified interpretations to the SOLAS Convention, for further consideration:

“[However, dedicated seawater ballast tanks should have an efficient corrosion prevention system such as hard protective coatings or equivalent and be of light colour.]”.

16.18 In view of the above developments, the Sub-Committee invited Member Governments and international organizations to submit their comments and proposals on the matter to DE 54.

17 CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

17.1 The Sub-Committee recalled that this was a continuous item, established by MSC 78 so that IACS could submit any newly developed or updated Unified Interpretations (UI) for the consideration of the Sub-Committee with a view to developing appropriate IMO interpretations.

Highly visible colour of lifeboat exterior (LSA Code, paragraph 1.2.2.6)

17.2 The Sub-Committee considered the following documents, noting that document DE 53/17/3 had been withdrawn by ILAMA:

- .1 DE 53/17 (IACS), containing the text of an IACS interpretation of the term “highly visible colour” contained in the LSA Code, paragraph 1.2.2.6, for life-saving appliances, providing that “highly visible colour” only includes colours of strong chromatic content, e.g., pure achromatic colours such as white and all shades of grey should not be accepted as “comparable” colours; and
- .2 DE 53/4/3 (Islamic Republic of Iran), proposing an amendment to the LSA Code to restrict the lifeboat exterior colour to international or vivid reddish orange, removing the option of using a comparably highly visible colour, which the Sub-Committee had agreed to consider under this agenda item (see also paragraph 4.3).

17.3 Following discussion of documents DE 53/17 and DE 53/4/3, the Sub-Committee agreed that the draft amendment to the LSA Code proposed by the Islamic Republic of Iran would adequately clarify the issue and would eliminate the need for a unified interpretation of the term “highly visible colour”. Consequently, the Sub-Committee agreed to draft amendments to the LSA Code, paragraph 1.2.2.6, as set out in annex 7, for submission to MSC 87 for approval with a view to subsequent adoption.

Steam boilers and boiler feed systems (SOLAS regulation II-1/32.4)

17.4 The Sub-Committee considered document DE 53/17/1 (IACS), containing the text of an IACS Unified Interpretation on the application of SOLAS regulation II-1/32.4 regarding steam boilers and boiler feed systems, providing that, if a steam generation system consists of two or more adequately sized boilers and the feed water for each of these boilers is supplied by a single feed water pipe, the level of redundancy for the piping of the feedwater system is considered to comply with the regulation.

17.5 Following discussion, the Sub-Committee, noting that the proposed interpretation had received support from some delegations, while other delegations had questioned whether it was in line with the intent of SOLAS regulation II-1/22.4, agreed to note the UI and take no further action.

Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82))

17.6 The Sub-Committee considered document DE 53/17/2 (IACS), providing a modification to IACS UI SC 233 submitted to DE 52 (DE 52/17) which took into account the relevant discussions at DE 52 regarding the use of the term “assistant inspector”.

17.7 The Sub-Committee supported the IACS UI provided in document DE 52/17, including modifications regarding the term “assistant inspector” presented in document DE 53/17/2, noting that these modifications were in accordance with the decisions of DE 52 and, with regard to concerns about any conflict of interest of the assistant inspector, expressed its understanding that it was the responsibility of the coating inspector to ensure that the assistant inspector had no conflict of interest in carrying out his duties.

17.8 Subsequently, the Sub-Committee agreed to the draft MSC circular on Unified interpretation of the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)), set out in annex 8, for submission to MSC 88 for approval.

Load testing of free-fall lifeboat hooks (resolution MSC.81(70), Part 2, chapter 5.3.4)

17.9 The Sub-Committee considered document DE 53/17/4 (IACS) providing, in the annex, a draft IACS UI on the load testing of hooks for primary release of free-fall lifeboats, as required in the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), for the consideration of the Sub-Committee.

17.10 In discussing the above draft UI, the Sub-Committee noted that it was not clear whether the UI was referring to installation or prototype tests, when neither of them should be bypassed by an interpretation, and that the relevant provisions of the Revised recommendation only apply to lifeboats launched by falls and not to free-fall lifeboats. Consequently, the Sub-Committee invited IACS to take these comments into account when finalizing the interpretation.

18 DEVELOPMENT OF A MANDATORY CODE FOR SHIPS OPERATING IN POLAR WATERS

Outcome of MSC 86

18.1 The Sub-Committee noted that MSC 86, following consideration of documents:

- .1 MSC 86/23/2 (Argentina, Chile), proposing that additional safety measures should be developed for ships operating in polar waters to enhance the capabilities of the officers in charge of a navigational watch on vessels, taking into account the outcome of STW 40 on the matter;
- .2 MSC 86/23/9 (Denmark, Norway, United States), proposing that the DE Sub-Committee and any other appropriate sub-committees should develop mandatory requirements for ships operating in polar regions;
- .3 MSC 86/23/19 (FOEI, Greenpeace, IFAW, WWF), supporting the proposals in document MSC 86/23/9; and
- .4 MSC 86/23/17 (Secretariat), containing a justification prepared by DE 52 for the inclusion of a new item on “Development of a Code for ships operating in polar waters” in the DE Sub-Committee’s work programme, which was supported by document MSC 86/12/4 (United Kingdom),

had included, in the work programme of the Sub-Committee and in the provisional agenda for this session, a high-priority item on “Development of a mandatory Code for ships operating in polar waters”, with a target completion date of 2012.

18.2 The Sub-Committee also noted that MSC 86, in the context of the above considerations, had noted the view of a number of delegations that measures to be applied in Antarctic waters need not necessarily be required in Arctic waters and vice versa, and that this aspect should be taken into account during the development of the Code.

Outcome of STW 41

18.3 The Sub-Committee noted that, following the decision at MSC 86 to include training requirements for personnel on ships operating in ice-covered waters as guidance in Part B of chapter V of the STCW Code, STW 41 had considered the report of the relevant correspondence group (STW 41/7/39) and referred it to a working group for finalization. Having received the report of the working group (STW 41/WP.3/Add.1/Rev.1), STW 41 had approved the draft text of chapter V (Guidance regarding special training requirements for personnel on certain types of ships), including Section B-V (Guidance regarding training of masters and officers for ships operating in polar waters), with a view to submission to the 2010 STCW Conference for adoption.

Outcome of ATCM XXXII

18.4 The Sub-Committee noted document DE 53/18 (Secretariat), reporting on the outcome of the 32nd Antarctic Treaty Consultative Meeting (ATCM XXXII) with regard to the agenda item, in particular on the adoption of a resolution on a mandatory shipping code for vessels operating in Antarctic waters (Resolution 8(2009)), welcoming the recent work of the Sub-Committee to develop Guidelines for ships operating in polar waters and their expected adoption by the IMO Assembly and expressing the desire of the Antarctic Treaty Parties that IMO would commence work as soon as practicable to develop mandatory requirements for ships operating in Antarctic waters.

Discussion

18.5 The Sub-Committee recalled the opening speech of the Secretary-General, in which he had stressed that the safety of ships operating in polar waters continued to attract attention, both in-house and among the general public, and that the work of the Sub-Committee on the subject would be watched attentively by many with an interest in the antipodes. He had also stated that, given the increased interest in the polar regions and the projected growth in shipping traffic therein, it was both timely and appropriate that an adequate regulatory regime was put in place to cater for all the relevant requirements from the safety and marine environmental protection points of view.

18.6 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/18/1 (Germany), suggesting that the Code to be developed should not be a prescriptive standard but rather be based on a goal-based standard concept and that functional requirements should be developed, addressing the particularities of engaging in operations in polar regions;
- .2 DE 53/18/2 (Canada), submitting a comprehensive proposal for structure and contents of a draft mandatory Code for ships operating in polar waters, attached at annex to the document, with mandatory (Part A) and recommendatory (Part B) provisions, and listing a number of outstanding issues which needed further detailed consideration;
- .3 DE 53/18/3 (FOEI, IUCN, Greenpeace, IFAW, WWF), identifying a range of shipping management issues which should be considered and addressed through the development of a mandatory Code for ships operating in polar waters, including effects of tourism, geographic extent of the new Code, binding nature, principles, definitions, design and construction issues, training, environmental protection and infrastructure support and compliance;

- .4 DE 53/18/4 (New Zealand), reporting on the outcome of the Antarctic Treaty Meeting of Experts on the management of shipborne tourism in the Antarctic Treaty area, held in Wellington, New Zealand, from 9 to 11 December 2009, with regard to the agenda item, in particular that the meeting participants expressed strong support for the development of a mandatory Polar Code and confirmed that they would wish to continue to be actively engaged in the process in order to share specific expertise on Antarctic tourist shipping operations;
- .5 DE 53/18/5 (Denmark), providing information on a HAZID analysis of ships navigating in Arctic waters performed by the Danish Maritime Authority (DMA) under the guidance of DNV which identified potential hazards encountered by ships navigating in polar waters and providing the Sub-Committee with the findings in order to focus and facilitate the development of mandatory regulations for ships navigating in polar waters;
- .6 DE 53/18/6 (United Kingdom), proposing a draft framework to be used in the development of a mandatory Code for vessels operating in polar waters, based on a risk-based approach, addressing all major aspects for ships operating in polar waters including construction standards, stability, provision of life-saving appliances, operational matters and navigation; and containing common requirements for both regions, as well as separate provisions for Arctic and Antarctic operations;
- .7 DE 53/18/7 (New Zealand), considering that at this stage more emphasis should be given to the design of the Code and that this would achieve a result that is more durable and more appropriate to polar shipping operations in both the Antarctic and Arctic; and being particularly supportive of ensuring provisions in the Code would improve the ability to coordinate mutual assistance between ships in the event of an incident within the Antarctic portion of the New Zealand search and rescue region;
- .8 DE 53/18/8 (Finland), providing comments and observations to be taken into account in the development of the Polar Code; stressing at the same time that overlapping principles related to ice-class requirements should be avoided; and recommending a division of the Code on the following basis: ship construction, operational control, operational practices and crew competence and ship manning; and
- .9 DE 53/18/9 (Canada, Denmark, Germany, Norway, Sweden, United States, BIMCO, CESA, RINA), proposing basic principles to be followed in the development of a mandatory Code for ships operating in polar waters, i.e. scope, application, implementation, approach, structure, control of shipping and enforcement, on which specific measures could then be based.

18.7 The observer from ICS informed the Sub-Committee about the Arctic Council's Arctic Marine Shipping Assessment 2009 Report that presented a comprehensive and valuable survey of Arctic shipping and covered in its recommendations a wide spectrum of technical and political considerations. ICS had commented directly on this report that it believed that IMO was the appropriate forum for developing standards for vessels operating in the Arctic and that it was important that the Arctic Council did not develop an instrument that cut across this IMO objective or which imposed requirements that might be in conflict or at variance to those being developed at IMO.

18.8 Considering the above documents, the Sub-Committee had a thorough debate of the issues involved, in which a large number of delegations took the floor and expressed, *inter alia*, the following views:

- .1 the risk of shipping in polar waters needed to be especially considered, taking into account the high volume of traffic remote from SAR services, especially regarding passenger ships operating in such remote areas;
- .2 the Code should contain both mandatory and recommendatory provisions;
- .3 the application of the Code should be without prejudice to the application of UNCLOS, the Antarctic Treaty and other rules applicable to polar waters;
- .4 the application of the Code to fishing vessels should be examined;
- .5 the Code should contain functional requirements, supported by prescriptive provisions, as appropriate, and should be risk-based;
- .6 governing principles needed to be established and a well thought-out structure of the Code needed to be developed;
- .7 training and manning standards should be considered with a view to improvement;
- .8 enhanced strength requirements for propulsion machinery and ice performance parameters should be introduced, including a minimum permissible level for ice-breaking capacity;
- .9 existing ice-class requirements, such as Russian, Swedish/Finnish and IACS requirements should be taken into account, including guidance on how to assess the ice class required;
- .10 the role of the flag Administration should be clearly specified;
- .11 there should be common requirements for polar areas, as well as separate requirements for the Arctic and Antarctic;
- .12 position reporting requirements should be introduced and ships should be authorized for operation in specific areas;
- .13 the introduction of additional environmental measures to protect the sensitive polar areas was necessary and, in this regard, the Sub-Committee noted document MEPC 60/21/1 (Norway), which provided an overview of environmental issues to be considered in relation to the development of the Polar Code;
- .14 special attention should be paid to sensitive species, underwater noise and the possibility of ship collisions with whales and other mammals;
- .15 the human element should be particularly considered, taking into account the potentially hazardous operating conditions in polar areas;
- .16 the great variety of ship sizes (convention and non-convention size) and types (cargo, passenger, supply) and operations (tourism, research, exploration) in polar regions needed to be considered;

- .17 the Code should be a stand-alone instrument, to be made mandatory under the SOLAS and/or the MARPOL Conventions, as appropriate; and
- .18 a correspondence group should be established to consider further all the issues involved.

18.9 Summarizing the discussion, the Chairman pointed out that:

- .1 all of the documents submitted had received support;
- .2 there had been overwhelming support to develop a risk-based Code with functional requirements supported by prescriptive provisions;
- .3 the Code should contain both mandatory and recommendatory parts and that, apart from common requirements, there should also be separate requirements for Arctic and Antarctic;
- .4 the Code would apply in polar waters only and ships not trading in polar regions would not need to comply with its requirements;
- .5 the Code should be made mandatory under SOLAS and/or MARPOL and/or other instruments, as deemed necessary; and
- .6 the outcome of the discussion and the action taken by the Sub-Committee would be reported to the MSC and the MEPC.

18.10 The Sub-Committee noted with thanks the presentation by CLIA and the International Association of Antarctic Tour Operators (IAATO) regarding a tiered risk assessment approach to a mandatory Polar Code and the offer by CLIA to submit the relevant study to the correspondence group for their information and consideration.

Establishment of a correspondence group

18.11 Following discussion, the Sub-Committee agreed to establish a correspondence group under the coordination of Norway* with the following terms of reference:

- .1 to further develop the draft International Code of safety for ships operating in polar waters (Polar Code) on the basis of the comments, proposals and decisions made at DE 53 regarding the basic principles of the Code, taking into account documents DE 53/18/1, DE 53/18/2, DE 53/18/3, DE 53/18/5, DE 53/18/6, DE 53/18/7, DE 53/18/8 and DE 53/18/9; and
- .2 to submit a report to DE 54.

*

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18.12 In view of the limited time available for the correspondence group to prepare its report, due to the close proximity between this session of the Sub-Committee and DE 54 (October 2010), the Sub-Committee invited the Committee to relax the deadline for the submission of the report, which is assumed to be bulky and would therefore be due by 23 July 2010, by two weeks to 6 August 2010.

19 APPLICATION OF AMENDMENTS TO SOLAS CHAPTER III AND THE LSA CODE

19.1 The Sub-Committee noted (DE 53/19) that MSC 86, following consideration of documents MSC 86/20/1 (IACS), concerning the application dates for amendments to SOLAS chapter III and the FSS and LSA Codes, and MSC 86/WP.3 (Secretariat), clarifying issues related to the scope of application of amendments to the SOLAS Convention and the LSA and FSS Codes, included in the Sub-Committee's work programme and the provisional agenda for this session a high-priority item on "Application of amendments to SOLAS chapter III and the LSA Code", with a target completion date of 2010.

19.2 Having noted document DE 53/19 (Secretariat), reporting in more detail on the outcome of MSC 86 in the matter, the Sub-Committee considered the following documents:

- .1 DE 53/19/1 (IACS), proposing amendments to SOLAS chapter III and the LSA Code, and consequential amendments to the FSS Code, in order to arrive at a more permanent solution regarding the scope of application of future amendments to SOLAS chapter III and the LSA Code;
- .2 DE 53/19/2 (IACS), proposing a clarification of the scope of application of amendments to SOLAS chapter III and the LSA Code in the form of a table as set out in annex 1 to the document; and
- .3 DE 53/19/3 (United States), proposing that the appropriate implementation dates should be considered during the developments of amendments and that each adopting MSC resolution adopting amendments should clearly specify the scope of application; and further suggesting to retain previous versions of amended text for the reference of surveyors evaluating existing equipment.

19.3 As agreed under agenda item 4 (Compatibility of life-saving appliances), the Sub-Committee also considered document DE 53/4/6 (ILAMA) under this agenda item (see paragraph 4.9).

19.4 The Sub-Committee agreed that a clarification of the scope of the application of amendments to SOLAS chapter III and the LSA Code would be useful and noted the options for effecting such clarification as presented in the documents submitted, i.e.:

- .1 appropriate implementation dates could be considered during the development of amendments and that either each MSC resolution adopting the amendments could clearly specify the scope of application, as proposed by the United States in document DE 53/19/3, or that the scope of application could be included in the text of the amendments;
- .2 a paragraph on application of amendments as proposed by IACS in document DE 53/19/1 could be included in the LSA Code;

- .3 the FP Sub-Committee should be informed of the comments regarding the scope of application amendments to the FSS Code approved at MSC 86 (paragraph 5 of document DE 53/19/1); and
- .4 a table, as proposed by IACS in document DE 53/19/2, on application of amendments to SOLAS chapter III and the LSA Code, could be issued as a circular in order to assist Administrations with the implementation of amendments.

19.5 The Sub-Committee considered the above mentioned options but decided not to pursue either of them at this point in time. With regard to the proposed list in document DE 53/19/2, the Sub-Committee agreed that only the entry-into-force date references to SOLAS should be based on the date on construction, while the entry-into-force date references to the LSA Code should generally be based on the date of installation of the equipment. In particular, the example provided by ILAMA (DE 53/4/6) showed clearly that a more in-depth discussion on the clarification of the scope of the application of amendments to SOLAS chapter III and supporting Codes and Recommendations in general was necessary.

19.6 Following discussion, the Sub-Committee, noting that the same problems should be solved for a number of other amendments to SOLAS and related Codes and that a general solution of the problem is necessary, agreed to invite the Committee to decide which Sub-Committee should consider this further in a holistic manner.

19.7 In order to resolve the matter for the aforementioned already adopted amendments to SOLAS chapter III and the LSA Code, the Sub-Committee agreed to request the Secretariat to update the list contained in annex 1 to document DE 53/19/2, in cooperation with IACS, as appropriate, in the light of the discussions and submit the updated list to DE 54.

20 GUIDELINES FOR A VISIBLE ELEMENT TO GENERAL ALARM SYSTEMS ON PASSENGER SHIPS

20.1 The Sub-Committee noted that MSC 86, following consideration of documents MSC 86/23/10 and MSC 86/INF.2 (United States, CLIA), proposing to develop non-mandatory guidelines regarding a visible element to the general emergency alarm on passenger ships to accommodate passengers who are deaf or hard of hearing, had included in the work programmes of the FP and DE Sub-Committees and provisional agendas for FP 54 and DE 53, a high-priority item on “Guidelines for a visible element to general emergency alarm systems on passenger ships”, with a target completion date of 2012, assigning the DE Sub-Committee as the coordinator.

20.2 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/20 (United States), proposing draft Guidelines for the design and installation of a visible element to the general emergency alarm on passenger ships to accommodate passengers who are deaf or hard of hearing, as set out in the annex to the document; and
- .2 DE 53/20/1 (CLIA), proposing draft Guidelines for the design and installation of a visible element to the general emergency alarm on passenger ships, as set out in the annex to the document.

20.3 After a brief discussion, which showed support for both proposals, the Sub-Committee, noting that both draft guidelines submitted had many similarities and could easily be harmonized, invited the delegation of the United States to submit, to DE 54, consolidated draft Guidelines for

the design and installation of a visible element to the general emergency alarm on passenger ships, prepared on the basis of documents DE 53/20 and DE 53/20/1, for the consideration of the Sub-Committee.

21 IMPROVEMENT OF EXISTING POLLUTION PREVENTION EQUIPMENT

21.1 The Sub-Committee recalled that DE 52, having considered a simplified test procedure for add-on equipment capable of breaking up emulsions that could supplement existing resolution MEPC.60(33)-compliant equipment as well as promotion of Integrated Bilge Water Treatment System (IBTS) as a holistic approach to address illegal oil discharges related to engine-room management and work, had suggested the inclusion of a dedicated item in its work programme to deal with the relevant issues.

21.2 In this connection, the Sub-Committee noted (DE 53/2/1) that MEPC 59, after an exchange of views on the matter, had included a high-priority item on “Improvement of existing pollution prevention equipment” with two subitems (“Development of test standards for type approval of add-on equipment” and “Promotion of integrated bilge water treatment systems”) in the work programme of the Sub-Committee and the provisional agenda for this meeting, with a target completion date of 2011.

21.3 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/21 (United States), proposing that test standards for type approval of add-on equipment improving existing pollution prevention equipment that has already been approved to resolution MEPC.60(33) should include the following equipment attributes: ability to achieve oil content discharge limits, using established test fluids deemed to be representative of bilge; oil removal capacity, based on oil content, flow capacity and test duration; automatic and continuous operation; capability to operate in shipboard environments; and limiting conditions for the equipment application; and also proposing that oil content meters approved to resolution MEPC.107(49) should be established as the appropriate oil content meter to be used; and
- .2 DE 53/21/1 (Japan), proposing a simplified test standard for type approval of add-on equipment capable of separating emulsions, attached at annex to the document, and suggesting points to be considered for the proper use of add-on equipment as well as for the promotion of integrated bilge water treatment systems (IBTS) as described in MEPC.1/Circ.642.

21.4 In the discussion that followed, those delegations and observers who intervened in the debate supported in general the proposals by the United States or Japan, whilst several of them also provided the following comments:

- .1 both proposals could be used as a basis for the preparation of type approval standards for add-on equipment; however, it was essential that the developed test was pragmatic;
- .2 promotion of IBTS was fully supported;
- .3 any part of equipment beyond repair should be replaced by MEPC.107(49)-compliant equipment;

- .4 a definition for add-on equipment was needed as well as a clear decision on where to place it, either upstream or downstream of existing equipment;
- .5 existing equipment approved under resolution MEPC.60(33) was deemed to be fully compliant with the requirements of MARPOL Annex I if in good condition and, therefore, the installation of any add-on equipment should not be made mandatory; and
- .6 it should be recognized that smaller ships which do not burn heavy fuel oil may not need any add-on equipment installed.

21.5 In response to a request for clarification concerning paragraph 8.2 of its document DE 53/21, the delegation of the United States reminded the Sub-Committee that during the discussions held at the MEPC on this matter, it had been recognized that existing equipment could not break up emulsions present in oily bilge water and that resolution MEPC.107(49) had been developed with that objective in mind. In that respect, the oil content meter of resolution MEPC.107(49) was an essential component of any add-on equipment.

21.6 Following concerns expressed by some delegations, the Chairman clarified that the Sub-Committee had been instructed to develop test standards for type approval of add-on equipment and that was exactly what it was going to do. The issue of application would be discussed at a future session.

21.7 In concluding the debate, the Sub-Committee decided to instruct the correspondence group established under agenda item 23 to further progress the issue (see also paragraph 23.7.1).

22 DEVELOPMENT OF GUIDELINES FOR A SHIPBOARD OIL WASTE POLLUTION PREVENTION PLAN

22.1 The Sub-Committee noted (DE 53/2/1) that MEPC 59 had considered a proposal by the United States (MEPC 59/20/2) to develop guidelines for a shipboard oil waste pollution prevention plan and to include the matter as a new item in the work programme of the DE Sub-Committee. The proposal had been supported, in principle, by IFAW (MEPC 59/20/6), as it would assist shipowners and crews to fully meet the ISM Code requirements as well as to comply with MARPOL Annex I. Subsequently, MEPC 59 had included a high-priority item on "Development of guidelines for a shipboard oil waste pollution prevention plan" in the work programme of the Sub-Committee and in the provisional agenda for this session, with a target completion date of 2011, pointing out the need for an intersessional correspondence group to facilitate the work.

22.2 Noting that no documents on the subject had been submitted to the session, the Sub-Committee had a short discussion after which it was agreed to task the correspondence group established under agenda item 23 to develop draft Guidelines for a shipboard oil waste pollution prevention plan (see paragraph 23.7.2).

22.3 The delegation of Vanuatu was of the view that the terms of reference of the correspondence group should be expanded from being the sole responsibility of owner/operator so as to include the other parties involved in the design and installation of the complete oily waste treatment packages on board. In that respect, they were also of the opinion that the guidelines should be addressed to shipyards, piping contractors and equipment manufacturers, particularly with respect to operation and maintenance of the gear.

23 MANUALLY OPERATED ALTERNATIVES IN THE EVENT OF POLLUTION PREVENTION EQUIPMENT MALFUNCTIONS

23.1 The Sub-Committee recalled the outcome of the DE 52 discussions on manually operated alternatives in the event of equipment malfunctions (resolution MEPC.108(49)), in particular that DE 52, recognizing that more work should be done on this matter, had invited interested Member Governments to submit relevant proposals, to the MEPC, for the inclusion of a new item in the work programme of the Sub-Committee.

23.2 In this connection, the Sub-Committee noted document DE 53/2/1 (Secretariat), reporting, *inter alia*, on the outcome of MEPC 59 in the matter, in particular that the MEPC had considered:

- .1 document MEPC 59/6/4 (Denmark), proposing to amend the Revised guidelines and specifications for oil discharge monitoring and control systems for oil tankers (resolution MEPC.108(49)) by revising paragraph 6.11 (with the deletion of paragraph 6.11.1.1) so as to avoid any uncontrollable discharge of oil, and in order to be in accordance with MARPOL Annex I regulation 34;
- .2 document MEPC 59/6/12 (OCIMF, INTERTANKO), arguing that no amendment was necessary and that the existing regulations were adequate and fit for purpose; and
- .3 the view of IACS that any amendment to resolution MEPC.108(49) was a policy matter for Member States to decide upon and that, if this matter was to be addressed by the Sub-Committee, consideration should be given to the time frame for implementation and also how the revision should be implemented in the many Oil Discharge Monitoring and Control (ODMC) manuals that would be affected, proposing that the first IOPP survey carried out on or after six months after the adoption date of any resolution/circular might be used, whilst the surveyor might delete that provision if it is contained in the approved OMDC manual,

and had accepted the proposal by Denmark to include a high-priority item on “Manually operated alternatives in the event of pollution prevention equipment malfunctions” in the work programme of the Sub-Committee and in the provisional agenda for this session, with two sessions needed to complete the item.

23.3 The Sub-Committee had for its consideration the following documents:

- .1 DE 53/23 (Denmark), proposing to revise paragraph 6.11 of the Revised guidelines on Manually operated alternatives in the event of equipment malfunctions to avoid any uncontrolled discharge of oil and in order to be in accordance with MARPOL Annex I regulation 34, and expressing the view that the Organization should urge Member States to ascertain that the operational manual for oil discharge monitoring and control systems does not include procedures which in case of failure of the equipment can lead to uncontrolled discharge of oil and that this could be done by deleting paragraph 6.11.1.1 of the resolution. They further recommended to take up the suggestion made by IACS at MEPC 59 that in order to give consideration to the timeframe for implementation, the revision of the relevant ODMC manuals should be carried out at the first IOPP survey, on or after six months after the adoption date;
- .2 DE 53/23/1 (OCIMF), commenting on document DE 53/23, stating that, should the proposed amendment to the manual operation of the discharge monitoring equipment prohibit the discharge of water contained within vessels' cargo tanks in

the event of failure of the oil content monitoring system be agreed, there would be a consequential impact upon the port environment, with measurable increases in emissions to the atmosphere both in terms of CO₂ and contaminants such as NO_x and SO_x, since vessels would require to spend longer time in the ports to discharge this water which would have ordinarily been discharged on passage at sea; and

- .3 DE 53/23/2 (Islamic Republic of Iran), noting that the operational manual for oil discharge monitoring and control systems does not include procedures, which, in case of failure of the equipment, can lead to uncontrolled discharge of oil; and supporting the deletion of paragraph 6.11.1.1 of the Revised guidelines. They also proposed that, since oil content (PPM measurement) cannot be measured by visual observation, an ODMC system must have two oil content metering (PPM measurement) with separate indication to have redundancy, oil content meters (PPM measurer) No.1 and No.2.

23.4 In the course of the consideration of the above documents, most delegations expressed support, in principle, for the proposals by Denmark and the Islamic Republic of Iran whilst the proposal by OCIMF did not gather sufficient support as it was deemed to picture a worst case scenario where oil tankers would be prevented from discharging dirty ballast to reception facilities in loading terminals.

23.5 The observer from INTERTANKO, however, supported the view of OCIMF to keep the current wording of paragraph 6.11.1.1 of the Revised guidelines; and emphasized, *inter alia*, that solutions would be needed if the currently allowed visual observation of the surface of the water adjacent to the effluent discharge, as a manually operated alternative in the event of equipment malfunction, was to be deleted. They suggested that a possible solution could be to include in section 5 of the Revised guidelines appropriate language concerning maintenance and the need to carry sufficient spare parts.

23.6 Having considered the above matters, the Sub-Committee, recognizing that it could not resolve the issue in the short time available for discussion, agreed to task a correspondence group with the preparation of suitable amendments to the Revised guidelines (see paragraph 23.7.3).

Establishment of the correspondence group

23.7 The Sub-Committee, taking into account the matters discussed under agenda items 21 and 22 (see paragraphs 21.7 and 22.3), established a correspondence group under the coordination of the United States*, and instructed it, taking into account comments, proposals and decisions made in plenary, to:

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- .1 develop type approval standards for add-on equipment for the two approaches described in document DE 53/21/1, paragraphs 4 and 5. In developing those standards, document DE 53/21/1 should be used as the base document, while incorporating attributes from document DE 53/21 and taking into consideration document DE 52/20/17;
- .2 develop guidelines to assist shipowners and operators to prepare ship-specific oily waste management plans, based on document MEPC 59/20/2. In developing the guidelines, IBTS (MEPC.1/Circ.642) should be included as a key element;
- .3 prepare draft amendments to the Revised guidelines and specifications for oil discharge monitoring and control systems for oil tankers (resolution MEPC.108(49)), based on documents DE 53/23 and DE 53/23/2; and
- .4 submit a report to DE 54.

24 WORK PROGRAMME AND AGENDA FOR DE 54

General

24.1 Having noted the adoption of the High-level Action Plan of the Organization and priorities for the 2010-2011 biennium (resolution A.1012(26)), the Sub-Committee further noted that the Assembly, recognizing the need for a uniform basis for the application of the Strategic Plan and the High-level Action Plan throughout the Organization, and for the strengthening of existing working practices through the provision of enhanced planning and management procedures, adopted Guidelines on the application of the Strategic Plan and the High-level Action Plan (resolution A.1013(26)). In particular, the Sub-Committee noted that the Assembly requested the Committee to review and revise, during the 2010-2011 biennium, the Committee's Guidelines on the organization and method of work (MSC-MEPC.1/Circ.2) with a view to bringing them in line with the aforementioned Guidelines on the application of the Strategic Plan and the High-level Action Plan.

24.2 In this context, the Sub-Committee was informed that, in pursuance of the above request, the Secretariat, in consultation with the MSC and MEPC Chairmen, had prepared draft revised Committee's Guidelines for consideration by MSC 87 (MSC 87/23), which also took into account the provisions of the Migration Plan approved by the Council. In this regard, the Sub-Committee noted that the former format for "work programme" had been replaced by a new format for "biennial agenda" and "post-biennial agenda" and the former format for the reporting on the status of planned outputs had been replaced by the new format; and that the Committee Chairmen had agreed to implement the use of the aforementioned new formats from the start of 2010, as set out in annexes 1 and 4 to document DE 53/WP.6.

Biennial and post-biennial agendas of the Sub-Committee and provisional agenda for DE 54

24.3 Taking into account the progress made during this session, the relevant decisions of MSC 86 and the MEPC and the provisions of the agenda management procedure, the Sub-Committee prepared the biennial and post-biennial agendas of the Sub-Committee and the draft provisional agenda for DE 54 (DE 53/WP.6), based on the work programme approved by MSC 86 (DE 53/2, annex), as set out in annexes 9 and 10, respectively, for consideration by MSC 87 and action as appropriate. While reviewing the biennial agenda, the Sub-Committee agreed to invite the Committee, and the MEPC as appropriate, to:

- .1 note that work on the following planned outputs has been completed:
 - .1.1 output 5.1.1.8 – Guidance on alternative arrangements for the bottom inspection requirements for passenger ships other than ro-ro passenger ships; and
 - .1.2 output 5.1.2.2 – Guidance on compatibility of life-saving appliances;
- .2 note that the following planned outputs have been renamed in SMART terms as proposed below, to clarify the remaining work on them, since they have been partly completed:
 - .2.1 output 5.1.2.1 – Measures to prevent accidents with lifeboats, to “Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory” and “Guidelines for the standardization of lifeboat control arrangements”; and
 - .2.2 output 5.2.1.8 – Cargo oil tank coating and corrosion protection, to “Supporting guidelines for cargo oil tank coating and corrosion protection”; and
- .3 concerning accepted output on the post-biennial agenda entitled “Guidelines on equivalent methods to reduce onboard emissions”, which MEPC 41 had included in the Sub-Committee’s work programme and MEPC 55 (MEPC 55/23, paragraph 19.9) had agreed to retain as a low-priority item in case there was a need to develop such guidelines in the future, note that this work has been overtaken by events, in view of the adoption of the revised MARPOL Annex VI and the revised NO_x Technical Code and the subsequent tasking of the BLG Sub-Committee, and, therefore, does not need to be included in the post-biennial agenda of this Sub-Committee.

Arrangements for the next session

24.4 The Sub-Committee agreed to establish at its next session drafting and working groups on subjects to be selected from the following:

- .1 guidance to ensure a consistent policy for watertight doors to remain open during navigation;
- .2 guidelines for a visible element to general alarm systems on passenger ships;
- .3 development of a new framework of requirements for life-saving appliances;
- .4 amendments to resolution A.744(18);
- .5 development of a mandatory Code of ships operating in polar waters;
- .6 protection against noise on board ships; and
- .7 pollution prevention, i.e. test standards for type approval of add-on equipment, measures to promote integrated bilge water treatment systems, and Guidelines for a shipboard oil waste pollution prevention plan, and manually operated alternatives in the event of pollution prevention equipment malfunctions,

whereby the Chairman, taking into account the submissions received on the respective subjects, would advise the Sub-Committee well in time before DE 54 on the final selection of such groups.

24.5 The Sub-Committee established correspondence groups on the following subjects, due to report to DE 54 and DE 55, respectively:

- .1 pollution prevention, i.e. test standards for type approval of add-on equipment, measures to promote integrated bilge water treatment systems, and Guidelines for a shipboard oil waste pollution prevention plan, and manually operated alternatives in the event of pollution prevention equipment malfunctions, to report to DE 54;
- .2 development of a mandatory Code for ships operating in polar waters, to report to DE 54; and
- .3 supporting guidelines for the Performance standard for protective coatings for cargo oil tanks of crude oil tankers, to report to DE 55.

Status of planned outputs

24.6 The Sub-Committee prepared the report on the status of planned outputs of the High-level Action Plan of the Organization and priorities for 2010-2011 biennium relevant to the Sub-Committee, as set out in annex 11, which the Committee is invited to consider and take action as appropriate.

Date of the next session

24.7 The Sub-Committee noted that its fifty-fourth session had been scheduled to take place from 25 to 29 October 2010.

25 ANY OTHER BUSINESS

Definition of “new installation of materials”

25.1 The Sub-Committee noted that MSC 86, when considering the report of its Drafting Group on Amendments to Mandatory Instruments (MSC 86/WP.4), had noted views that a new paragraph should be added to SOLAS regulation II-1/3-5 (New installation of materials containing asbestos), adding a definition of “new installation of materials”, and had instructed the Sub-Committee to consider the matter further under this agenda item. In this connection, the Sub-Committee considered document DE 53/25 (Secretariat), containing background information on the instruction by MSC 86 and the wording for the definition proposed by the United Kingdom.

25.2 Following an intervention by the delegation of the United Kingdom, which was supported by many delegations, proposing to not add a new paragraph to SOLAS regulation II-1/3-5, but instead to add a relevant footnote to the regulation, to be included in the next publication of the SOLAS consolidated edition, the Sub-Committee agreed to request the Secretariat to add, in the next publication of the SOLAS consolidated edition, the following footnote to regulation II-1/3-5:

“In the context of this regulation, “new installation of materials containing asbestos” means any new physical installation on board. Any material purchased prior to 1 January 2011 being kept in the ship’s store or in the shipyard for a ship under construction, should not be permitted to be installed after 1 January 2011 as a working part.”

25.3 The Sub-Committee further agreed to the draft MSC circular on Unified Interpretation of SOLAS regulation II-1/3-5, as set out in annex 12, for submission to MSC 88 for approval.

25.4 In this context, the Sub-Committee noted information by some delegations that ships that had been declared “asbestos-free” had not always been found to be free of asbestos and that the above interpretation would help to prevent such occurrences.

Investigation report on the fire on the fishing factory vessel “Hercules”

25.5 The Sub-Committee noted that the investigation report on the fire on the fishing factory vessel **Hercules** had been referred to it by MSC 86 and FSI 17 for consideration. In this connection, the Sub-Committee considered document DE 53/25/1 (Secretariat), informing it of the outcome of MSC 86 in the matter, in particular of the decision of the Committee to include in the work programme of the Sub-Committee a high-priority item on “General requirements on electrical installations”, with two sessions needed to complete the item, following a relevant proposal by Denmark and the Faroe Islands (MSC 86/23/14) to develop amendments to SOLAS regulation II-1/40.2 regarding general requirements on electrical installations.

25.6 Following discussion, the Sub-Committee agreed that light fixtures, the fault of which had lead to the fire on the **Hercules**, should be in accordance with SOLAS regulation II-1/40.2 and relevant IEC standards and that a clarification to that intent might be appropriate. In this connection, the Sub-Committee further agreed that MSC.1/Circ.1120 on Unified interpretations of SOLAS chapter II-2, the FSS Code, the FTP Code and related fire test procedures may need to be revised. Consequently, the Sub-Committee agreed to consider these issues further when the item on “General requirements on electrical installations” had been placed on the agenda.

25.7 The delegation of Australia informed the Sub-Committee about a similar incident in Australian waters, which concerned a 1988-built containership that suffered from an engine-room fire whereby the cables from the emergency source of power to the electrically-driven emergency fire pump passed through the engine-room, and, not being fire-resistant, were damaged in the fire, leaving the ship without power for any fire pumps. Nonetheless, the ship had been accepted as meeting the requirements of SOLAS regulation II-1/43.1.3 which state that “a fire or other casualty in spaces containing the main source of electrical power ... or in any machinery space of category A will not interfere with the supply, control and distribution of electrical power”. Australia accepted that the interpretation to SOLAS regulation II-2/10.2.2.3.2.2 included in circular MSC.1/Circ.1120, if fully implemented, should prevent similar incidents in ships built since 2004; however, they felt that the fact that such an incident can occur on an existing ship should be brought to the attention of all concerned and, accordingly, Australia had requested that action taken under the new item should include the preparation of a new circular, advising owners of pre-2004 ships to ensure that any cables to emergency fire pumps passing through the main engine-room (or other space of major fire hazard) are of fire resistant standard in accordance with the interpretation in MSC.1/Circ.1120.

25.8 In this respect, the Sub-Committee noted the view of the delegation of Turkey that the casualty of the **Und Adriyatik**, discussed at DE 52, should also be considered under the above item, once established.

Amendments to the 2008 SPS Code

25.9 The Sub-Committee noted that MSC 86 had considered a proposal by Norway (MSC 86/25/2) to clarify certain provisions of the 2008 SPS Code; subsequently had instructed it to develop, under this agenda item, a draft MSC resolution on amendments to the 2008 SPS Code

with a view to adoption at MSC 87; and, in order to facilitate the discussion on the matter at this session, had urged Member Governments and international organizations to submit concrete proposals in writing so that the issue could be dealt with in a timely manner.

25.10 The Sub-Committee had for its consideration document DE 53/25/2 (Germany, Norway), proposing amendments to the 2008 SPS Code (resolution MSC.266(84)) clarifying the provisions of paragraphs 5.1, 8.3 and the Record of Equipment for the Special Purpose Ship Safety Certificate, as set out in the annex to the document.

25.11 Following discussion, the Sub-Committee supported the proposed amendments and agreed to a draft MSC resolution on adoption of amendments to the 2008 SPS Code, as set out in annex 13, for submission to MSC 87 for adoption.

Safety study on shipwrecked fishermen's experience with finding the knives to be provided in life rafts

25.12 The Sub-Committee noted document DE 53/INF.2 (Denmark), containing extracts from reports of the Danish Division for Investigation of Maritime Accidents regarding seafarers' experience when entering life rafts abandoning ship, where shipwrecked persons had problems releasing the painter line of the life raft from the sinking ship because they could not find the knife that is part of the life raft equipment.

25.13 In this connection, the observer from ILAMA pointed out that the above could be easily attributed to lack of experience of, and training with, the life-saving appliances. In their experience the professional attention towards LSA was markedly less evident within the fishing industry than in other sectors of maritime employment. The observer went on to suggest that a positive contribution to combating the problems reported could be made by a review of the relevant provisions of chapter IV of the LSA Code.

26 ACTION REQUESTED OF THE COMMITTEES

26.1 The Maritime Safety Committee, at its eighty-seventh session, is invited to:

- .1 note that the Sub-Committee did not agree to the draft amendments to circular MSC.1/Circ.1331 proposed by NAV 55 (MSC 87/9, paragraph 2.19) and take action as appropriate (paragraphs 2.2 and 2.3);
- .2 note that the Sub-Committee agreed to discontinue consideration of the issue of "unfavourable conditions of trim and list" since no generally accepted solution to the problem could be found (paragraph 3.12);
- .3 note the Sub-Committee's discussion regarding counterfeit LSA products, in particular that awareness should be raised concerning this problem and take action as appropriate (paragraphs 3.16 and 3.17);
- .4 approve the draft MSC circular on Guidelines for evaluation and replacement of lifeboat on-load release mechanisms referred to in SOLAS regulation III/1.5 (paragraphs 3.20 and 3.21 and annex 1);
- .5 adopt the draft MSC resolution on Amendments to the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), concerning test procedures for evaluation of release hooks (paragraph 3.25 and annex 2);

- .6 approve the draft MSC circular on Determination of the required safe working load of life raft launching appliances on passenger ships (paragraph 4.5 and annex 3);
- .7 note that, due to time constraints, the Sub-Committee could not finalize the performance standards for recovery systems and the associated new SOLAS regulation III/17-1 and will consider the matter further at DE 54 (paragraph 6.7);
- .8 adopt the draft MSC resolution on Performance standard for protective coatings for cargo oil tanks of crude oil tankers (paragraph 7.13 and annex 4);
- .9 adopt the draft MSC resolution on Performance standard for protective coatings for alternative means of corrosion protection for cargo oil tanks of crude oil tankers (paragraph 7.16 and annex 5);
- .10 approve the draft MSC circular on Guidelines for the assessment of technical provisions for the performance of an in-water survey in lieu of bottom inspection in dry-dock to permit one dry-dock examination in any five-year period for passenger ships other than ro-ro passenger ships (paragraph 12.10 and annex 6);
- .11 approve the draft amendment to the LSA Code concerning lifeboat exterior colour, with a view to adoption (paragraph 17.3 and annex 7);
- .12 note that the Sub-Committee established a correspondence group to advance the work on the development of a mandatory Polar Code intersessionally and relax the deadline for the submission of the correspondence group's report to DE 54 to 6 August 2010 (paragraphs 18.11 and 18.12);
- .13 note the outcome of the Sub-Committee's discussion on the application of amendments to SOLAS chapter III and the LSA Code (section 19) and decide which Sub-Committee should consider the issue further in a holistic manner (paragraphs 19.4 to 19.7);
- .14 note the biennial and post-biennial agendas of the Sub-Committee and approve the changes proposed (paragraph 24.3 and annex 9);
- .15 approve the provisional agenda for DE 54 (paragraph 24.3 and annex 10);
- .16 note the report on the status of planned outputs of the High-level Action Plan of the Organization and priorities for 2010-2011 biennium relevant to the Sub-Committee (paragraph 24.6 and annex 11); and
- .17 adopt the draft MSC resolution on Adoption of amendments to the 2008 SPS Code (paragraph 25.11 and annex 13).

26.2 The Maritime Safety Committee, at its eighty-eighth session, is invited to:

- .1 note the Sub-Committee's decision that there is no need to develop a new Code covering offshore construction vessels and that instead relevant guidelines and interpretations will be further discussed at DE 55 (paragraph 15.5);

- .2 approve the draft MSC circular on Unified Interpretation of the Performance Standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)) (paragraph 17.8 and annex 8);
- .3 approve the draft MSC circular on Unified interpretation of SOLAS regulation II-1/3-5, concerning new installation of materials containing asbestos, and the inclusion of a relevant footnote in the next SOLAS edition (paragraphs 25.2 and 25.3 and annex 12); and
- .4 approve the report in general.

26.3 The Marine Environment Protection Committee is invited to note that the Sub-Committee established a correspondence group to prepare type approval standards for add-on equipment for pollution prevention equipment; guidelines to assist shipowners and operators to prepare ship-specific oily waste management plans; and draft amendments to the Revised guidelines and specifications for oil discharge monitoring and control systems for oil tankers (resolution MEPC.108(49)) (paragraph 23.7).

ANNEX 1**DRAFT MSC CIRCULAR****GUIDELINES FOR EVALUATION AND REPLACEMENT OF
LIFEBOAT ON-LOAD RELEASE MECHANISMS REFERRED TO IN
SOLAS REGULATION III/1.5**

1 The Maritime Safety Committee, at its [eighty-seventh session (12 to 21 May 2010)], approved the Guidelines for evaluation and replacement of lifeboat on-load release mechanisms referred to in SOLAS regulation III/1.5, set out in the annex, following the recommendations made by the Sub-Committee on Ship Design and Equipment, at its fifty-third session.

2 Member Governments are invited to use the annexed Guidelines when applying SOLAS regulation III/1.5, as amended by resolution MSC....(87), and to bring them to the attention of all parties concerned.

3 Member Governments and shipowners are also strongly urged, pending the entry into force of SOLAS regulation III/1.5, to use the annexed Guidelines to evaluate existing lifeboat on-load release mechanisms at the earliest available opportunity.

ANNEX

GUIDELINES FOR EVALUATION AND REPLACEMENT OF LIFEBOAT ON-LOAD RELEASE MECHANISMS REFERRED TO IN SOLAS REGULATION III/1.5

General

1 New SOLAS regulation III/1.5, which is expected to enter into force [date], requires that for all ships, lifeboat on-load release mechanisms not complying with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87), be replaced no later than the next scheduled dry-docking of the ship.

2 Administrations should, when applying SOLAS regulation III/1.5, ensure that lifeboat on-load release mechanisms are evaluated for compliance with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87), in accordance with the design review specified in these Guidelines.

3 In determining compliance, an Administration should use a design review in accordance with the procedure below. In cases where the Administration considers that other useful compliance information can be obtained, the described hook stability test or other assessment techniques, e.g., computer modelling, should be used.

4 Considering that paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87), represent important safety improvements, Administrations and shipowners are encouraged to evaluate existing lifeboat on-load release mechanisms in accordance with these Guidelines at the earliest available opportunity, in advance of the entry into force of SOLAS regulation III/1.5.

Design review

5 Administrations, or recognized organizations on their behalf, should review the designs of all existing on-load release mechanisms approved by them against the requirements of paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87), using suitable design documentation (drawings, etc.). In cases where compliance with paragraph 4.4.7.6.5 cannot be established by design review, it may alternatively be evaluated by a suitable practical test of the hydrostatic interlock.

6 Design reviews should include consideration of anticipated wear of critical parts over the service life of the release mechanism. Following are illustrated examples of several types of hook systems which may not meet the relevant requirements if they fall out of tolerance due to wear (the list is not exhaustive, but represents some of the most common types):

- .1 **Flat to flat cam hooks** – The simplest type of flat to flat cam hook has a cam with no offset or undercut, and the force from the hook tail generates a turning moment on the cam which introduces a push on the release cable and to the release handle. The push initiates tension in the cable guiding tube. On such systems the safety lock at release handle and the strength and stiffness of the cable guiding tube is essential to avoid unintentional release. If there is slack in the operating system or some part of the release cable and guiding tube fails, the hook opens. This may

easily be tested through dismantling or removal of the release cable from the crank arm. A flat to flat cam hook without any self-locking feature is illustrated in Figure 1 below.

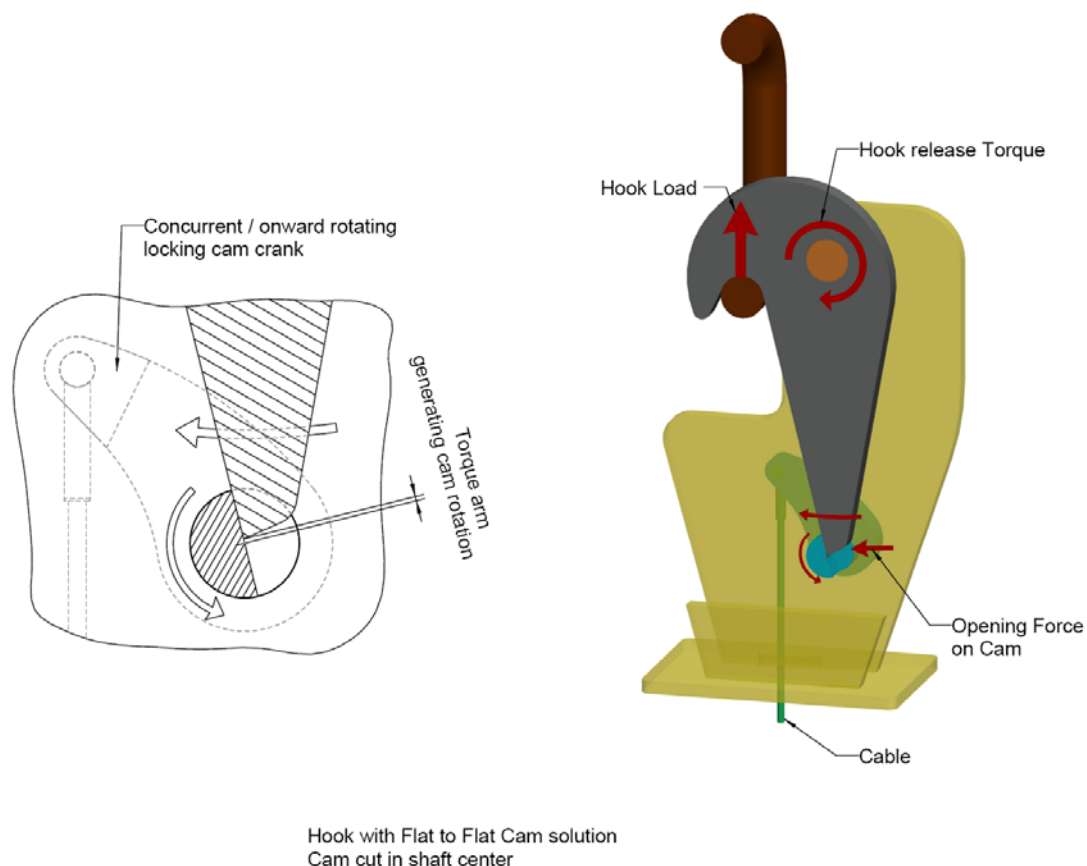


Figure 1

2. **Flat to flat cam with some self-locking capability.** Some flat to flat cam designs have been modified to give them a kind of self-locking capability. This is done through introduction of an undercut or offset in the flat surface of the locking cam surface allowing the hook tail end to be 0.6 mm longer than the distance between the hook bearing and the locking cam bearing. When new, and under prototype testing, this small distance generates a self-locking factor due to the fact that the hook tail-end point of attack is under the centre of the locking cam centre. Figure 2 illustrates a close up of a concurrent/onward (forward) turning flat cam, with a self-locking feature based on a hook segment tail-end under the centre of the round onwards turning cam.

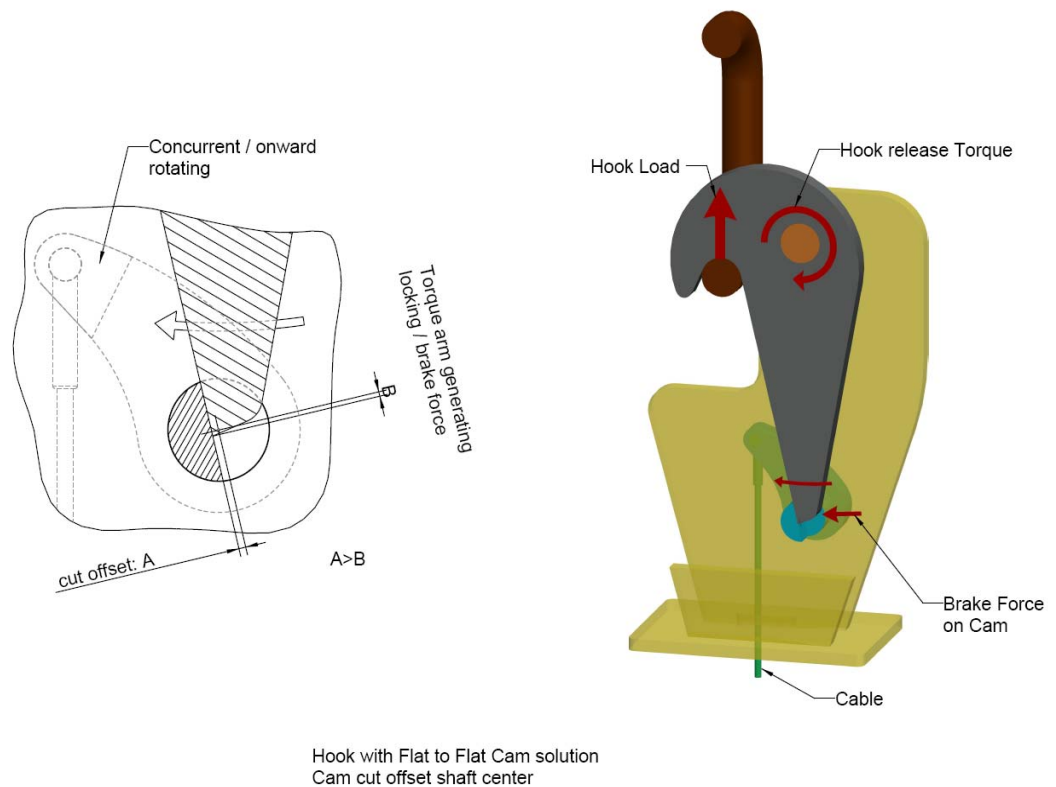


Figure 2

As soon as the normal clearances in the hook segment and locking cam bearings and some additional wear/tear/corrosion in bearings and at the hook tail reduce the offset distance ($= 0.6 \text{ mm}$), the self-locking arm disappears and the system opens if the operating cable is broken/removed or is too flexible/has slack. Figure 3 below illustrates the situation that may arise after use of the hook due to wear and tear.

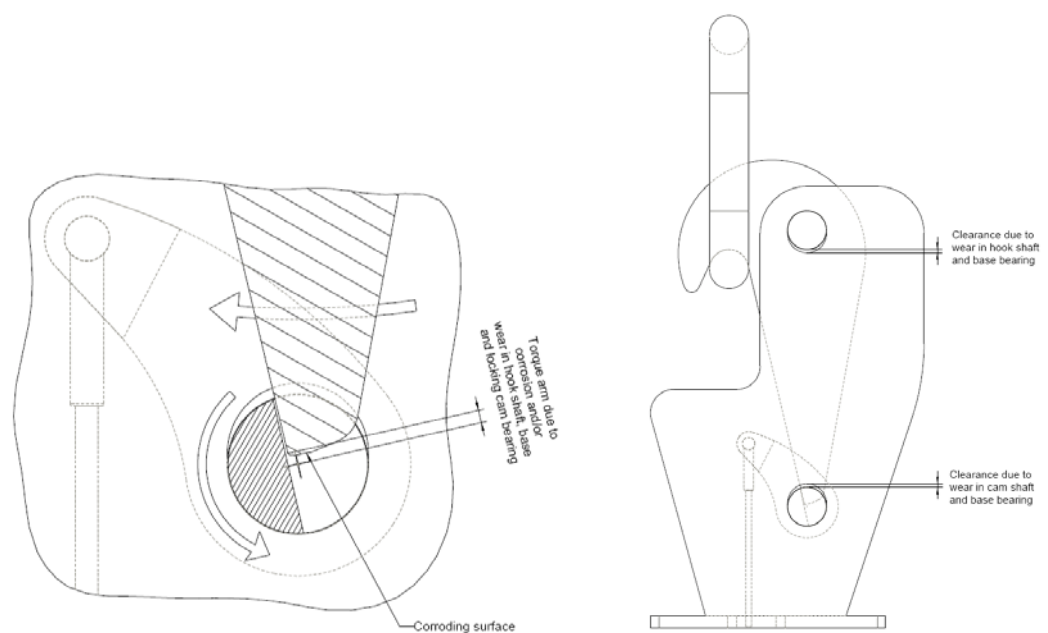
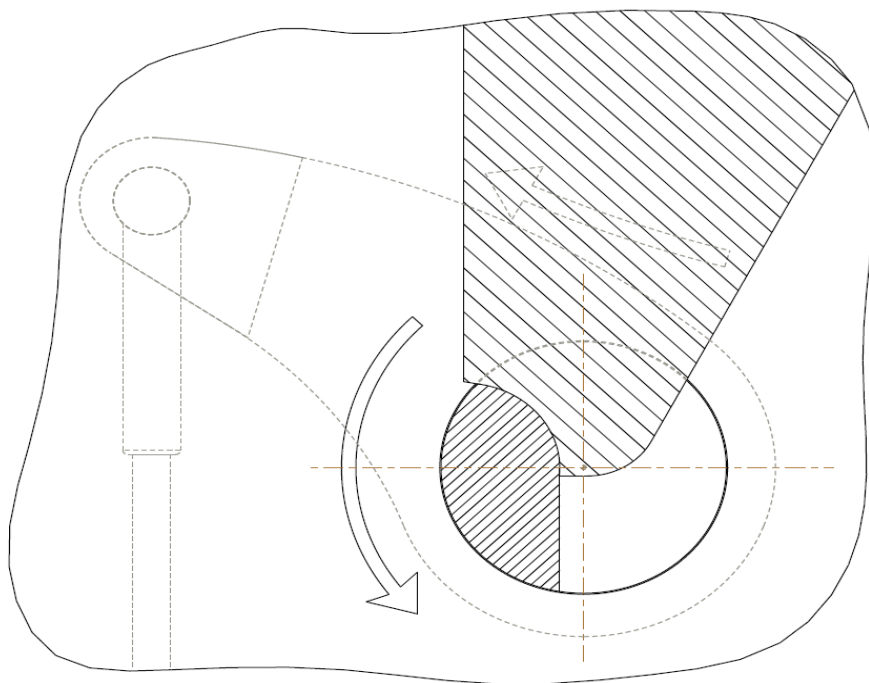


Figure 3

- .3 **Forward rotating round cam with a self-locking capability.** Figure 4 illustrates a close up of a concurrent/onward (forward) turning round cam, with a self-locking capability based on a hook segment tail end under the centre of the round forward turning cam. As soon as the normal clearances in the hook segment and locking cam bearings and some additional wear/tear/corrosion in the bearings and at the hook tail reduce the offset, the self-locking arm disappears and the system opens if the operating cable is broken/removed or is too flexible/has slack. A round cam design with “some” self-locking feature is illustrated in figure 4 below.



Hook with concurrent / onward rotating round cam solution

Figure 4

7 If the design review reveals that a release mechanism does not comply with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87); or a design review cannot be carried out because design documentation is not available, all installed release mechanisms of that type should be replaced at the earliest available opportunity, and no later than the next scheduled dry-docking after [date of entry into force]. Until the release mechanisms are replaced, additional safety measures, including use of fall prevention devices in accordance with MSC.1/Circ.1327, should be employed. As an alternative to replacement, the hooks may be modified to comply with the requirements of paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87), provided that the modifications are approved by the Administration.

Reporting the results of plan reviews to the Organization

8 The Administration should report the result of each design review carried out in accordance with these Guidelines to the Organization, based on the reporting procedure.*

[Hook stability test

9 This test should be carried out on a one-time basis in conjunction with the regularly scheduled annual thorough examination of lifeboat on-load release gear (SOLAS regulation III/20.11.2).

10 The following procedure should be carried out by the manufacturer's representative or other person appropriately trained and certified for the work to be done in accordance with MSC.1/Circ.1277, under the witness of the attending Administration or recognized organization:

- .1 with the lifeboat empty, the load should be removed from the release hooks either by lowering the boat into the water, or if this is not practicable, transferring the load of the lifeboat to maintenance pendants**;
- .2 with the load removed, and the hooks completely and properly reset and engaged, completely disconnect the actuating cable or other operating linkage from each hook of the release mechanism;
- .3 with all personnel clear of the lifeboat, and the hooks in the ready to launch condition with all locking devices removed, attempt to lift the boat a very short distance, or just clear of the water.

11 The hooks should remain closed throughout the test while under load. If any hook opens during the test, all other hooks of the same type should be tested in the case of cargo ships, or at least 20% of hooks of the same type should be tested in the case of passenger ships.

12 If the hooks do not remain closed throughout the test while under load, the hooks should be replaced at the earliest available opportunity and no later than the next scheduled dry-docking after [date of entry into force]. Until the hooks are replaced, additional safety measures, including use of fall preventer devices, in accordance with MSC.1/Circ.1327, should be employed.

13 This test should not be considered to be a substitute for a thorough design review.]

[Reporting the results of hook stability tests to the Organization

14 In the event that a hook does not remain closed throughout the test while under load, after consultation with the manufacturer, the Administration should report the result of the test to the Organization, based on the reporting procedure*.]

* Refer to the reporting procedure to be developed.

** Maintenance pendants, if used, should be inspected to ensure they are sound and of an appropriate load rating.

Procedures for replacement of non-compliant release mechanisms

15 For evaluation of the installation of new release mechanisms to replace mechanisms not complying with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87), the following should be submitted for review by the Administration or recognized organization:

- .1 drawings of the original hook arrangement (if possible confirming that the original point of suspension of the boat in relation to the boat remains unchanged and that the geometry of the hook above the centre does not influence adversely the operation of the hook). Structural changes to the link plates should be indicated;
- .2 detailed drawings showing clearly the proposed changes (e.g., means of hook anchorage, including materials used for nuts and bolts with regard to strength and corrosion resistance);
- .3 if the drawings show that forces and/or force couples will change and/or the hook anchorage will change, calculation of static forces including safety factor of 6 according to the LSA Code from lifeboat hook into lifeboat structure including tension and shear forces in bolts, link plates, welds and keel shoe(s); and
- .4 a revised operation and maintenance manual reflecting changes to the original configuration.

16 Considering that a release mechanism system does not consist just of the hooks themselves, but also release handles, cabling, etc., in the lifeboat, the evaluation of a replacement hook system other than that originally provided in the lifeboat should include such factors as loadings of the release handle on the console, efficiency of any hydrostatic interlock in the light and loaded conditions, whether the size/configuration of the replacement equipment would affect the lifeboat's stability or seating space, and compatibility of the modified lifeboat system with its launching appliance.

17 The following tests should be carried out on installations of new release mechanisms to replace mechanisms found not to comply with paragraphs 4.4.7.6.3 to 4.4.7.6.5 of the LSA Code, as amended by resolution MSC....(87):

- .1 1.1 x load and simultaneous release test according to resolution MSC.81(70) (part 2, paragraph 5.3.1), or an equivalent method acceptable to the Administration;
- .2 load test according to resolution MSC.81(70) (part 2, paragraph 5.3.4), as amended by MSC.226(82), if the keel shoe/structure of the lifeboat is modified;
- .3 if the centre of the hook longitudinally, transversely and/or vertically relative to the boat has changed, the prototype hook release test according to resolution MSC.81(70) (part 1, paragraph 6.9.4), as amended by MSC.226(82), should be carried out; and
- .4 if the lifeboat is also a rescue boat and/or is installed on a cargo ship of 20,000 gross tonnage or more, the 5 knots installation test according to resolution MSC.81(70) (part 2, paragraph 5.4), should be carried out.

ANNEX 2

DRAFT MSC RESOLUTION

**ADOPTION OF AMENDMENTS TO THE REVISED RECOMMENDATION ON
TESTING OF LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70))**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.689(17) on Testing of life-saving appliances, by which the Assembly, at its seventeenth session, adopted recommendations for test requirements for life-saving appliances,

RECALLING FURTHER that the Assembly, when adopting resolution A.689(17), authorized the Committee to keep the Recommendation on testing of life-saving appliances under review and to adopt, when appropriate, amendments thereto,

NOTING resolution MSC.81(70), by which, at its seventieth session, it adopted the Revised recommendation on testing of life-saving appliances, recognizing the need to introduce more precise provisions for the testing of life-saving appliances based on the requirements of the International Life-Saving Appliances (LSA) Code,

BEING DESIROUS to address test procedures for the evaluation on release hooks,

HAVING CONSIDERED, at its [eighty-seventh session], amendments to the Revised recommendation on testing of life-saving appliances, proposed by the Sub-Committee on Ship Design and Equipment at its fifty-third session,

1. ADOPTS amendments to the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), the text of which is set out in the Annex to the present resolution;
2. RECOMMENDS Governments to apply the annexed amendments when testing life-saving appliances.

ANNEX

**AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF
LIFE-SAVING APPLIANCES (RESOLUTION MSC.81(70)), AS AMENDED**

**PART 1
PROTOTYPE TESTS FOR LIFE-SAVING APPLIANCES**

- 1 The existing paragraphs 6.9.3 and 6.9.4 are replaced with the following:

“6.9.3 It should be demonstrated that the release mechanism can release the fully-equipped lifeboat when loaded with weights equal to the mass of the number of persons for which the lifeboat is to be approved, when the lifeboat is being towed at speeds up to 5 knots. In lieu of a waterborne test, this test may be conducted as follows:

- .1 a force equal to 25% of the safe working load of the hook should be applied to the hook in the lengthwise direction of the boat at an angle of 45° to the vertical. This test should be conducted in the aftward as well as the forward direction;
- .2 a force equal to the safe working load of the hook should be applied to the hook in an athwartships direction at an angle of 20° to the vertical. This test should be conducted on both sides; and
- .3 a force equal to the safe working load of the hook should be applied to the hook in a direction halfway between the positions of tests 1 and 2 (i.e. 45° to the longitudinal axis of the boat in plan view) at an angle of 33° to the vertical. This test should be conducted in four positions.

There should be no damage to the hook as a result of this test, and in the case of a waterborne test, there should be no damage to the lifeboat or its equipment.

- 6.9.4 A release mechanism should be prepared, and tested as follows:

- .1 the actuation force/moment of the release mechanism should be measured loaded with 100% of its design load. The actuation force/moment should be no more than 300 N/100 Nm. If a cable is used, it should be of the maximum length specified by the manufacturer, and secured in the same manner it would be secured in a lifeboat;
- .2 the release mechanism should then be released 100 times under 100% of its rated load. The mechanism should then be disassembled and the parts examined. There should be no evidence of excessive wear on any part that would prevent the system from operating as prescribed;

- .3 the mechanism should then be reassembled and, while disconnected from the operating mechanisms, tested 10 times with cyclic loading from a minimal force of no more than 1000 N to 1.1 times the design load, at nominal 10 seconds per cycle. The specimen should remain closed during the test. For cam-type designs, the test should be carried out at an initial cam rotation of 0° (fully reset position), and repeated at 45°; and
- .4 the cable should be reconnected to the operating mechanism, and the release mechanism should be demonstrated to operate satisfactorily under its full rated load.

6.9.5 A release mechanism should be mounted on a tensile strength testing device. The load should be increased to at least six times the working load of the release mechanism without failure of the release mechanism.”

- 2 The existing paragraphs 6.9.5 and 6.9.6 are renumbered as 6.9.6 and 6.9.7, respectively.
- 3 In paragraph 6.11.3, the referenced paragraph number “6.9.4” is replaced with “6.9.3”.
- 4 In paragraphs 7.1.1 and 7.4.1, the referenced paragraph numbers “6.9.5” and “6.9.6” are replaced by “6.9.6” and “6.9.7”, respectively.
- 5 In paragraphs 7.2.1, 7.3.1, 7.5 and 7.6, the referenced paragraph numbers “6.9.1 to 6.9.4” are replaced by “6.9.1 to 6.9.5”.

ANNEX 3**DRAFT MSC CIRCULAR****DETERMINATION OF THE REQUIRED SAFE WORKING LOAD OF LIFE RAFT
LAUNCHING APPLIANCES ON PASSENGER SHIPS**

1 The Maritime Safety Committee, at its [eighty-seventh session (12 to 21 May 2010)], following the recommendations made by the Sub-Committee on Ship Design and Equipment, at its fifty-second session, adopted amendments to the LSA Code (resolution MSC....(87)) and to the Revised recommendation on testing of life-saving appliances (resolution MSC....(87)), to increase the assumed weight of life raft occupants to 82.5 kg for the purpose of life raft approval evaluation and testing, which are expected to enter into force on [date of entry into force].

2 In adopting the aforementioned amendments, the Committee considered the recommendation by the Sub-Committee on Ship Design and Equipment, at its fifty-second session, that the determination of the required safe working load of a life raft launching appliance on a passenger ship should continue to be based on an assumed occupant weight of 75 kg, even though the life raft has been tested to a higher weight standard, and agreed to the recommendation.

3 The Committee, therefore, agreed that the required safe working load of life raft launching appliances on passenger ships should continue to be based on an assumed occupant weight of 75 kg times the number of persons for which the life raft is approved. The Committee also agreed that, notwithstanding paragraph 2/6.2.5 of the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), as amended by resolution MSC....(87), for life raft launching appliances on passenger ships the load for the installation “lowering test” should continue to be based on an assumed occupant weight of 75 kg.

4 Member Governments are invited to apply the above clarification when evaluating and testing installations of life raft launching appliances on passenger ships, and bring it to the attention of all parties concerned.

ANNEX 4**DRAFT MSC RESOLUTION****PERFORMANCE STANDARD FOR PROTECTIVE COATINGS
FOR CARGO OIL TANKS OF CRUDE OIL TANKERS**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING regulation II-1/3-11 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (hereinafter referred to as “the Convention”) adopted by resolution [MSC....(87)], concerning protective coatings for cargo oil tanks of crude oil tankers,

NOTING ALSO that the aforementioned regulation II-1/3-11 provides that the protective coatings referred to therein shall comply with the requirements of the Performance standard for protective coatings for cargo oil tanks of crude oil tankers (hereinafter referred to as “the Performance standard for protective coatings”),

RECOGNIZING that the Performance standard for protective coatings referred to above is not intended to inhibit the development of new or novel technologies which provide for alternative systems,

HAVING CONSIDERED, at its [eighty-seventh session], the text of the proposed Performance standard for protective coatings,

1. ADOPTS the Performance standard for protective coatings for cargo oil tanks of crude oil tankers, the text of which is set out in the Annex to the present resolution;
2. INVITES Contracting Governments to the Convention to note that the Performance standard for protective coatings will take effect on [...] upon entry into force of SOLAS regulation II-1/3-11;
3. NOTES that, under the provisions of SOLAS regulation II-1/3-11.3.1, amendments to the Performance standard for protective coatings shall be adopted, brought into force and take effect in accordance with the provisions of article VIII of that Convention concerning the amendment procedure applicable to the Annex to the Convention other than chapter I;
4. REQUESTS the Secretary-General to transmit certified copies of this resolution and the text of the Performance standard for protective coatings contained in the Annex to all Contracting Governments to the Convention;
5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and the Annex to all Members of the Organization which are not Contracting Governments to the Convention;

6. INVITES Governments to encourage the development of novel technologies aimed at providing for alternative systems and to keep the Organization advised of any positive results;
7. RESOLVES to keep the Performance standard for protective coatings under review and amend them as necessary, in light of experience gained in its application.

ANNEX

PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR CARGO OIL TANKS OF CRUDE OIL TANKERS

1 PURPOSE

This Standard provides technical requirements for the minimum standard for protective coatings to be applied in cargo oil tanks during the construction of new crude oil tankers.

2 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

- 2.1 *Crude oil tanker* is as defined in Annex I of MARPOL 73/78.
- 2.2 *Dew point* is the temperature at which air is saturated with moisture.
- 2.3 *DFT* is dry film thickness.
- 2.4 *Dust* is loose particulate matter present on a surface prepared for painting, arising from blast-cleaning or other surface preparation processes, or resulting from the action of the environment.
- 2.5 *Edge grinding* is the treatment of the edge before secondary surface preparation.
- 2.6 “*GOOD*” *condition* is the condition with minor spot rusting as defined in resolution A.744(18) for assessing the ballast tank coatings for tankers.
- 2.7 *Hard coating* is a coating that chemically converts during its curing process or a non-convertible air drying coating which may be used for maintenance purposes. This can be either inorganic or organic.
- 2.8 *NDFT* is the nominal dry film thickness. 90/10 practice means that 90% of all thickness measurements shall be greater than or equal to NDFT and none of the remaining 10% measurements shall be below 0.9 x NDFT.
- 2.9 *Primer coat* is the first coat of the coating system applied in the shipyard after shop primer application.
- 2.10 *Shop primer* is the prefabrication primer coating applied to steel plates, often in automatic plants (and before the first coat of a coating system).
- 2.11 *Stripe coating* is painting of edges, welds, hard to reach areas, etc., to ensure good paint adhesion and proper paint thickness in critical areas.
- 2.12 *Target useful life* is the target value, in years, of the durability for which the coating system is designed.
- 2.13 *Technical Data Sheet* is the paint manufacturer’s Product Data Sheet which contains detailed technical instruction and information relevant to the coating and its application.

3 GENERAL PRINCIPLES

3.1 The ability of the coating system to reach its target useful life depends on the type of coating system, steel preparation, operating environment, application and coating inspection and maintenance. All these aspects contribute to the good performance of the coating system.

3.2 Inspection of surface preparation and coating processes shall be agreed upon between the shipowner, the shipyard and the coating manufacturer and presented to the Administration for review. Clear evidence of these inspections shall be reported and included in the Coating Technical File (CTF) (see paragraph 3.4).

3.3 When considering the Standard provided in section 4, the following is to be taken into account:

- .1 it is essential that specifications, procedures and the various different steps in the coating application process (including, but not limited to, surface preparation) are strictly applied by the shipbuilder in order to prevent premature decay and/or deterioration of the coating system;
- .2 the coating performance can be improved by adopting measures at the ship design stage such as reducing scallops, using rolled profiles, avoiding complex geometric configurations and ensuring that the structural configuration permits easy access for tools and to facilitate cleaning, drainage and drying of the space to be coated; and
- .3 the coating performance standard provided in this document is based on experience from manufacturers, shipyards and ship operators; it is not intended to exclude suitable alternative coating systems, providing a performance at least equivalent to that specified in this Standard is demonstrated. Acceptance criteria for alternative systems are provided in section 8.

3.4 Coating Technical File (CTF)

3.4.1 Specification of the cargo oil tank coating system applied, record of the shipyard's and shipowner's coating work, detailed criteria for coating selection, job specifications, inspection, maintenance and repair shall be included in the Coating Technical File required by resolution MSC.215(82).

3.4.2 *New construction stage*

The Coating Technical File shall contain at least the following items relating to this Standard and shall be delivered by the shipyard at new ship construction stage:

- .1 copy of Statement of Compliance or Type Approval Certificate;
- .2 copy of Technical Data Sheet, including:
 - product name and identification mark and/or number;
 - materials, components and composition of the coating system, colours;
 - minimum and maximum dry film thickness;
 - application methods, tools and/or machines;
 - condition of surface to be coated (de-rusting grade, cleanliness, profile, etc.); and
 - environmental limitations (temperature and humidity);

- .3 shipyard work records of coating application, including:
 - applied actual areas (in square metres) of coating in each cargo oil tank;
 - applied coating system;
 - time of coating, thickness, number of layers, etc.;
 - ambient conditions during coating; and
 - details of surface preparation;
- .4 procedures for inspection and repair of coating system during ship construction;
- .5 coating log issued by the coating inspector – stating that the coating was applied in accordance with the specifications to the satisfaction of the coating supplier representative and specifying deviations from the specifications (see annex 2);
- .6 shipyard's verified inspection report, including:
 - completion date of inspection;
 - result of inspection;
 - remarks (if given); and
 - inspector signature; and
- .7 procedures for in-service maintenance and repair of coating systems.¹

3.4.3 *In-service maintenance and repair*

In-service maintenance and repair activities shall be recorded in the Coating Technical File in accordance with the relevant section of the Guidelines for coating maintenance and repair.

3.4.4 The Coating Technical File shall be kept on board and maintained throughout the life of the ship.

3.5 **Health and safety**

The shipyard is responsible for implementation of national regulations to ensure the health and safety of individuals and to minimize the risk of fire and explosion.

4 **COATING STANDARD**

4.1 **Performance standard**

This Standard is based on specifications and requirements to provide a target useful coating life of 15 years, which is considered to be the time period, from initial application, over which the coating system is intended to remain in "GOOD" condition. The actual useful life will vary, depending on numerous variables including actual conditions encountered in service.

4.2 **Standard application**

Protective coatings for cargo oil tanks applied during the construction of new crude oil tankers shall at least comply with the requirements in this Standard.

¹ Guidelines to be developed by the Organization.

4.3 Coating system

An epoxy-based system meeting test and physical properties (table 1.1.3) shall be documented, and a Type Approval Certificate or Statement of Compliance shall be provided.

4.4 Area of application

The following areas are the minimum areas that shall be protected according to this Standard:

- .1 Deckhead with complete internal structure, including brackets connecting to longitudinal and transverse bulkheads. In tanks with ring frame girder construction the underdeck transverse framing to be coated down to level of the first tripping bracket below the upper faceplate.
- .2 Longitudinal and transverse bulkheads to be coated to the uppermost means of access level. The uppermost means of access and its supporting brackets to be fully coated.
- .3 On cargo tank bulkheads without an uppermost means of access the coating to extend to 10% of the tanks height at centreline but need not extend more than 3 m down from the deck.
- .4 Flat inner bottom and all structure to height of 0.3 m above inner bottom to be coated.

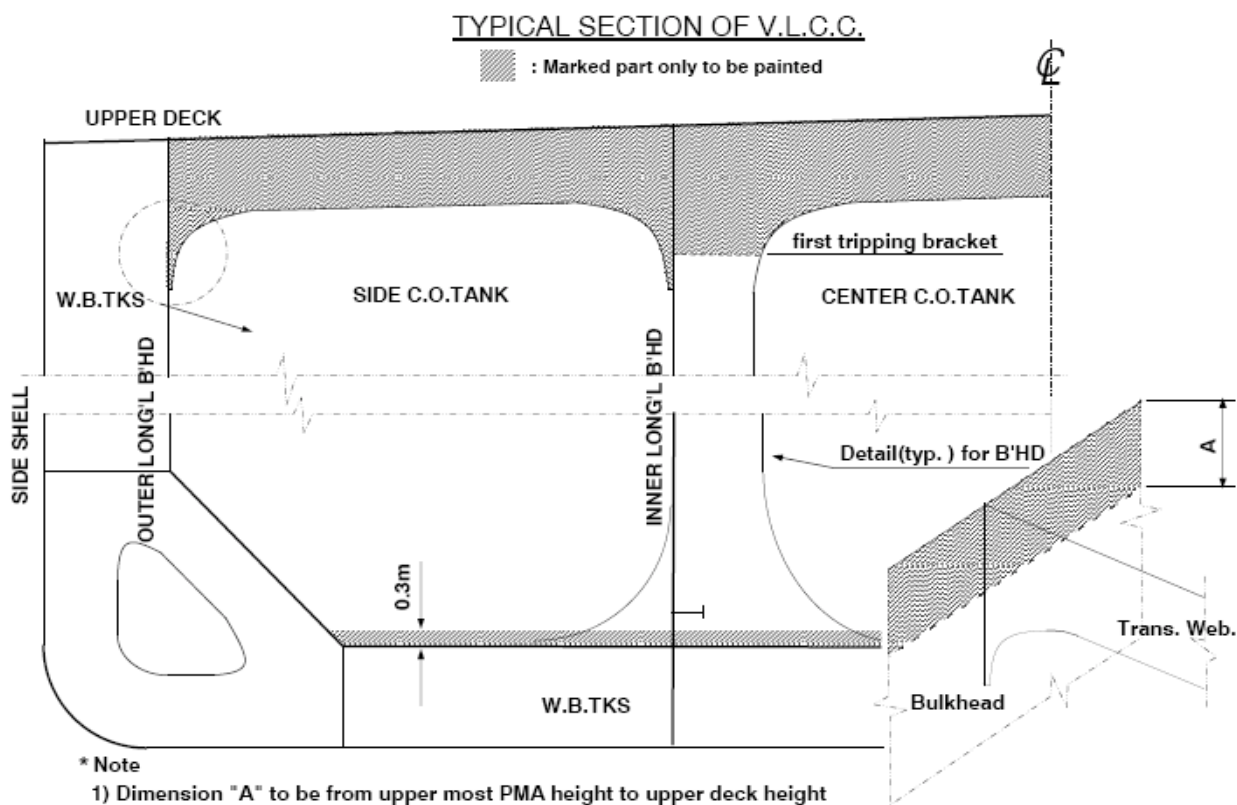


Figure 1

4.5 Special application

4.5.1 This Standard covers protective coating requirements for steel structure within cargo oil tanks. It is noted that there are other independent items that are fitted within the cargo oil tanks and to which coatings are applied to provide protection against corrosion.

4.5.2 It is recommended that this Standard is applied, to the extent practicable, to those portions of means of access provided for inspection within the areas specified in subsection 4.4 that are not integral to the ship structure, such as rails, independent platforms, ladders, etc. Other equivalent methods of providing corrosion protection for non-integral items may also be used, provided they do not impair the performance of the coatings of the surrounding structure. Access arrangements that are integral to the ship structure, such as stiffener depths for walkways, stringers, etc., are to fully comply with this Standard when located within the coated areas.

4.5.3 It is also recommended that supports for piping, measuring devices, etc., be coated as a minimum in accordance with the non-integral items indicated in paragraph 4.5.2.

4.6 Basic coating requirements

4.6.1 The requirements for protective coating systems to be applied at ship construction for the cargo oil tanks of crude oil tankers meeting the performance standard specified in paragraph 4.1 are listed in table 1.

4.6.2 Coating manufacturers shall provide a specification of the protective coating system to satisfy the requirements of table 1 and the operating environment.

4.6.3 The Administration shall verify the Technical Data Sheet and Statement of Compliance or Type Approval Certificate for the protective coating system.

4.6.4 The shipyard shall apply the protective coating in accordance with the verified Technical Data Sheet and its own verified application procedures.

4.7 The referenced standards listed in this Standard are acceptable to the Organization. Test equipment, test methods, preparation methods and/or test results shall conform to performance standards not inferior to those acceptable to the Organization.

Table 1 – Basic coating system requirements for cargo oil tanks of crude oil tankers

	Characteristic	Requirement
1	Design of coating system	
.1	Selection of the coating system	The selection of the coating system shall be considered by the parties involved with respect to the service conditions and planned maintenance. The following aspects, among other things shall be considered: .1 location of space relative to heated surfaces; .2 frequency of cargo operations; .3 required surface conditions; .4 required surface cleanliness and dryness; .5 supplementary cathodic protections, if any (where coating is supplemented by cathodic protection, the coating shall be compatible with the cathodic protection system); .6 permeability of the coating and resistance to inert gas and acids; and .7 appropriate mechanical properties (flexibility, impact resistance). The coating manufacturer shall supply products with documented satisfactory performance records and technical data sheets. The manufacturer shall also be capable of rendering adequate technical assistance. Performance records, technical data sheet and any manufacturer's technical assistance provided shall be recorded in the Coating Technical File. Coatings for application underneath sun-heated decks or on bulkheads forming boundaries of heated spaces shall be able to withstand repeated heating and/or cooling without becoming brittle.
.2	Coating type	Epoxy-based systems. Other coating systems with performance according to the test procedure in the annex. A multi-coat system with each coat of a contrasting colour is recommended. The top coat shall be of a light colour to facilitate in-service inspection. Consideration should be given to the use of enhanced coatings in way of suction bellmouths and heating coil downcomers. Consideration should be given to the use of supplementary cathodic protection where there may be galvanic issues.

	Characteristic	Requirement
.3	Coating test	Epoxy-based systems tested prior to the date of entry into force of this Standard in a laboratory by a method corresponding to the test procedure in annex 1 or equivalent, which as a minimum meets the requirements for rusting and blistering, or which have documented field exposure for 5 years with a final coating condition of not less than “GOOD”, may be accepted. For epoxy-based systems approved on or after entry into force of this Standard, testing according to the procedure in annex 1, or equivalent, is required.
.4	Job specification	There shall be a minimum of two stripe coats and two spray coats, except that the second stripe coat, by way of welded seams only, may be reduced in scope where it is proven that the NDFT can be met by the coats applied in order to avoid unnecessary over thickness. Any reduction in scope of the second stripe coat shall be fully detailed in the CTF. Stripe coat shall be applied by brush or roller. Roller shall be used for scallops, ratholes, etc., only. Each main coating layer shall be appropriately cured before application of the next coat, in accordance with the coating manufacturer’s recommendations. Job specifications shall include the dry-to-recoat times and walk-on time given by the manufacturer. Surface contaminants such as rust, grease, dust, salt, oil, etc., shall be removed prior to painting. The method to be according to the paint manufacturer’s recommendations. Abrasive inclusions embedded in the coating shall be removed.
.5	NDFT (nominal total dry film thickness) ²	NDFT 320 µm with 90/10 rule for epoxy-based systems; other systems to the coating manufacturer’s specifications. Maximum total dry film thickness according to the manufacturer’s detailed specifications. Care shall be taken to avoid increasing the DFT in an exaggerated way. Wet film thickness shall be regularly checked during application. Thinners shall be limited to those types and quantities recommended by the manufacturer.

² Type of gauge and calibration in accordance with SSPC-PA2:2004 Paint Application Specification No.2.

	Characteristic	Requirement
2 PSP (Primary surface preparation)		
.1	Blasting and profile ^{3,4}	Sa 2½; with profiles between 30-75 µm. Blasting shall not be carried out when: .1 the relative humidity is above 85%; or .2 the surface temperature of steel is less than 3°C above the dew point. Checking of the steel surface cleanliness and roughness profile shall be carried out at the end of the surface preparation and before the application of the primer, and in accordance with the coating manufacturer's recommendations.
.2	Water soluble salt limit equivalent to NaCl ⁵	≤ 50 mg/m ² of sodium chloride.
.3	Shop primer	Zinc containing inhibitor free zinc silicate based or equivalent. Compatibility with main coating system shall be confirmed by the coating manufacturer.
3 Secondary surface preparation		
.1	Steel condition ⁶	The steel surface to be coated shall be prepared so that the coating selected can achieve an even distribution at the required NDFT and have an adequate adhesion by removing sharp edges, grinding weld beads and removing weld spatter and any other surface contaminant to grade P2. Edges to be treated to a rounded radius of minimum 2 mm, or subjected to three pass grinding or at least equivalent process before painting.

³ Refer to standard: ISO 8501-1: 1988/Suppl: 1994. Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

⁴ Refer to standard: ISO 8503-1/2: 1988. Preparation of steel substrate before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates.

⁵ Conductivity measured in accordance with the following standard:

.1 ISO 8502-9: 1998. Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness; or
[.2 NACE International Standard SP0508-2008 Item No. 21134. Standard practice methods of validating equivalence to ISO 8502-9 on measurement of the levels of soluble salts.]

⁶ Refer to standard: ISO 8501-3: 2001. Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

	Characteristic	Requirement
.2	Surface treatment ⁷	Sa 2½ on damaged shop primer and welds. All surfaces to be coated shall be blasted to Sa 2, removing at least 70% of intact shop primer, which has not passed a pre-qualification certified by test procedures in table 1.3. If the complete coating system comprising epoxy-based main coating and shop primer has passed a pre-qualification certified by test procedures in table 1.3 intact shop primer may be retained provided the same epoxy-based system is used. Retained shop primer shall be cleaned by sweep blasting, high pressure water washing or equivalent method. If a zinc silicate shop primer has passed the pre-qualification test of table 1.3 as part of an epoxy coating system, it may be used in combination with other epoxy coatings certified under table 1.3, provided that the compatibility has been confirmed by the manufacturer by the test with reference to the immersion test of annex 1 or in accordance with the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)).
.3	Surface treatment after erection	Erection joints St 3 or better or Sa 2½ where practicable. <i>For inner bottom:</i> - Damages up to 20% of the area to be coated to be treated to minimum St 3. - Contiguous damages over 25 m² or over 20% of the area to be coated, Sa 2½ shall be applied. <i>For underdeck:</i> - Damages up to 3% of area to be coated to be treated to minimum St 3. - Contiguous damages over 25 m² or over 3% of the area to be coated, Sa 2½ shall be applied. Coating in overlap to be feathered.
.4	Profile requirements ⁸	In case of full or partial blasting 30-75 µm, otherwise as recommended by the coating manufacturer.
.5	Dust ⁹	Dust quantity rating “1” for dust size class “3”, “4” or “5”. Lower dust size classes to be removed if visible on the surface to be coated without magnification.

⁷ Refer to standard: ISO 8501-1: 1988/Suppl: 1994. Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

⁸ Refer to standard ISO 8503-1/2: 1988 – Preparation of steel substrate before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates.

⁹ Refer to standard ISO 8502-3:1993 – Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness.

	Characteristic	Requirement
.6	Water soluble salts limit equivalent to NaCl after blasting/grinding ¹⁰	$\leq 50 \text{ mg/m}^2$ of sodium chloride.
.7	Contamination	No oil contamination. Paint manufacturer's recommendations should be followed regarding any other contamination between coats.
4 Miscellaneous		
.1	Ventilation	Adequate ventilation is necessary for the proper drying and curing of coating. Ventilation should be maintained throughout the application process and for a period after application is completed, as recommended by the coating manufacturer.
.2	Environmental conditions	Coating shall be applied under controlled humidity and surface conditions, in accordance with the manufacturer's specifications. In addition, coating shall not be applied when: .1 the relative humidity is above 85%; or .2 the surface temperature is less than 3°C above the dew point; or .3 any other requirements of the paint manufacturer are not being met.
.3	Testing of coating ¹¹	Destructive testing should be avoided. Sample dry film thickness shall be measured after each coat for quality control purposes and the total dry film thickness shall be confirmed after completion of the final coat, using appropriate thickness gauges.
.4	Repair	Any defective areas, e.g., pinholes, bubbles, voids, etc., shall be marked up and appropriate repairs effected. All such repairs shall be re-checked and documented.

¹⁰ Conductivity measured in accordance with standard ISO 8502-9: 1998 – Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness.

¹¹ Type of gauge and calibration in accordance with standard SSPC-PA2: 2004 – Paint Application Specification No.2.

5 COATING SYSTEM APPROVAL

Results from prequalification tests (table 1, paragraph 1.3) of the coating system shall be documented, and a Statement of Compliance or Type Approval Certificate shall be issued if found satisfactory by a third party, independent of the coating manufacturer.

6 COATING INSPECTION REQUIREMENTS

6.1 General

6.1.1 To ensure compliance with this Standard, the following shall be carried out by qualified coating inspectors certified to NACE Coating Inspector Level 2, FROSIO Inspector Level III or equivalent as verified by the Administration.

6.1.2 Coating inspectors shall inspect surface preparation and coating application during the coating process by carrying out, as a minimum, those inspection items identified in section 6.2 to ensure compliance with this Standard. Emphasis shall be placed on initiation of each stage of surface preparation and coatings application as improper work is extremely difficult to correct later in the coating progress. Representative structural members shall be non-destructively examined for coating thickness. The inspector shall verify that appropriate collective measures have been carried out.

6.1.3 Results from the inspection shall be recorded by the inspector and shall be included in the CTF (see annex 2).

6.2 Inspection items

Construction stage		Inspection items
Primary surface preparation	1	The surface temperature of steel, the relative humidity and the dew point shall be measured and recorded before the blasting process starts and at times of sudden changes in weather.
	2	The surface of steel plates shall be tested for soluble salt checked for oil, grease and other contamination.
	3	The cleanliness of the steel surface shall be monitored in the shop primer application process.
	4	The shop primer material shall be confirmed to meet the requirements of 2.3c of table 1. Verified by manufacturer.
Thickness		If compatibility with the main coating system has been declared, then the thickness and curing of the zinc silicate shop primer to be confirmed to conform to the specified values.
Block assembly	1	After completing construction of the block and before secondary surface preparation starts, a visual inspection for steel surface treatment including edge treatment shall be carried out.
		Any oil, grease or other visible contamination to be removed.

Construction stage		Inspection items
	2	After blasting/grinding/cleaning and prior to coating, a visual inspection of the prepared surface shall be carried out. On completion of blasting and cleaning and prior to the application of the first coat of the system, the steel surface shall be tested for levels of remaining soluble salts in at least one location per block.
	3	The surface temperature, the relative humidity and the dew point shall be monitored and recorded during the coating application and curing.
	4	Inspection to be performed of the steps in the coating application process mentioned in table 1.
	5	DFT measurements shall be taken to prove that the coating has been applied to the thickness as specified.
Erection	1	Visual inspection for steel surface condition, surface preparation and verification of conformance to other requirements in table 1, and the agreed specification to be performed.
	2	The surface temperature, the relative humidity and the dew point shall be measured and recorded before coating starts and regularly during the coating process.
	3	Inspection to be performed of the steps in the coating application process mentioned in table 1.

7 COATING VERIFICATION REQUIREMENTS

The following shall be carried out by the Administration prior to reviewing the Coating Technical File for the ship subject to this Standard:

- .1 check that the Technical Data Sheet and Statement of Compliance or Type Approval Certificate comply with the Standard;
- .2 check that the coating identification on representative containers is consistent with the coating identified in the Technical Data Sheet and Statement of Compliance or Type Approval Certificate;
- .3 check that the inspector is qualified in accordance with the qualification standards in paragraph 6.1.1;
- .4 check that the inspector's reports of surface preparation and the coating's application indicate compliance with the manufacturer's Technical Data Sheet and Statement of Compliance or Type Approval Certificate; and
- .5 monitor implementation of the coating inspection requirements.

8 ALTERNATIVE COATING SYSTEMS

8.1 All systems that are not an epoxy-based system applied according to table 1 of this Standard are defined as an alternative system.

8.2 This Standard is based on recognized and commonly used coating systems. It is not meant to exclude other, alternative, systems with proven equivalent performance, for example non-epoxy-based systems.

8.3 Acceptance of alternative systems shall be subject to documented evidence that they ensure a corrosion prevention performance at least equivalent to that indicated in this Standard, by either:

- .1 testing according to this standard; or
- .2 five years' field exposure with documentary evidence of continuous trading with crude oil cargoes.¹² The coating condition is not less than "GOOD" after five years.

¹² The vessel for field exposure should be trading in varied trade routes and carrying substantial varieties of crude oils to ensure a realistic sample: for example, three ships on three different trade areas with different varieties of crude cargoes.

ANNEX 1

TEST PROCEDURES FOR COATING QUALIFICATION FOR CARGO OIL TANKS OF CRUDE OIL TANKERS

1 Scope

This annex provides details of the test procedures for cargo tank coatings for crude oil carriers as referred to in paragraphs 4.6 and 8.3 of this Standard. Both the tank-top and deck-head should be applied with coating systems that have passed the full test protocol as described in this document.

2 Definitions

Coating specification means the specification of coating systems which include the type of coating system, steel preparation, surface preparation, surface cleanliness, environmental conditions, application procedure, inspection and acceptance criteria.

3 Background

It is acknowledged that a crude oil cargo tank on board a ship is exposed to two very different environmental conditions.

3.1 When the cargo tank is loaded there are three distinct vertical zones:

- .1 Lowest part, and horizontal parts on stringer decks, etc., exposed to water that can be acidic and sludge that can contain anaerobic bacteria.
- .2 Mid part where the oil cargo is in contact with all immersed steel.
- .3 Vapour space where the air is saturated with various vapours from the loaded cargo tank such as H₂S, CO₂, SO₂, water vapour and other gases and compounds from the inert gas system.

3.2 When the tank is in a ballast condition:

- .1 Lowest part and horizontal parts on stringer decks, etc., exposed to cargo residues and water that can be acidic and sludge that can contain anaerobic bacteria.
- .2 Tank space where the air contains various vapours from the crude oil residues such as H₂S, CO₂, SO₂, water vapour and other gases and compounds from the inert gas system.

4 Testing

The tests herein are designed to simulate, as far as practicable, the two main environmental conditions to which the crude oil cargo tank coating will be exposed. The coating shall be validated by the following tests: the test procedures shall comply with Appendix 1 (Gas-tight chamber simulating the vapour phase of the loaded tank) and Appendix 2 (Immersion test simulating the loaded condition of the crude oil tank¹³).

¹³ Related test method is derived from, but not identical to, standard ISO 2812-1:2007 – Paints and varnishes – Determination of resistance to liquids – Part 1: Immersion in liquids other than water.

5 Test gas composition

The test gas is based on the composition of the vapour phase in crude oil tanks, except that the hydrocarbon components are not included as these have no detrimental effect on epoxy coatings such as those used in cargo oil tanks.

TEST GAS COMPOSITION

N ₂	83 ± 2 per cent by volume of dry gas
CO ₂	13 ± 2 per cent by volume of dry gas
O ₂	4 ± 1 per cent by volume of dry gas
SO ₂	300 ± 20 ppm
H ₂ S	200 ± 20 ppm

6 Test liquid

Crude oil is a complex chemical material which is not stable over time when stocked. Crude oils can also vary in composition over time. In addition the use of crude oil has proven to create practical and HSE barriers for the involved testing institutes. To overcome this, a model immersion liquid is used to simulate crude oil. The formulation of this crude oil model system is given below:

- .1 start with distillate Marine Fuel, DMA Grade¹⁴ density at 15°C: maximum 890 kg/m³, viscosity of maximum 6 mm²/s at 40°C;
- .2 add naphthenic acid up to an acid number¹⁵ of 2.5 ± 0.1 mg KOH/g;
- .3 add benzene/ toluene (1:1 ratio) up to a total of 8.0 ± 0.2% w/w of the DMA;
- .4 add artificial seawater¹⁶ up to a total of 5.0 ± 0.2% w/w to the mixture;
- .5 add H₂S dissolved in a liquid carrier (in order to get 5 ± 1 ppm w/w H₂S in the total test liquid);
- .6 thoroughly mix the above constituents immediately prior to use; and
- .7 once the mixture is completed, it should be tested to confirm the mixture is compliant with the test mixture concentrations.

Note: To prevent the risk of H₂S release into the test facility, it is recommended to use a stock solution for steps 1 to 4, then fill the test containers and complete the test solution with steps 5 and 6.

¹⁴ Refer to standard ISO 8217:2005 – Petroleum products – Fuels (class F) – Specifications of marine fuels.

¹⁵ Refer to standard ISO 6618:1997 – Petroleum products and lubricants – Determination of acid or base number – Colour-indicator titration method.

¹⁶ Refer to standard ASTM D1141 – 98(2008) – Standard Practice for the Preparation of Substitute Ocean Water.

APPENDIX 1

GAS-TIGHT CABINET TEST

1 Test condition

The vapour test shall be carried out in a gas-tight cabinet. The dimensions and design of the air tight gas cabinet are not critical, provided the requirements of subparagraphs .6 to .10 below are met. The test gas is designed to simulate the actual crude oil cargo tank environment in ballast condition as well as the vapour conditions of the loaded tank.

- .1 The exposure time is 90 days.
- .2 Testing shall be carried out using duplicate panels; a third panel shall be prepared and stored at ambient conditions to act as a reference panel during final evaluation of the test panels.
- .3 The size of each test panel is 150 mm x 100 mm x 3 mm.
- .4 The panels shall be treated according to the Performance Standard table 1, 1.2 and the coating system applied according to table 1, 1.4 and 1.5.
- .5 The zinc silicate shop primer, when used, shall be weathered for at least 2 months and cleaned by low pressure fresh water washing. The exact method of shop primer preparation before being over coated shall be reported, and the judgement issued for that specific system. The reverse side and edges of the test piece shall be coated appropriately, in order not to influence the test results.
- .6 Inside the gas-tight cabinet a trough shall be present. This trough shall be filled with 2 ± 0.2 l of water. The water in the trough shall be drained and renewed prior to each time the test gas is refreshed.
- .7 The vapour spaces inside the gas-tight cabinet shall be filled with a mixture of test gas as per item 5 of the Standard. The cabinet atmosphere is to be maintained over the period of the test. When the gas is outside the scope of the test method, it shall be refreshed. The monitoring frequency and method, and the date and time for refreshing the test gas, shall be in the test report.
- .8 The atmosphere in the test cabinet shall at all times be $95 \pm 5\%$ relative humidity.
- .9 Temperature of the test atmosphere shall be $60 \pm 3^{\circ}\text{C}$.
- .10 A stand for the test panels shall be made of a suitable inert material to hold the panels vertically spaced at least 20 mm between panels. The stand shall be positioned in the cabinet to ensure the lower edge of the panels is at least 200 mm above the height of the water and at least 100 mm from the walls of the cabinet. If two shelves are in the cabinet care shall be taken to ensure solution does not drip on to the lower panels.

2 Test results

2.1 Prior to testing, the following measured data of each coating composing the coating system, including the zinc silicate shop primer when used under the coating system, shall be reported:

- .1 infrared (IR) identification of the base and hardener components of the coating;
- .2 specific gravity¹⁷ of the base and hardener components of the paint; and
- .3 mean dry film thickness (DFT) (by using a template).¹⁸

2.2 After completion of the test duration remove the panels from the cabinet and rinse with warm tap water. Dry the panels by blotting with absorbent paper then evaluate the panels for rust and blistering within 24 h of the end of the test.

2.3 After testing, the following measured data shall be reported: blisters and rust.¹⁹

3 Acceptance criteria

3.1 The test results based on section 2 shall satisfy the following criteria, the poorest performing of the duplicate test panels shall be used in the report:

Item	Acceptance criteria for epoxy-based systems	Acceptance criteria for alternative systems
Blisters on panel	No blisters	No blisters
Rust on panel	Ri 0 (0%)	Ri 0 (0%)

3.2 When evaluating test panels, blistering or rusting within 5 mm of the panel edge shall be ignored.

4 Test report

The test report shall include the following information:

- .1 coating manufacturers' name and manufacturing site;²⁰
- .2 dates of test;

¹⁷ Refer to standard ISO 2811-1/4:1997 – Paints and varnishes. Determination of density.

¹⁸ Six equally distributed measuring points are used on panels size 150 mm x 100 mm.

¹⁹ Refer to the following standards:

- .1 ISO 4628-1:2003 – Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 1: General introduction and designation system;
- .2 ISO 4628-2:2003 – Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2: Assessment of degree of blistering; and
- .3 ISO 4628:2003 – Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of common types of defect – Part 3: Designation of degree of rusting.

²⁰ It should be noted that the test is valid irrespective of production site, meaning that no individual testing of product from different production sites is required.

- .3 product name/identification of each coat and, where applicable, zinc silicate shop primer;
- .4 batch numbers of each component of each product;
- .5 details of surface preparation of steel panels, before shop primer application, and treatment of the shop primer before over coating where relevant and at a minimum including the following:
 - .5.1 surface treatment, or treatment of weathered shop primer, and any other important information on treatment influencing the performance; and
 - .5.2 water soluble salt level measured on the steel prior to application of the shop primer;²¹
- .6 details of coating system, including the following:
 - .6.1 zinc silicate shop primer if relevant, its secondary surface pre-treatment and condition under which applied, weathering period;
 - .6.2 number of coats, including the shop primer, and thickness of each;
 - .6.3 mean dry film thickness (DFT) prior to testing;²²
 - .6.4 thinner if used;²²
 - .6.5 humidity;²²
 - .6.6 air temperature;²² and
 - .6.7 steel temperature;²²
- .7 details of schedule for refreshing the test gas;
- .8 test results according to section 2; and
- .9 results according to section 3.

²¹ Refer to the following standards:

- .1 ISO 8502-6:2006. Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 6: Extraction of soluble contaminants for analysis – The Bresle method; and
- .2 ISO 8502-9:1998. Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 9: Field method for the conductometric determination of water-soluble salts.

²² Both of actual specimen data and manufacturer's requirement/recommendation.

APPENDIX 2

IMMERSION TEST

1 Test condition

The immersion test²³ is developed to simulate the conditions in a crude oil tank in loaded condition.

- .1 The exposure time is 180 days.
- .2 The test liquid should be made as per item 6 in the Standard.
- .3 The test liquid should be added to a container with an inside flat bottom until a column of the test liquid of height of 400 mm is reached, resulting in an aqueous phase of 20 mm. Any other alternative test set-up, using an identical test liquid, which will also result in the immersion of the test panel in 20 mm of the aqueous phase, is also accepted. This can be achieved by using, for instance, inert marbles.
- .4 The temperature of the test liquid should be $60 \pm 2^{\circ}\text{C}$ and should be uniform and maintained constant with recognized methods such as water or oil bath or air circulation oven capable of keeping the immersion liquid within the required temperature range.
- .5 Test panels shall be positioned vertically and fully immersed during the test.
- .6 Testing shall be carried out using duplicate panels.
- .7 Inert spacers which do not cover the test area shall be used to separate test panels.
- .8 The size of each test panel is 150 mm x 100 mm x 3 mm.
- .9 The panels shall be treated according to the Performance Standard table 1, 1.2 and the coating system applied according to table 1, 1.4 and 1.5.
- .10 The zinc silicate shop primer, when used, shall be weathered for at least 2 months and cleaned by low pressure fresh water washing. The exact method of shop primer preparation before being over coated shall be reported, and the judgement issued for that specific system. The reverse side, and edges, of the test piece shall be coated appropriately, in order not to influence the test results.
- .11 After the full immersion test period is completed the panels shall be removed from the test liquid and wiped with dry clean cloth before evaluation of the panels.
- .12 Evaluation of the test panels shall be done within 24 h after completion of the test.

²³ Related test method is derived from, but not identical to, standard ISO 2812-1:2007 – Paints and varnishes – Determination of resistance to liquids – Part 1: Immersion in liquids other than water.

2 Test results

2.1 Prior to testing, the following measured data of each coating composing the coating system, including the zinc silicate shop primer when used under the coating system, shall be reported:

- .1 infrared (IR) identification of the base and hardener components of the coating;
- .2 specific gravity of the base and hardener components of the paint;²⁴ and
- .3 mean dry film thickness (DFT) (by using a template).²⁵

2.2 After testing, the following measured data shall be reported: blisters and rust.²⁶

3 Acceptance criteria

3.1 The test results based on section 2 shall satisfy the following criteria, the poorest performing of the duplicate test panels shall be used in the report:

Item	Acceptance criteria for epoxy-based systems	Acceptance criteria for alternative systems
Blisters on panel	No blisters	No blisters
Rust on panel	Ri 0 (0%)	Ri 0 (0%)

3.2 When evaluating test panels, blistering or rusting within 5 mm of the panel edge should be ignored.

4 Test report

The test report shall include the following information:

- .1 coating manufacturers' name and manufacturing site;²⁷
- .2 dates of test;

²⁴ Refer to standard ISO 2811-1/4:1997 – Paints and varnishes. Determination of density.

²⁵ Six equally distributed measuring points are used on panels size 150 mm x 100 mm.

²⁶ Refer to the following standards:

- .1 ISO 4628-1:2003 – Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 1: General introduction and designation system;
- .2 ISO 4628-2:2003 – Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2: Assessment of degree of blistering; and
- .3 ISO 4628:2003 – Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of common types of defect – Part 3: Designation of degree of rusting.

²⁷ It should be noted that the test is valid irrespective of production site, meaning that no individual testing of product from different production sites is required.

- .3 product name/identification of each coat and, where applicable, zinc silicate shop primer;
- .4 batch numbers of each component of each product;
- .5 details of surface preparation of steel panels, before shop primer application, and treatment of the shop primer before over coating where relevant and at a minimum including the following:
 - .5.1 surface treatment, or treatment of weathered shop primer, and any other important information on treatment influencing the performance; and
 - .5.2 water soluble salt level measured on the steel prior to application of the shop primer;²⁸
- .6 details of coating system, including the following:
 - .6.1 zinc silicate shop primer if relevant, its secondary surface pre-treatment and condition under which applied, weathering period;
 - .6.2 number of coats, including the shop primer, and thickness of each;
 - .6.3 mean dry film thickness (DFT) prior to testing;²⁹
 - .6.4 thinner if used;²⁹
 - .6.5 humidity;²⁹
 - .6.6 air temperature;²⁹ and
 - .6.7 steel temperature;²⁹
- .7 test results according to section 2; and
- .8 results according to section 3.

²⁸ Refer to the following standards:

- .1 ISO 8502-6:2006. Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 6: Extraction of soluble contaminants for analysis – The Bresle method; and
- .2 ISO 8502-9:1998. Preparation of steel substrates before application of paints and related products – Tests for the assessment of surface cleanliness – Part 9: Field method for the conductometric determination of water-soluble salts.

²⁹ Both of actual specimen data and manufacturer's requirement/recommendation.

APPENDIX 3

PRECAUTIONS REGARDING THE USE OF DANGEROUS MATERIALS

- 1 The test methods involve the use of materials that may be hazardous to health as follows:
 - .1 Sulphur Dioxide: Corrosive when wet, toxic if inhaled, causes burns, and is an irritant to the eyes and respiratory system.
 - .2 Hydrogen Sulphide: Highly flammable (Flash point of -82°C), can form an explosive mixture with air, corrosive when wet, causes burns, has to be kept away from sources of ignition, irritant and asphyxiant, LTEL 5 ppm, STEL 10 ppm, higher concentrations can be fatal and have no odour. Repeated exposure to low concentrations can result in the sense of smell for the gas being diminished.
 - .3 Benzene: Highly flammable (Flash point of -11°C), can form an explosive mixture with air, toxic, carcinogenic, acute health risk.
 - .4 Toluene: Highly flammable (Flash point of 4°C), can form an explosive mixture with air, irritant, acute health risk, reprotoxin.
- 2 Special test apparatus and precautions may be required depending on the regulations in force in the country where the tests are carried out.
- 3 Although some countries have no specific requirements preventing either of the tests being carried out, it shall anyhow be required that:
 - .1 a risk assessment of the working conditions is carried out;
 - .2 during the test period, the system shall be enclosed; and
 - .3 the environment shall be controlled, particularly at the start and end of the tests, suitable air exhaust shall be available and personal protective equipment shall be worn.

ANNEX 2

EXAMPLE OF DAILY LOG AND NON-CONFORMITY REPORT

DAILY LOG

Sheet No:

Ship:		Tank/Hold No:		Database:					
Part of structure:									
SURFACE PREPARATION									
Method:					Area (m²):				
Abrasive:					Grain size:				
Surface temperature:					Air temperature:				
Relative humidity (max):					Dew point:				
Standard achieved:									
Rounding of edges:									
Comments:									
Job No.:			Date:			Signature:			
COATING APPLICATION:									
Method:									
Coat No.	System	Batch No.	Date	Air temp.	Surf temp.	RH%	Dew point	DFT* Meas.	Specified
* Measured minimum and maximum DFT. DFT readings to be attached to daily log.									
Comments:									
Job No:			Date:			Signature:			

NON-CONFORMITY REPORT

Sheet No:

Ship:	Tank/Hold No:	Database:
Part of structure:		
DESCRIPTION OF THE INSPECTION FINDINGS TO BE CORRECTED		
Description of findings:		
Reference document (daily log):		
Action taken:		
Job No.:	Date:	Signature:

ANNEX 5**DRAFT MSC RESOLUTION****PERFORMANCE STANDARD FOR ALTERNATIVE MEANS OF CORROSION
PROTECTION FOR CARGO OIL TANKS OF CRUDE OIL TANKERS**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING regulation II-1/3-11 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (hereinafter referred to as “the Convention”) adopted by resolution [MSC....(87)], concerning alternative means of corrosion protection for cargo oil tanks of crude oil tankers,

NOTING ALSO that the aforementioned regulation II-1/3-11 provides that the alternative means of corrosion protection referred to therein shall comply with the requirements of the Performance standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers (hereinafter referred to as “the Performance standard for alternative means of corrosion protection”),

HAVING CONSIDERED, at its [eighty-seventh session], the text of the proposed Performance standard for alternative means of corrosion protection,

1. ADOPTS the Performance standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers, the text of which is set out in the Annex to the present resolution;
2. INVITES Contracting Governments to the Convention to note that the Performance standard for alternative means of corrosion protection will take effect on [...] upon entry into force of SOLAS regulation II-1/3-11;
3. NOTES that, under the provisions of chapter II-1 of the SOLAS Convention, amendments to the Performance standard for alternative means of corrosion protection shall be adopted, brought into force and take effect in accordance with the provisions of article VIII of that Convention concerning the amendment procedure applicable to the annex to the Convention other than chapter I;
4. REQUESTS the Secretary-General to transmit certified copies of this resolution and the text of the Performance standard for protective coatings contained in the Annex to all Contracting Governments to the Convention;
5. FURTHER REQUESTS the Secretary-General to transmit copies of this resolution and the Annex to all Members of the Organization which are not Contracting Governments to the Convention;
6. INVITES Governments to encourage the development of novel technologies aimed at providing for alternative systems and to keep the Organization advised of any positive results;

7. RESOLVES to keep the Performance standard for alternative means of corrosion protection under review and amend it as necessary, in light of experience gained in its application.

ANNEX

PERFORMANCE STANDARD FOR ALTERNATIVE MEANS OF CORROSION PROTECTION FOR CARGO OIL TANKS OF OIL TANKERS

1 PURPOSE

1.1 This Standard provides technical requirements for the minimum standard for means of corrosion protection or utilization of corrosion resistant material other than protective coating to be used for cargo oil tanks during construction of new crude oil tankers.

2 DEFINITION

2.1 *Alternative means* is a means that is not a utilization of protective coating applied according to the Performance standard for protective coating for cargo oil tanks of crude oil tankers (resolution MSC....(87)).

2.2 *Corrosion resistant steel* is steel whose corrosion resistance performance in the bottom or top of the internal cargo oil tank is tested and approved to satisfy the requirements in this Standard in addition to other relevant requirements for ship material, structure strength and construction.

2.3 *Target useful life* is the target value, in years, of the durability for which the means of corrosion protection or utilization of corrosion resistance material is designed.

3 APPLICATION

3.1 As of the date of the development of this Standard, corrosion resistant “steel” is the only recognized possible means for corrosion protection or utilization of corrosion resistant material to maintain the required structural integrity for 25 years, as an alternative to protective coating. If corrosion resistant steel is to be used as alternative means, it shall comply with the Performance Standard for corrosion resistant steel as set out in the annex.

3.2 When a novel type of alternative means to which the provisions in the annex are not applicable has been developed, and recognized by the Organization, a specific performance standard including testing procedure(s) should be developed by the Organization by adding a new annex to this Standard, taking into account experience gained through field tests for the novel prototype alternative conducted in accordance with SOLAS regulation II-1/3-11.4.

Annex

PERFORMANCE STANDARD FOR CORROSION RESISTANT STEEL

1 PURPOSE

This Standard provides technical requirements for the minimum standard for corrosion resistance steel to be used for cargo oil tanks during construction of new crude oil tankers.

2 GENERAL PRINCIPLES

2.1 The ability of corrosion resistant steel to reach its target useful life depends on the type of steel, application and survey. All these aspects contribute to the good performance of corrosion resistant steel.

2.2 Technical File

2.2.1 Documents and information stipulated in 2.2.3 and 2.2.4 shall be documented in the Technical File. The Technical File shall be verified by the Administration.

2.2.2 The Technical File shall be kept on board and maintained throughout the life of the ship.

2.2.3 *New construction stage*

The Technical File shall contain at least the following items relating to this Standard and shall be delivered by the shipyard at new ship construction stage:

- .1 copy of Type Approval Certificate;
- .2 technical Data, including:
 - .2.1 approved welding methods and welding consumables;
 - .2.2 repairing methods recommended by the manufacturer (if any);
- .3 records of the application, including:
 - .3.1 applied actual space and area of each compartment; and
 - .3.2 applied product and its thickness.

2.2.4 *In-service maintenance, repair and partial renewal*

In-service maintenance, repair and renewal activities shall be recorded in the Technical File.

3 CORROSION RESISTANT STEEL STANDARD

3.1 Performance standard

This Standard is based on specifications and requirements which intend to provide a target useful life of 25 years, which is considered to be the time period, from initial application, over which the thickness diminution of the steel is intended to be less than the diminution allowance and watertight integrity is intended to be maintained in cargo oil tanks. The actual useful life will vary, depending on numerous variables including actual conditions encountered in service.

3.2 Standard application

Corrosion resistant steel for cargo oil tanks applied to the area specified in 3.4 during the construction of new crude oil tankers shall at least comply with the requirements in this Standard and this should be considered as a minimum.

3.3 Special application

3.3.1 This Standard covers corrosion resistant steel requirements for ship's steel structures. It is noted that other independent items are fitted within the tanks to which measures are applied to provide protection against corrosion.

3.3.2 It is recommended that this Standard or the Performance standard for protective coating for cargo oil tanks is applied, to the extent possible, to those portions of permanent means of access provided for inspection within the area specified in section 3.4 that are not integral to the ship's structure, such as rails, independent platforms, ladders, etc. Other equivalent methods of providing corrosion protection for the non-integral items may also be used, provided they do not impair the performance of the corrosion resistant steel of the surrounding structure. Access arrangements that are integral to the ship structure, such as increased stiffener depths for walkways, stringers, etc., are to fully comply with this Standard or the Performance standard for protective coating for cargo oil tanks, when located within the areas specified in section 3.4.

3.3.3 It is also recommended that supports for piping, measuring devices, etc., be provided with corrosion protection in accordance with the non-integral items indicated in 3.3.2.

3.4 Area of application

The following areas are the minimum areas that shall be protected according to this Standard:

- .1 Deckhead with complete internal structure, including brackets connecting to longitudinal and transverse bulkheads. In tanks with ring frame girder construction the underdeck transverse framing to be protected down to level of the first tripping bracket below the upper faceplate.
- .2 Longitudinal and transverse bulkheads to be protected to the uppermost means of access level. The uppermost means of access and its supporting brackets to be fully protected.
- .3 On cargo tank bulkheads without an uppermost means of access the protection to extend to 10% of the tanks height at centreline but need not extend more than 3 m down from the deck.

- .4 Flat inner bottom and all structure to height of 0.3 m above inner bottom to be protected.

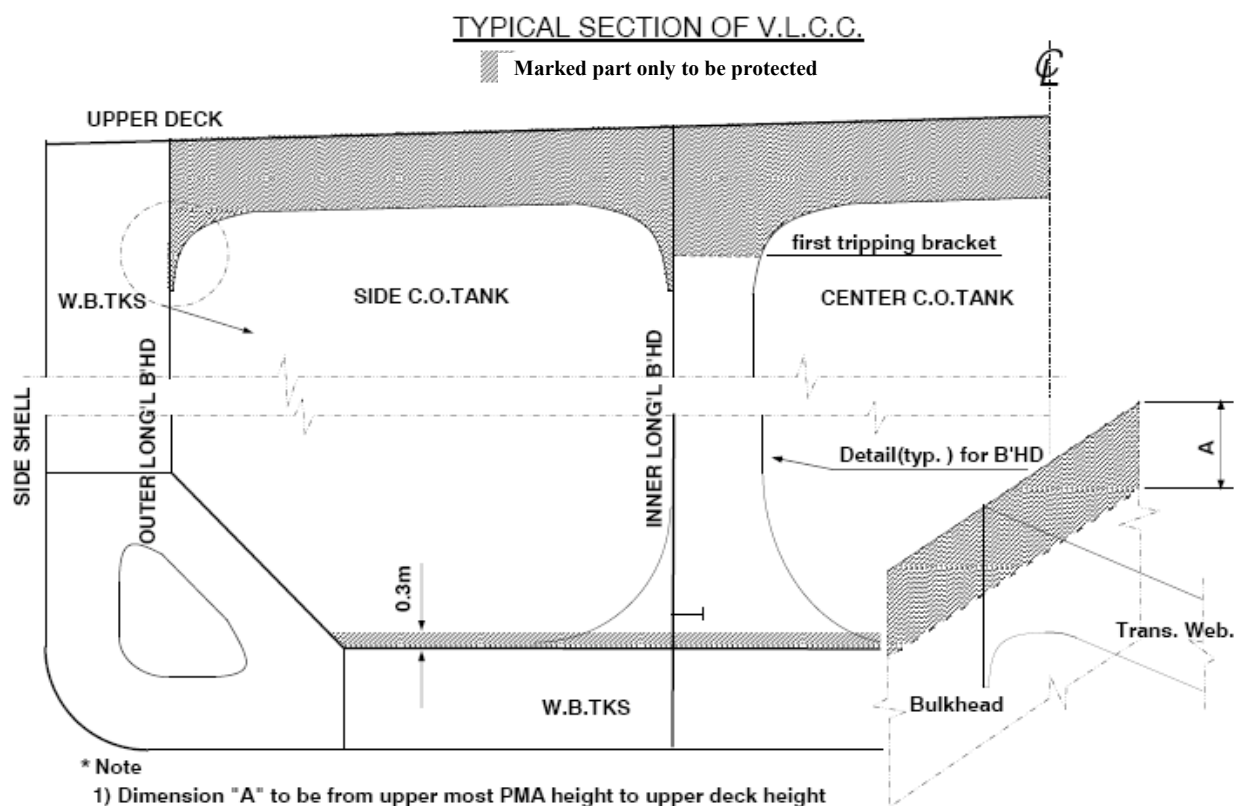


Figure 1

3.5 Basic requirements

The requirements for corrosion resistant steel to be applied at ship construction for cargo tanks in crude oil tankers meeting the performance standard specified in section 3.1 are to use approved corrosion resistant steels according to the conditions specified in the Type Approval Certificate and the Technical File to protect the area of application indicated in section 3.4.

4 APPROVAL

4.1 Corrosion resistant steel shall be tested according to the appendix, or equivalent, for approval. Corrosion resistant steel tested prior to entry into force of this Standard may be accepted, provided that the steel is tested according to the test procedure in the appendix, or equivalent.

4.2 Results from prequalification tests (4.1) of corrosion resistant steel shall be documented, and a Type Approval Certificate shall be issued if found satisfactory by the Administration.

4.3 The Type Approval Certificate shall include following information:

- .1 product name and identification mark and/or number;
- .2 materials, components and corrosion resistance process of the steel;
- .3 steel thickness;
- .4 welding methods and welding consumables; and
- .5 applicable area (upper and/or inner bottom plate).

5 INSPECTION AND VERIFICATION REQUIREMENTS

To ensure compliance with this Standard, the Administration shall carry out survey(s) during the construction process and verify that approved corrosion resistant steel has been applied to the area required.

APPENDIX

TEST PROCEDURES FOR QUALIFICATION OF CORROSION RESISTANT STEEL FOR CARGO TANKS IN CRUDE OIL TANKERS

1 Scope

These Procedures provide details of the test procedure referred to in paragraph 4.1 of this Standard.

2 Testing

Corrosion resistant steel shall be verified by the following tests.

2.1 *Test on simulated upper deck conditions*

2.1.1 *Test condition*

Tests on simulated upper deck conditions in cargo oil tank (COT) shall satisfy each of the following conditions:

- .1 Corrosion resistant steel and conventional steel shall be tested at the same time.
- .2 The chemical composition of conventional steel shall comply with the requirements of table 1. The mechanical properties of the test specimen should be representative of steel used in its intended shipboard application.

Table 1 – Chemical composition for conventional steel (%)

C	Mn	Si	P	S
0.13-0.17	1.00-1.20	0.15-0.35	0.010-0.020	0.002-0.008
Al(acid soluble min)	Nb max.	V max	Ti max	Nb+V+Ti max.
0.015	0.02	0.10	0.02	0.12
Cu max.	Cr max.	Ni max.	Mo max.	Others max.
0.1	0.1	0.1	0.02	0.02 (each)

- .3 The tests for corrosion resistant steel shall be carried out for 21, 49, 77 and 98 days. The tests for conventional steel shall be carried out for 98 days. The tests for welded joints shall be carried out for 98 days.
- .4 There are to be five test pieces for each test period.
- .5 The size of each test piece is 25 ± 1 mm x 60 ± 1 mm x 5 ± 0.5 mm. The surface of the test piece shall be polished with an emery paper #600. The size of the test piece for a welded joint is 25 ± 1 mm x 60 ± 1 mm x 5 ± 0.5 mm, including 15 ± 5 mm width of the weld metal part.
- .6 The surface of the test piece, except for the tested surface, shall be protected from corrosive environment in order not to affect the test results.

- .7 The test apparatus consists of a double chamber, and the temperature of the outer chamber is to be controlled.
- .8 Simulating the condition of the actual upper deck, the test cycle runs with distilled water and simulated COT gas ($4 \pm 1\% \text{ O}_2$ - $13 \pm 2\% \text{ CO}_2$ - $100 \pm 10 \text{ ppm SO}_2$ - $500 \pm 50 \text{ ppm H}_2\text{S}$ - $83 \pm 2\% \text{ N}_2$). A sufficient distance between the surface of the test piece and the distilled water is to be kept to avoid splashing of distilled water. The minimum gas flow rate is 100 cc per minute for the first 24 h and 20 cc per minute after 24 h.
- .9 The test pieces shall be heated for $19 \pm 2 \text{ h}$ at $50 \pm 2^\circ\text{C}$ and $3 \pm 2 \text{ h}$ at $25 \pm 2^\circ\text{C}$ and the transition time is to be at least 1 h. The time for 1 cycle is 24 h. The temperature of the distilled water is to be kept at not higher than 36°C , while the temperature of the test pieces is 50°C .

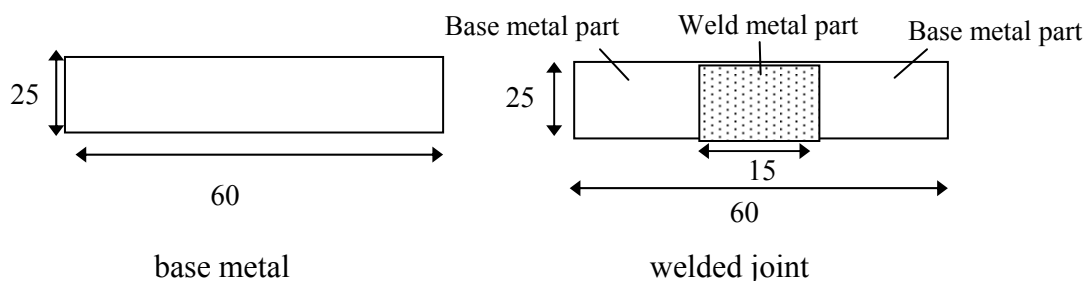


Figure 1 –Test piece of this test

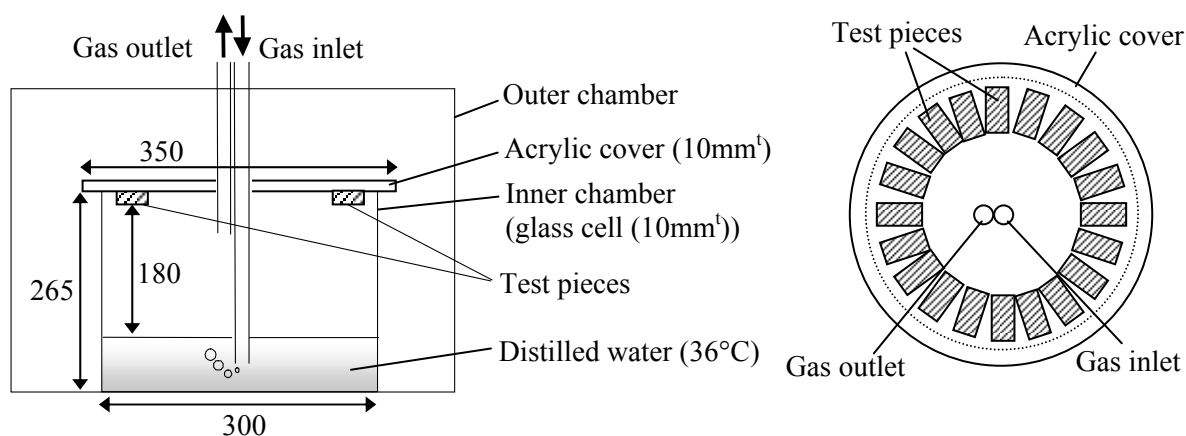


Figure 2 – An example of simulated corrosion test apparatus for upper deck

2.1.2 Test results of base metal

Prior to the testing, the following measured data shall be reported:

- .1 size and weight of the test piece;

After the testing, the following measured data shall be reported:

- .2 weight loss (difference between initial weight and weight after testing) of conventional steel (W_C) and corrosion resistant steel (W_{21} , W_{49} , W_{77} and W_{98});
- .3 corrosion loss of conventional steel (CL_C) and corrosion resistant steel (CL_{21} , CL_{49} , CL_{77} and CL_{98}), calculated by the following formulae:

$$CL_C(mm) = \frac{10 \times W_C}{S \times D}$$

$$CL_{21}(mm) = \frac{10 \times W_{21}}{S \times D}$$

$$CL_{49}(mm) = \frac{10 \times W_{49}}{S \times D}$$

$$CL_{77}(mm) = \frac{10 \times W_{77}}{S \times D}$$

$$CL_{98}(mm) = \frac{10 \times W_{98}}{S \times D}$$

whereby:

W_C : weight loss of conventional steel (g) (average of five test pieces)

W_{21} : weight loss of corrosion resistant steel after 21 days (g) (average of five test pieces)

W_{49} : weight loss of corrosion resistant steel after 49 days (g) (average of five test pieces)

W_{77} : weight loss of corrosion resistant steel after 77 days (g) (average of five test pieces)

W_{98} : weight loss of corrosion resistant steel after 98 days (g) (average of five test pieces)

S : surface area (cm^2)

D : density (g/cm^3).

The test is considered to be carried out appropriately if CL_C is between 0.05 and 0.11 (corrosion rate is between 0.2 and 0.4 mm/year). The concentration of H_2S in simulated COT gas may be increased for adjusting CL_C ;

- .4 coefficients A and B of corrosion resistant steel, calculated from the test results for 21, 49, 77 and 98 days by least square method.

Corrosion loss of corrosion resistant steel is described as follows:

$$CL = A \times t^B$$

A(mm) and B: coefficient
t: test period(days);

- .5 estimated corrosion loss after 25 years (ECL) calculated by the following formula:

$$ECL(mm) = A \times (25 \times 365)^B.$$

2.1.3 *Test results of welded joint*

The surface boundary between base metal and weld metal shall be observed by microscope at 1,000 times magnification.

2.1.4 *Acceptance criteria*

The test results based on sections 2.1.2 and 2.1.3 shall satisfy the following criteria:

- .1 $ECL(mm) \leq 2$ (for base metal); and
- .2 no discontinuous surface (e.g., step) between the base metal and weld metal (for welded joint).

2.1.5 *Test report*

The test report shall include the following information:

- .1 name of the manufacturer;
- .2 date of tests;
- .3 chemical composition and corrosion resistant process of steel;
- .4 test results according to sections 2.1.2 and 2.1.3; and
- .5 judgement according to section 2.1.4.

2.2 *Test on simulated inner bottom conditions*

2.2.1 *Test condition*

Tests on simulated inner bottom conditions in cargo oil tanks (COT) should satisfy each of the following conditions:

- .1 The test shall be carried out for 72 h for base metal, and 168 h for welded joint.

- .2 There are to be at least five test pieces of corrosion resistant steel for base metal and welded joint, respectively. For comparison, at least five test pieces of base metal of conventional steel should be tested in the same condition.
- .3 The size of each test piece is $25 \pm 1 \text{ mm} \times 60 \pm 1 \text{ mm} \times 5 \pm 0.5 \text{ mm}$ for a specimen with base metal only, and is $25 \pm 1 \text{ mm} \times 60 \pm 1 \text{ mm} \times 5 \pm 0.5 \text{ mm}$ for a specimen with welded joint including $15 \pm 5 \text{ mm}$ width of weld metal part as shown in figure 3. The surface of the test pieces shall be polished with an emery paper #600, except a hole for hanging.
- .4 The samples are hung in a solution from a fishing line (0.3 mm to 0.4 mm in diameter, made of nylon) to avoid crevice-like and/or localized corrosion. An example of a corrosion test configuration is shown in figure 4.
- .5 The test solution contains 10mass% NaCl and its pH is 0.85 adjusted by HCl solution. The test solution should be changed to a new one every 24 h to minimize pH change of the test solution. The volume of the solution is more than 20 cc/cm^2 (surface area of test piece). The temperature of the test solution is to be kept at $30 \pm 2^\circ\text{C}$.

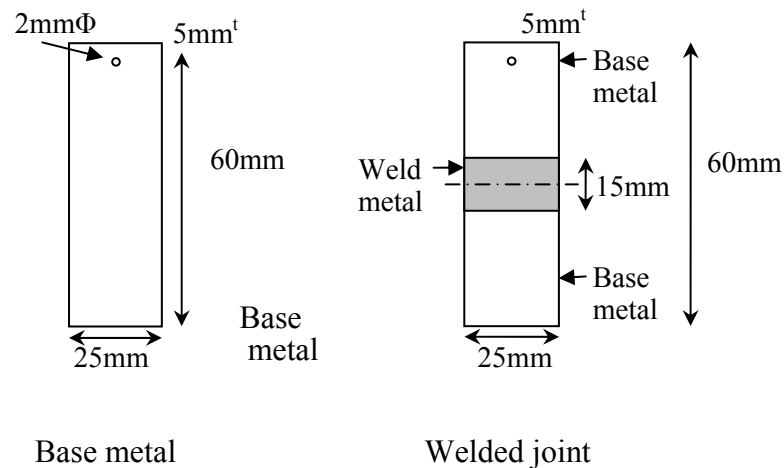


Figure 3 – Test piece for this test

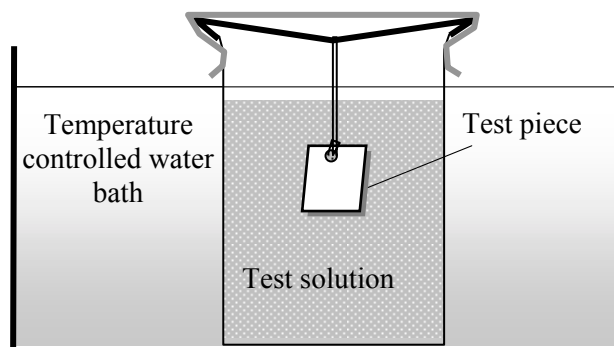


Figure 4 – Simulated corrosion test apparatus for inner bottom

2.2.2 Test results of base metal

Prior to the testing, the following data shall be measured and reported:

- .1 size and weight of test piece;

After the testing, the following measured data shall be reported:

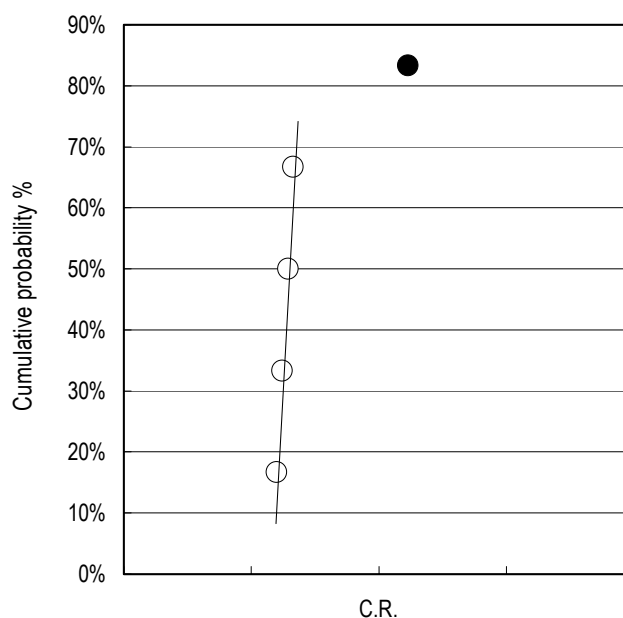
- .2 weight loss (difference between initial weight and weight after testing);
- .3 corrosion rate (C.R.) calculated by the following formula:

$$C.R.(mm / year) = \frac{365(days) \times 24(hours) \times W \times 10}{S \times 72(hours) \times D}$$

whereby:

W : weight loss(g), S : surface area(cm²), D : density(g/cm³);

- .4 to identify specimen which hold crevice and/or localized corrosion, the C.R. is to be plotted on a normal distribution statistic chart. C.R. data which deviate from the normal statistical distribution must be eliminated from the test results. An example is shown in figure 5 for reference;
- .5 calculation of average of C.R.'s data ($C.R._{ave}$):



**Figure 5 – An example of plot of C.R.s on a normal distribution chart
(In this case C.R. data ● should be abandoned and eliminated.)**

2.2.3 Test results of welded joint

The surface boundary between base metal and weld metal shall be observed by microscope at 1,000 times magnification.

2.2.4 *Acceptance criterion*

The test results based on sections 2.2.2 and 2.2.3 shall satisfy the following criteria:

- .1 $C.R._{ave}(mm / year) \leq 1.0$ (for base metal); and
- .2 no discontinuous surface (e.g., step) between the base metal and weld metal (for welded joint).

2.2.5 *Test report*

The test report shall include the following information:

- .1 name of the manufacturer;
- .2 date of tests;
- .3 chemical composition and corrosion resistant process of steel;
- .4 test results according to sections 2.2.2 and 2.2.3; and
- .5 judgement according to section 2.2.4.

ANNEX 6**DRAFT MSC CIRCULAR****GUIDELINES FOR THE ASSESSMENT OF TECHNICAL PROVISIONS FOR THE PERFORMANCE OF AN IN-WATER SURVEY IN LIEU OF BOTTOM INSPECTION IN DRY-DOCK TO PERMIT ONE DRY-DOCK EXAMINATION IN ANY FIVE-YEAR PERIOD FOR PASSENGER SHIPS OTHER THAN RO-RO PASSENGER SHIPS**

1 The Maritime Safety Committee, at its [eighty-seventh session (12 to 21 May 2010)], approved Guidelines for the assessment of technical provisions for the performance of an in-water survey in lieu of bottom inspection in dry-dock to permit one dry-dock examination in any five-year period for passenger ships other than ro-ro passenger ships, as set out in the annex, as prepared by the Sub-Committee on Ship Design and Equipment at its fifty-third session.

2 The Guidelines are intended to provide guidance on technical aspects to be considered when implementing a one in five year dry-docking regime with an in-water survey in lieu of bottom inspection in dry-dock for passenger ships of 15 years of age or less, other than ro-ro passenger ships, and to ensure that sound technical judgment is exercised by Administrations in a uniform manner, when implementing such a regime.

3 Member Governments are invited to apply the attached Guidelines when accepting an in-water survey in lieu of a bottom inspection in dry-dock, and to bring them to the attention of all parties concerned.

ANNEX

GUIDELINES FOR THE ASSESSMENT OF TECHNICAL PROVISIONS FOR THE PERFORMANCE OF AN IN-WATER SURVEY IN LIEU OF BOTTOM INSPECTION IN DRY-DOCK TO PERMIT ONE DRY-DOCK EXAMINATION IN ANY FIVE-YEAR PERIOD FOR PASSENGER SHIPS OTHER THAN RO-RO PASSENGER SHIPS

1 Introduction

1.1 Following SOLAS regulation I/7, the Survey Guidelines under the Harmonized System of Survey and Certification (resolution A.997(25)) currently specify that inspection of a passenger ship's bottom, as required by SOLAS regulation I/7, should be carried out annually, with two inspections in dry-dock in any five-year period¹. Where acceptable to the Administration, the minimum number of inspections in dry-dock of the outside of the bottom of a passenger ship (which is not a ro-ro passenger ship) in any five-year period may be reduced from two to one. In such cases, the interval between consecutive inspections in dry-dock shall not exceed 60 months.

1.2 It is recognized that technological advances have been made in regard to corrosion resistant materials, quality, endurance and effectiveness of hull coatings, repair in water by means of protected environment such as temporary cofferdam, implementation of effective five-year maintenance regimes and also the effectiveness of in-water survey (IWS) technology overall.

1.3 The following guidance has been developed to ensure that sound technical judgement is exercised by Administrations in a uniform manner, when allowing passenger ships to have an in-water survey in lieu of bottom inspection in dry-dock.

1.4 The guidance for in-water survey is intended to be applied to passenger ships of 15 years of age or less² and which are not ro-ro passenger ships. Some aspects of the guidance may also be useful in ascertaining suitability of any in-water inspection of passenger ships.

2 Areas for technical consideration by the Administration

2.1 Prior to agreeing to an in-water survey, the Administration should ascertain that:

- .1 the owner has requested the Administration or recognized organization (RO) to approve the in-water survey at least four weeks in advance of the intended date of the inspection. The owner's proposed schedule and the conditions for performing the in-water inspection should allow effective planning and execution of the survey;
- .2 the master of the ship has confirmed in writing that the ship, to his best knowledge, has not sustained any grounding or contact damage since the previous bottom inspection and that nothing unusual has been observed to suspect that any part of the ship's bottom or protuberances has been otherwise damaged;

¹ The definition of "any five-year period" is the five-year period of validity of the International Load Line Certificate.

² If an in-water survey in lieu of dry-docking is proposed for the 15th anniversary of the ship's construction, it should be subject to specific agreement of the Administration based on a dry-dock examination within the previous 30 months.

- .3 the Administration or its RO has reviewed the ship survey records to confirm current satisfactory condition of hull and machinery. Decisions of acceptability should be based on the condition of the ship, the hull protection system and the procedures that will be followed for the performing of the underwater survey; and
- .4 a shipowner who makes a request for an IWS has completed, at a previous dry-dock, or during its initial construction, a preliminary survey of the hull to the satisfaction of the Administration or its RO that documents and establishes the ship's future suitability for an IWS. The preliminary survey will evaluate the condition of the hull and note that appropriate preparations, markings, fittings and capability have been satisfactorily installed, affixed or completed so as to accomplish the IWS in accordance with the recommendations specified in these Guidelines.

3 Conditions for in-water survey

3.1 The Administration or its RO should be satisfied that conditions for survey are sufficient to complete the survey satisfactorily. Points to consider may include those below, and classification society requirements should also support this aim.

3.2.1 The IWS should be carried out by a diving company that is approved by the Administration or its RO, and in accordance with an approved plan.

3.2.2 Diving companies providing services on behalf of the owner of a ship or a mobile offshore unit (such as measurements, tests, surveys or maintenance of safety systems and equipment), the results of which are used by the surveyors in making decisions affecting certification, should be subject to approval by the Administration or its RO.

3.2.3 Diving companies should undergo an approval process, including training, and should be certified every five years, subject to intermediate audit.

3.2.4 The in-water survey should be performed to the satisfaction of the attending Administration or RO surveyor who is properly trained and authorized to conduct such surveys. Training and qualification of the attending authorized surveyor from an RO should be in accordance with the quality system requirements of the RO and resolution A.739(18), as verified by periodic audit.

3.3 The in-water survey should be carried out at an agreed geographical location with the ship at a suitable draught in an area that has been demonstrated to have sheltered waters and with weak tidal streams and currents. The weather at the time of the survey should be conducive to a safe and effective IWS.

3.4 Surveys of the underwater body should be carried out in sufficiently clear and calm waters. In general, for example, a significant portion of the propeller or rudder should be clearly observed from a single view. Visibility and water conditions should be suitable to provide sufficient evidence to be able to draw a conclusion that the hull inspection requirements have been met and the hull is in satisfactory condition.

3.5 The surveyor should be satisfied that the hull marking and mapping as well as the method of pictorial presentation are satisfactory. To facilitate an efficient survey it is recommended that the underwater hull and fittings are permanently and clearly marked externally (including tank boundaries).

3.6 Sufficient information to the satisfaction of the attending surveyor, including specific plans to facilitate the survey, should be available on board in order to ensure a full assessment and survey.

3.7 Unless accessible from outside with the aid of the ship's trim and/or heel, underwater parts should be surveyed and/or relevant maintenance work should be carried out with assistance by a diver to the satisfaction of the attending surveyor. The survey should include CCTV monitoring of the IWS, together with electronic video and still picture (if required and where appropriate) recording of the ship's hull, appendages, sea-chests and other elements of the survey. There should be good two-way communication between the diver and the personnel at the surface, including the surveyor.

3.8 The hull below the waterline should be sufficiently clean to the satisfaction of the surveyor and diver so as to be able to ascertain the physical condition of the hull and coating.

3.9 Interior sections of the hull plating should be made available for inspection to the same extent as if the ship were in dry-dock.

4 Survey findings

4.1 If the IWS reveals damage, deterioration or other conditions that require early attention or which can only be assessed reliably out of water, the surveyor may require that the ship be dry-docked in order that a fuller survey can be undertaken and the necessary work carried out. If the condition of the hull is such that it may cause corrosion damages affecting the ship's hull integrity and strength before the next survey, suitable repairs should be carried out.

4.2 The Administration should be informed of the results of all in-water surveys.

5 Maintenance considerations

5.1 A basic requirement for consideration to allow one inspection in dry-dock in five years is that a comprehensive maintenance regime based upon a five-year cycle should be effectively implemented by the company for the relevant items. The items to be considered may include the following:

- .1 *Shafting and stern tube* – Stern tube bearings should be oil lubricated or, in the case of water lubricated systems, the shafting should be of corrosion resistant material. Where wear-down measurements are unable to be taken, special consideration may be given to ascertaining sternbush clearances based on a review of the operating history, onboard testing and stern bearing oil analysis.
- .2 *Shell coating* – The hull coating system should be able to perform its functions of corrosion protection and anti-fouling over the anticipated five-year period in water. The use of a high resistance coating or advanced coating, such as silicone-based paint, would be examples of typical coating systems that could be accepted.
- .3 *Shaft seals* – Shaft seals should be capable of five-year service. The use of advanced systems such as air seals with failure mode redundancy could be considered as offering added confidence of service life.

- .4 *Bow thrusters and stern thrusters* – Inspection and replacement of propeller blade foot seals of the bow thrusters and stern thrusters should be based upon a five-year interval, taking into account the lubricating oil record. Bow and stern thrusters dismantling for general overhauling may be considered at intervals greater than five years, in accordance with manufacturer's recommendations.
- .5 *Rope cutters* – The fitting of rope cutters may be an added safeguard to give confidence to continued trouble-free operation of propulsion shaft, propeller and seals.
- .6 *Main propellers and shafting for controllable pitch propellers (CPP) ships* – Main propeller blade foot seals and the shaft seals replacement interval should be in accordance with the five-year regime, taking into account the lubricating oil record. Main propeller hub dismantling for general overhauling may be considered at intervals greater than five years. Screwshaft surveys should normally be carried out at five-year intervals, unless a screwshaft condition monitoring scheme is in effect.
- .7 *Rudders* – Rudder pintles and rudders should be inspected at in-water surveys, and pintle and bush clearances taken for water lubricated pintles/bearings. The rudders should be inspected and rudder bearing clearances should be taken every five years in dry-dock. When rudder clearances are unable to be taken in oil lubricated bearings, special consideration may be given to ascertaining rudder bearing clearances based on a review of the operating history and onboard testing. Replacement of the sliding block and the becker rudder flap bushes may be considered at intervals greater than five years.
- .8 *Sea chests* – Means, such as hinged gratings, should be provided on all sea chests to allow divers access to each sea chest to inspect the external sides of through hull connections and sea valves.
- .9 *Anodes and cathodic protection and sea valves* – The operator's maintenance regime should include provisions for inspection and replacement of cathodic protection anodes, taking into account that replacement of sacrificial anodes is variable, according to the conditions experienced. Sea valves that are found to be in need of replacement at the in-water survey should be replaced without delay.
- .10 *Hull thickness measurements* – Requirements for thickness measurements of hull structure should not be prohibited by any in-water survey.
- .11 *Podded Propulsion Units (PODs)* – Scheduled replacement of the drive end and non-drive end bearings on the PODs and inspection and replacement of seals should be based upon a five-year maintenance regime.

5.2 The items listed above are not exhaustive and other items of fittings and equipment may be considered to be included in such a maintenance regime.

5.3 In all cases, the design life of components, manufacturers recommended maintenance, company's implemented ship's maintenance system and classification society survey requirements should not conflict with the bottom inspection of passenger ships when the inspection is intended to be carried out in dry-dock only once in any five-year period.

ANNEX 7

**DRAFT AMENDMENTS TO THE INTERNATIONAL LIFE-SAVING APPLIANCES
(LSA) CODE**

**CHAPTER I
GENERAL**

The existing subparagraph .6 of paragraph 1.2.2 is replaced with the following:

“.6 be of international or vivid reddish orange, on all parts where this will assist detection at sea.”

ANNEX 8**DRAFT MSC CIRCULAR****UNIFIED INTERPRETATIONS OF THE PERFORMANCE STANDARD FOR
PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS
IN ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS
(RESOLUTION MSC.215(82))**

1 The Maritime Safety Committee, at its [eighty-eighth session (...)], with a view to ensuring a uniform approach towards the application of the provisions of the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)); and following the recommendation made by the Sub-Committee on Ship Design and Equipment at its fifty-third session, approved the unified interpretations of the Performance standard, set out in the annex.

2 Member Governments are invited to use the annexed unified interpretations when applying the relevant provisions of the Performance standard and to bring them to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS OF THE PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS, ADOPTED BY RESOLUTION MSC.215(82)

PSPC 2 – DEFINITIONS

“2.6 “GOOD” condition is the condition with minor spot rusting as defined in resolution A.744(18).”

Interpretation

GOOD: Condition with spot rusting on less than 3% of the area under consideration without visible failure of the coating. Rusting at edges or welds should be on less than 20% of edges or weld lines in the area under consideration.

Coating Technical File: A term used for the collection of documents describing issues related to the coating system and its application from the point in time when the first document is provided and for the entire life of the ship including the inspection agreement and all elements of PSPC 3.4.

PSPC 3 – GENERAL PRINCIPLES

“3.2 Inspection of surface preparation and coating processes shall be agreed upon between the ship owner, the shipyard and the coating manufacturer and presented to the Administration for review. The Administration may, if it so requires, participate in the agreement process. Clear evidence of these inspections shall be reported and be included in the Coating Technical File (CTF) (see 3.4).”

Interpretation

1 Inspection of surface preparation and coating processes agreement should be signed by shipyard, shipowner and coating manufacturer and should be presented by the shipyard to the Administration for review prior to commencement of any coating work on any stage of a new building and as a minimum should comply with the PSPC.

2 To facilitate the review, the following from the CTF should be available:

- .1 Coating specification including selection of areas (spaces) to be coated, selection of coating system, surface preparation and coating process.
- .2 Statement of Compliance or Type Approval of the coating system.

3 The agreement should be included in the CTF and should at least cover:

- .1 Inspection process, including scope of inspection, who carries out the inspection, the qualifications of the coating inspector(s) and appointment of a qualified coating inspector (responsible for verifying that the coating is applied in

accordance with the PSPC). Where more than one coating inspector will be used then their areas of responsibility should be identified (for example, multiple construction sites).

.2 Language to be used for documentation.

4 Any deviations in the procedure relative to the PSPC noted during the review should be raised with the shipyard, which is responsible for identifying and implementing the corrective actions.

5 A Passenger Ship Safety Certificate or Cargo Ship Safety Certificate or Cargo Ship Safety Construction Certificate, as appropriate, should not be issued until all required corrective actions have been closed to the satisfaction of the Administration.

“3.4 Coating Technical File

3.4.1 Specification of the coating system applied to the dedicated seawater ballast tanks and double-side skin spaces, record of the shipyard’s and shipowner’s coating work, detailed criteria for coating selection, job specifications, inspection, maintenance and repair shall be documented in the Coating Technical File (CTF), and the Coating Technical File shall be reviewed by the Administration.

3.4.2 New construction stage

...

3.4.3 In-service maintenance, repair and partial re-coating

In-service maintenance, repair and partial re-coating activities shall be recorded in the Coating Technical File in accordance with the relevant section of the Guidelines for coating maintenance and repair.

3.4.4 Re-coating

If a full re-coating is carried out, the items specified in 3.4.2 shall be recorded in the Coating Technical File.

3.4.5 The Coating Technical File shall be kept on board and maintained throughout the life of the ship.”

Interpretation

Procedure for Coating Technical File Review

1 The shipyard is responsible for compiling the Coating Technical File (CTF) either in paper or electronic format, or a combination of the two.

2 The CTF should contain all the information required by the PSPC 3.4 and the inspection of surface preparation and the coating processes agreement (see PSPC 3.2).

3 The CTF should be reviewed for content in accordance with the PSPC 3.4.2.

4 Any deviations found under 3 should be raised with the shipyard, which is responsible for identifying and implementing the corrective actions.

5 A Passenger Ship Safety Certificate or Cargo Ship Safety Certificate or Cargo Ship Safety Construction Certificate, as appropriate, should not be issued until all required corrective actions have been closed to the satisfaction of the Administration.

“3.5 Health and safety

The shipyard is responsible for implementation of national regulations to ensure the health and safety of individuals and to minimize the risk of fire and explosion.”

Interpretation

In order to document compliance with PSPC 3.5, relevant documentation from the coating manufacturer concerning health and safety aspects such as Material Safety Data Sheet is recommended to be included in the CTF for information.

PSPC 4 – COATING STANDARD

“4.3 Special application

4.3.1 This Standard covers protective coating requirements for the ship’s steel structure. It is noted that other independent items are fitted within the tanks to which coatings are applied to provide protection against corrosion.

4.3.2 It is recommended that this Standard is applied, to the extent possible, to those portions of permanent means of access provided for inspection not integral to the ship’s structure, such as rails, independent platforms, ladders, etc. Other equivalent methods of providing corrosion protection for the non-integral items may also be used, provided they do not impair the performance of the coatings of the surrounding structure. Access arrangements that are integral to the ship structure, such as increased stiffener depths for walkways, stringers, etc., are to fully comply with this Standard.

4.3.3 It is also recommended that supports for piping, measuring devices, etc., be coated in accordance with the non-integral items indicated in 4.3.2.”

Interpretation

Reference is made to MSC/Circ.1279, “Guidelines for corrosion protection of permanent means of access arrangements”, approved by MSC 84 in May 2008.

PSPC 4 – TABLE 1: FOOTNOTES OF STANDARDS

“Footnotes:

5 Type of gauge and calibration in accordance with SSPC-PA2:2004. Paint Application Specification No.2.

6 Reference standard: ISO 8501-1:1988/Suppl:1994. Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness.

- 7 *Reference standard: ISO 8503-1/2:1988. Preparation of steel substrate before application of paints and related products – Surface roughness characteristics of blast-cleaned steel substrates.*
- 8 *Conductivity measured in accordance with ISO 8502-9:1998. Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness.*
- 9 *Reference standard: ISO 8501-3:2001 (grade P2). Preparation of steel substrate before application of paints and related products – Visual assessment of surface cleanliness. (referred to in 3.1).*
- 10 *Reference standard: ISO 8502-3:1993. Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness. (referred to in 3.5)."*

Interpretation

Only the footnoted standards referred to in PSPC Table 1 are to be applied.

PSPC 4 – TABLE 1: 1 DESIGN OF COATING SYSTEM

“1.3 Coating pre-qualification test

Epoxy-based systems tested prior to the date of entry into force of this Standard in a laboratory by a method corresponding to the test procedure in annex 1 or equivalent, which as a minimum meets the requirements for rusting and blistering; or which have documented field exposure for 5 years with a final coating condition of not less than “GOOD” may be accepted.

For all other systems, testing according to the procedure in annex 1, or equivalent, is required.”

Interpretation

Procedure for Coating System Approval

- 1 A Type Approval Certificate showing compliance with the PSPC 5 should be issued if the results of either method A+D, or B+D, or C+D are found satisfactory by the Administration.
- 2 The Type Approval Certificate should indicate the product and the shop primer tested. The certificate should also indicate other type approved shop primers with which the product may be used which have under gone the cross over test in a laboratory meeting the requirements in Method A, 1.1 of this UI.
- 3 The documents required to be submitted are identified in the following sections, in addition for all type approvals the following documentation is required: Technical Data Sheet showing all the information required by PSPC 3.4.2.2.
- 4 Winter type epoxy requires separate prequalification tests, including a shop primer compatibility test according to PSPC Annex 1. Winter and summer type coating are considered different unless Infrared (IR) identification and Specific Gravity (SG) demonstrate that they are the same.

Method A: Laboratory test

- 1 A coating pre-qualification test should be carried out by a test laboratory recognized by the Administration and the test laboratory should meet the requirements set out in IACS UR Z17.
- 2 Results from satisfactory pre-qualification tests (PSPC Table 1: 1.3) of the coating system should be documented and submitted to the Administration.
- 3 Type Approval tests should be carried out for the epoxy-based system with the stated shop primer in accordance with the PSPC Annex 1. If the tests are satisfactory, a Type Approval Certificate should be issued to include both the epoxy and the shop primer. The Type Approval Certificate will allow the use of the epoxy either with the named shop primer or on bare prepared steel.
- 4 An epoxy-based system may be used with shop primers other than the one with which it was originally tested provided that the other shop primers are approved as part of a system (PSPC Table 1: 2.3 and Table 1: 3.2) and have been tested according to PSPC Annex 1, Appendix 1, 1.7, which is known as the “crossover test”. If the test or tests are satisfactory, a Type Approval Certificate should be issued. In this instance, the Type Approval Certificate should include the details of the epoxy and a list of all shop primers with which it has been tested that have passed these requirements. The Type Approval Certificate will allow the use of the epoxy with all the named shop primers or on bare prepared steel.
- 5 Alternatively, the epoxy can be tested without shop primer on bare prepared steel to the requirements of the PSPC, Annex 1. If the test or tests are satisfactory, a Type Approval Certificate should be issued. The Type Approval Certificate should just record the epoxy. The certificate will allow the use of the epoxy on bare prepared steel only. If, in addition, crossover tests are satisfactorily carried out with shop primers which are approved as part of a system, the Type Approval Certificate should include the details of shop primers which have satisfactorily passed the crossover test. In this instance, the Type Approval Certificate will allow the use of the epoxy-based system with all the named shop primers or on bare prepared steel.
- 6 The Type Approval Certificate is invalid if the formulation of either the epoxy or the shop primer is changed. It is the responsibility of the coating manufacturer to inform the Administration immediately of any changes to the formulation.

Method B: 5 years' field exposure

- 1 Coating manufacturer's records, which shall at least include the information indicated in 2, should be examined to confirm that the coating system had 5 years' field exposure and that the current product is the same as that being assessed.
- 2 Manufacturer's records
 - original application records;
 - original coating specification;
 - original technical data sheet;
 - current formulation's unique identification (code or number);
 - if the mixing ratio of base and curing agent has changed, a statement from the coating manufacturer confirming that the composition mixed product is the same as the original composition. This should be accompanied by an explanation of the modifications made;

- current technical data sheet for the current production site;
- SG and IR identification of original product;
- SG and IR identification of the current product; and
- if original SG and IR cannot be provided, then a statement from the coating manufacturer confirming the readings for the current product are the same as those of the original.

3 Either class survey records from an Administration or a joint (coating manufacturer and Administration) survey of all ballast tanks of a selected vessel should be carried out for the purpose of verification of compliance with the requirements of 1 and 7. The reporting of the coating condition in both cases should be in accordance with the IACS Recommendation 87, section 2.

4 The selected vessel should have ballast tanks in regular use, of which:

- at least one tank is approximately 2,000 m³ or more in capacity;
- at least one tank shall be adjacent to a heated tank; and
- at least one tank contains an underdeck exposed to the sun.

5 In the case that the selected vessel does not meet the requirements in 4, then the limitations should be clearly stated on the Type Approval Certificate. For example, the coating cannot be used in tanks adjacent to heated tanks or underdeck or tanks with a volume greater than the size surveyed.

6 In all cases of approval by Method B, the shop primer should be removed prior to application of the approved epoxy-based system coating, unless it can be confirmed that the shop primer applied during construction is identical in formulation to that applied in the selected vessel used as a basis for the approval.

7 All ballast tanks should be in “GOOD” condition excluding mechanical damages, without touch up or repair in the prior 5 years.

8 “Good” is defined as: *Condition with spot rusting on less than 3% of the area under consideration without visible failure of the coating. Rusting at edges or welds, must be on less than 20% of edges or welds in the area under consideration.*

9 Examples of how to report coating conditions with respect to areas under consideration should be as those given in IACS Recommendation 87.

10 If the applied NDFT is greater than required by the PSPC, the applied NDFT will be the minimum to be applied during construction. This should be reported prominently on the Type Approval Certificate.

11 If the results of the inspection are satisfactory, a Type Approval Certificate should be issued to include both the epoxy-based system and the shop primer. The Type Approval Certificate shall allow the use of the epoxy-based system either with the named shop primer or on bare prepared steel. The Type Approval Certificate should reference the inspection report which should also form part of the Coating Technical File.

12 The Type Approval Certificate is invalid if the formulation of either the epoxy-based system or the shop primer is changed. It is the responsibility of the coating manufacturer to inform the Administration immediately of any changes to the formulation.

Method C: Existing Marintek B1 approvals

1 Epoxy-based system coatings systems with existing satisfactory Marintek test reports minimum level B1 including relevant IR identification and SG, issued before 8 December 2006 can be accepted. If original SG and IR documentation cannot be provided, then a statement should be provided by the coating manufacturer, confirming that the readings for the current product are the same as those of the original.

2 The Marintek test report with IR and SG information should be reviewed and, if satisfactory, a Type Approval Certificate should be issued. The certificate should record the report reference and the shop primer used. The Type Approval Certificate should allow the use of the epoxy-based system either with the named shop primer, unless there is evidence to indicate that it is unsuitable, or on bare prepared steel.

3 The epoxy-based system approved by this method may be used with other shop primers if satisfactory crossover tests are carried out with shop primers which are approved as part of a system, see Method A, 4. In this instance, the Type Approval Certificate should include the details of the epoxy-based system and a list of all shop primers which have passed these requirements. The Type Approval Certificate will allow the use of the epoxy-based system with all the named shop primers or on bare prepared steel.

4 Such coatings should be applied in accordance with PSPC Table 1 rather than the application conditions used during the approval test which may differ from the PSPC, unless these are more stringent than PSPC Annex 1, for example if the NDFT is higher or high pressure water washing and or sweep blasting of the shop primer is used. In such cases these limiting conditions should be added to the Type Approval Certificate and should be followed during coating application in the shipyard.

5 The Type Approval Certificate is invalid if the formulation of either the epoxy-based system or the shop primer is changed. It is the responsibility of the coating manufacturer to inform the Administration immediately of any changes to the formulation.

Method D: Coating manufacturer

1 The coating/shop primer manufacturer should meet the requirements set out in IACS UR Z17, paragraphs 4, 5, 6 and 7 (except for 4.6) and paragraphs 2 to 7 below, which should be verified by the Administration.

2 Coating manufacturers

- .1 Extent of engagement – Production of coating systems in accordance with PSPC and this UI.
- .2 These requirements apply to both the main coating manufacturer and the shop primer manufacturer where both coatings form part of the total system.
- .3 The coating manufacturer should provide to the Administration the following information:

- A detailed list of the production facilities.
 - Names and location of raw material suppliers will be clearly stated.
 - A detailed list of the test standards and equipment to be used, (Scope of approval).
 - Details of quality control procedures employed.
 - Details of any sub-contracting agreements.
 - List of quality manuals, test procedures and instructions, records, etc.
 - Copy of any relevant certificates with their issue number and/or date, e.g., Quality Management System certification.
- .4 Inspection and audit of the manufacturer's facilities should be based on the requirements of the PSPC.
- .5 With the exception of early "scale up" from laboratory to full production, adjustment outside the limitations listed in the QC instruction referred to below is not acceptable, unless justified by trials during the coating system's development programme, or subsequent testing. Any such adjustments must be agreed by the formulating technical centre.
- .6 If formulation adjustment is envisaged during the production process, the maximum allowable limits should be approved by the formulating technical centre and clearly stated in the QC working procedures.
- .7 The manufacturer's quality control system should ensure that all current production is the same formulation as that supplied for the Type Approval Certificate. Formulation change should not be permissible without testing in accordance with the test procedures in the PSPC and the issue of a Type Approval Certificate by the Administration.
- .8 Batch records including all QC test results such as viscosity, specific gravity and airless spray characteristics should be accurately recorded. Details of any additions should also be included.
- .9 Whenever possible, raw material supply and lot details for each coating batch should be traceable. Exceptions may be where bulk supply such as solvents and pre-dissolved solid epoxies are stored in tanks, in which case it may only be possible to record the supplier's blend.
- .10 Dates, batch numbers and quantities supplied to each coating contract should be clearly recorded.

3 All raw material supply should be accompanied by the supplier's "Certificate of Conformance". The certificate should include all requirements listed in the coating manufacturer's QC system.

4 In the absence of a raw material supplier's certificate of conformance, the coating manufacturer should verify conformance to all requirements listed in the coating manufacturer's QC system.

5 Drums should be clearly marked with the details as described on the Type Approval Certificate.

6 Product Technical Data Sheets should comply with all the PSPC requirements. The QC system will ensure that all Product Technical Data Sheets are current.

7 QC procedures of the originating technical centre should verify that all production units comply with the above stipulations and that all raw material supply is approved by the technical centre.

8 In the case that a coating manufacturer wishes to have products which are manufactured in different locations under the same name, then IR identification and SG should be used to demonstrate that they are the same coating, or individual approval tests will be required for the paint manufactured in each location.

9 The Type Approval Certificate is invalid if the formulation of either the epoxy-based system or the shop primer is changed. It is the responsibility of the coating manufacturer to inform class immediately of any changes to the formulation. Failure to inform class of an alteration to the formulation should lead to cancellation of the certificates for that manufacturer's products.

“1.4 Job specification

... .

1.5 NDFT (nominal total dry film thickness)⁵

...”

Interpretation

1 Wet film thickness should be regularly checked during application for quality control by the builder. The PSPC does not state who should check WFT, it is accepted for this to be the builder. Measurement of DFT should be done as part of the inspection required in PSPC 6.

2 Stripe coats should be applied as a coherent film showing good film formation and no visible defects. The application method employed should insure that all areas that require stripe coating are properly coated by brush or roller. A roller may be used for scallops, ratholes, etc., but not for edges and welds.

PSPC 4 – TABLE 1: 2 PSP (PRIMARY SURFACE PREPARATION)

“2. PSP (Primary Surface Preparation)

2.1 Blasting and profile^{6, 7}

Sa 2¹/₂; with profiles between 30-75 µm

Blasting shall not be carried out when:

.1 the relative humidity is above 85%; or

.2 the surface temperature of steel is less than 3°C above the dew point.”

Interpretation

Checking of the steel surface cleanliness and roughness profile should be carried out at the end of the surface preparation and before the application of the primer, in accordance with the manufacturer's recommendations.

“2.2 *Water soluble salt limit equivalent to NaCl*⁸

≤ 50 mg/m² of sodium chloride.

2.3 *Shop primer*

Zinc containing inhibitor free zinc silicate based or equivalent. Compatibility with main coating system shall be confirmed by the coating manufacturer.”

Interpretation

The conductivity of soluble salts should be measured in accordance with ISO 8502-6 and ISO 8502-9, and compared with the conductivity of 50 mg/m² NaCl. If the measured conductivity is less than or equal to, then it is acceptable. Minimum readings to be taken should be one (1) per plate in the case of manually applied shop primer. In cases where an automatic process for application of shop primer is used, there should be means to demonstrate compliance with PSPC through a Quality Control System, which should include a monthly test.

Procedure for review of quality control of automated shop primer plants

1 It is recognized that the inspection requirements of PSPC 6.2 may be difficult to apply to an automated shop primer plant and a quality control approach would be a more practical way of enabling compliance with the requirements of PSPC.

2 As required in PSPC, it is the responsibility of the coating inspector to confirm that the quality control procedures are ensuring compliance with PSPC.

3 When reviewing the quality control for automated shop primer plants the following procedures should be included:

- .1 Procedures for management of the blasting grit including measurement of salt and contamination.
- .2 Procedures recording the following; steel surface temperature, relative humidity, dewpoint.
- .3 Procedures for controlling or monitoring surface cleanliness, surface profile, oil, grease, dust and other contamination.
- .4 Procedures for recording/measuring soluble salts.
- .5 Procedures for verifying thickness and curing of the shop primer conforms to the values specified in the Technical Specification.

PSPC 4 – TABLE 1: 3 SSP (SECONDARY SURFACE PREPARATION)

“3.3 Surface treatment after erection⁶

Butts St 3 or better or Sa 2^{1/2} where practicable. Small damages up to 2% of total area: St 3. Contiguous damages over 25 m² or over 2% of the total area of the tank, Sa 2^{1/2} shall be applied.

Coating in overlap shall be feathered.”

Interpretation

Usually, the fillet welding on tank boundary watertight bulkhead is left without coating on block stage (because not yet be leakage tested), in which case it can be categorized as erection joint (“butt”) to be power tooled to St 3.

“3.6 Water soluble salts limit equivalent to NaCl after blasting/grinding⁸

≤ 50 mg/m² of sodium chloride.”

Interpretation

1 The conductivity of soluble salts is measured in accordance with ISO 8502-6 and ISO 8502-9, and compared with the conductivity of 50 mg/m² NaCl. If the measured conductivity is less then or equal to, then it is acceptable.

2 All soluble salts have a detrimental effect on coatings to a greater or lesser degree. ISO 8502-9:1998 does not provide the actual concentration of NaCl. The % NaCl in the total soluble salts will vary from site to site. Minimum readings to be taken should be one (1) reading per block/section/unit prior to applying.

PSPC 4 – TABLE 1: 4 MISCELLANEOUS

“4.3 Testing of coating⁵

Destructive testing shall be avoided.

Dry film thickness shall be measured after each coat for quality control purpose and the total dry film thickness shall be confirmed after completion of final coat, using appropriate thickness gauges (see annex 3).”

Interpretation

All DFT measurements should be measured. Only the final DFT measurements need to be measured and reported for compliance with the PSPC by the qualified coating inspector. The Coating Technical File may contain a summary of the DFT measurements which typically will consist of minimum and maximum DFT measurements, number of measurements taken and percentage above and below required DFT. The final DFT compliance with the 90/10 practice should be calculated and confirmed, see PSPC 2.8.

PSPC 5 – COATING SYSTEM APPROVAL

“Results from pre-qualification tests (Table 1, paragraph 1.3) of the coating system shall be documented and a Statement of Compliance or Type Approval Certificate shall be issued if found satisfactory by a third party, independent of the coating manufacturer.”

Interpretation

See Interpretation of PSPC Table 1: 1 Design of coating system, 1.3 Coating prequalification test.

PSPC 6 – COATING INSPECTION REQUIREMENTS

“6.1 General

6.1.1 To ensure compliance with this Standard, the following shall be carried out by qualified coating inspectors certified to NACE Coating Inspector Level 2, FROSIO Inspector Level III or equivalent as verified by the Administration.

6.1.2 Coating inspectors shall inspect surface preparation and coating application during the coating process by carrying out, as a minimum, those inspection items identified in section 6.2 to ensure compliance with this Standard. Emphasis shall be placed on initiation of each stage of surface preparation and coatings application as improper work is extremely difficult to correct later in the coating progress. Representative structural members shall be non-destructively examined for coating thickness. The inspector shall verify that appropriate collective measures have been carried out.

6.1.3 Results from the inspection shall be recorded by the inspector and shall be included in the CTF (refer to annex 2 (Example of daily log and non-conformity report)).”

Interpretation

Procedure for assessment of coating inspectors’ qualifications

1 Coating inspectors required to carry out inspections in accordance with the PSPC 6 should be qualified to NACE Coating Inspector Level 2, FROSIO Inspector Level III, or an equivalent qualification. Equivalent qualifications are described in 3 below.

2 However, only coating inspectors with at least 2 years’ relevant coating inspector experience and qualified to NACE Coating Inspector Level 2 or FROSIO Inspector Level III, or with an equivalent qualification, can write and/or authorize procedures, or decide upon corrective actions to overcome non-compliances.

3 Equivalent qualification

3.1 Equivalent qualification is the successful completion, as determined by course tutor, of an approved course.

3.2 The course tutors should be qualified with at least 2 years’ relevant experience and qualified to NACE Coating Inspector Level 2 or FROSIO Inspector Level III, or with an equivalent qualification.

3.3 Approved course: A course that has a syllabus based on the issues associated with the PSPC including the following:

- Health environment and safety
- Corrosion
- Materials and design
- International standards referenced in PSPC
- Curing mechanisms
- Role of inspector
- Test instruments
- Inspection procedures
- Coating specification
- Application procedures
- Coating failures
- Pre-job conference
- MSDS and product data sheet review
- Coating technical file
- Surface preparation
- Dehumidification
- Waterjetting
- Coating types and inspection criteria
- Specialized application equipment
- Use of inspection procedures for destructive testing and non destructive testing instruments
- Inspection instruments and test methods
- Coating inspection techniques
- Cathodic protection
- Practical exercises, case studies

Examples of approved courses may be internal courses run by the coating manufacturers or shipyards, etc.

3.4 Such a course should have an acceptable measurement of performance, such as an examination with both theoretical and practical elements. The course and examination should be approved by the Administration.

3.5 Equivalent qualification arising from practical experience: An individual may be qualified without attending a course where it can be shown that the individual:

- has a minimum of 5-year practical work experience as a coating inspector of ballast tanks during new construction within the last 10 years; and
- has successfully completed the examination given in 3.4.

4 *Assistant to the coating inspectors*

4.1 If the coating inspectors require assistance from other persons to do the part of the inspections under the coating inspector's supervision, those persons should be trained to the coating inspector's satisfaction.

4.2 Such training should be recorded and endorsed either by the inspector, the yard's training organization or inspection equipment manufacturer to confirm competence in using the measuring equipment and confirm knowledge of the measurements required by the PSPC.

4.3 Training records should be available for verification if required.

PSPC 7 – VERIFICATION REQUIREMENTS

“The following shall be carried out by the Administration prior to reviewing the Coating Technical File for the ship subject to this Standard:

- .1 check that the Technical Data Sheet and Statement of Compliance or Type Approval Certificate comply with this Standard;*
- .2 check that the coating identification on representative containers is consistent with the coating identified in the Technical Data Sheet and Statement of Compliance or Type Approval Certificate;*
- .3 check that the inspector is qualified in accordance with the qualification standards in paragraph 6.1.1;*
- .4 check that the inspector's reports of surface preparation and the coating's application indicate compliance with the manufacturer's Technical Data Sheet and Statement of Compliance or Type Approval Certificate; and*
- .5 monitor implementation of the coating inspection requirements.”*

Interpretation

Procedure for verification of application of the PSPC

- 1 The verification requirements of PSPC 7 should be carried out by the Administration.
- 2 Monitoring implementation of the coating inspection requirements, as called for in PSPC 7.5 means checking, on a sampling basis, that the inspectors are using the correct equipment, techniques and reporting methods as described in the inspection procedures reviewed by the Administration.
- 3 Any deviations found under 2 should be raised initially with the coating inspector, who is responsible for identifying and implementing the corrective actions.
- 4 In the event that corrective actions are not acceptable to the Administration or in the event that corrective actions are not carried out, then the shipyard should be informed.
- 5 A Passenger Ship Safety Certificate or Cargo Ship Safety Certificate or Cargo Ship Safety Construction Certificate, as appropriate, should not be issued until all required corrective actions have been carried out to the satisfaction of the Administration.

PSPC ANNEX 1: TEST PROCEDURES FOR COATING QUALIFICATION FOR DEDICATED SEAWATER BALLAST TANK OF ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS

Annex 1 – Footnotes of standards

“Footnotes:

- 10 Reference standard: ISO 2811-1/4:1997. Paints and varnishes. Determination of density.*
- 11 Reference standards: ISO 4628/2:2003. Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2. ISO 4628:2003. Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of common types of defect – Part 3: Designation of degree of rusting.*
- 12 Nine equally distributed measuring points are used on panel’s size 150 mm x 150 mm or 15 equally distributed measuring points on panel’s size 200 mm x 400 mm.*
- 13 Reference standard: ISO 4624:2002. Pull-off test for adhesion.*
- 14 Reference standards: ASTM D4145:1983. Standard Test Method for Coating Flexibility of Prepainted Sheet.*
- 16 Reference standard: ISO 6270-1:1998. Paints and varnishes – Determination of resistance to humidity – Part 1: Continuous condensation.”*

Interpretation

Only the footnoted standards referred to in PSPC Annex 1 are to be applied.

ANNEX 9

BIENNIAL AND POST-BIENNIAL AGENDAS OF THE DE SUB-COMMITTEE

BIENNIAL AGENDA^{*}

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)					
PLANNED OUTPUTS 2010-2011 (resolution A.1012(26))		Parent organ(s)	Coordinating organ(s)	Involved organ(s)	Target completion year
Number	Description				
1.1.2.2	Consideration of IACS unified interpretations	MSC		DE	Continuous Ongoing
2.0.1.6	Guidance to ensure a consistent policy for watertight doors to remain open during navigation	MSC	DE	SLF	2010
2.0.1.29	Interpretation of application of SOLAS, MARPOL and Load Line requirements for major conversions of oil tankers	MSC MEPC	DE		2010
2.0.1.[30]	Application of amendments to SOLAS chapter III and the LSA Code	MSC	DE		2010
5.1.1.1	Performance standards for recovery systems for all types of ships	MSC	DE		2010
5.1.1.7	Safety provisions applicable to tenders operating from passenger ships	MSC	DE	FP, COMSAR, NAV, SLF, STW	2011
5.1.1.8	Guidance on alternative arrangements for the bottom inspection requirements for passenger ships other than ro-ro passenger ships	MSC	DE		2010

* Items printed in bold have been selected for the provisional agenda for DE 54, shown in annex 10. Struck-out text indicates completed outputs and shaded text indicates proposed additions and/or changes.

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)					
PLANNED OUTPUTS 2010-2011 (resolution A.1012(26))		Parent organ(s)	Coordinating organ(s)	Involved organ(s)	Target completion year
Number	Description				
5.1.1.10	Guidelines for a visible element to general alarm systems on passenger ships	MSC	DE	FP	2012
5.1.2.1	Measures to prevent accidents with lifeboats Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory Guidelines for standardization of lifeboat control arrangements	MSC	DE	FSI, NAV, STW	2010
5.1.2.2	Guidance on compatibility of life-saving appliances	MSC	DE		2010
5.1.2.4	Development of a new framework of requirements for life-saving appliances	MSC	DE		2012
5.2.1.1/ 5.3.1.1	Amendments to resolution A.744(18)	MSC	DE		2010
5.2.1.8	Cargo oil tank coating and corrosion protection Supporting guidelines for cargo oil tank coating and corrosion protection	MSC	DE		2010
5.2.1.13	Development of safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III	MSC	DE		2011
5.2.1.14	Thermal performance of immersion suits	MSC	DE		2010
5.2.1.19	Development of a mandatory Code of ships operating in polar waters	MSC	DE		2012

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)					
PLANNED OUTPUTS 2010-2011 (resolution A.1012(26))		Parent organ(s)	Coordinating organ(s)	Involved organ(s)	Target completion year
Number	Description				
5.2.1.24	Revision of resolution A.760(18)	MSC	DE		2010
5.2.1.26	Protection against noise on board ships	MSC	DE		2010
5.2.1.27	Amendments to the Revised recommendation on testing of life-saving appliances	MSC	DE		2010
5.2.1.28	Classification of offshore industry vessels and consideration of the need for a Code for offshore construction support vessels	MSC	DE		2010
7.1.2.27	Test standards for type approval of add-on equipment	MEPC	DE		2011
7.1.2.28	Measures to promote integrated bilge water treatment systems	MEPC	DE		2011
7.1.2.29	Guidelines for a shipboard oil waste pollution prevention plan	MEPC	DE		2011
7.1.2.30	Manually operated alternatives in the event of pollution prevention equipment malfunctions	MEPC	DE		2011
12.1.2.2	Casualty analysis	MSC	FSI	DE	Continuous Ongoing

POST-BIENNIAL AGENDA

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)								
ACCEPTED POST-BIENNIAL OUTPUTS				Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Timescale (sessions)	Remarks
Number	Reference to Strategic Directions	Reference to High-level Actions	Description					
DE 1	5.2.1	5.2.1.15	Amendments to the LSA Code for free-fall lifeboats with float-free capabilities*	MSC	DE		1	MSC 76/23, paragraphs 20.41.3 and 20.48; DE 47/25, paragraph 19.2
DE 2	5.2.1	5.2.1.3	Provisions for gas-fuelled engine installations in ships*	MSC	BLG	DE	2	MSC 78/26, paragraph 24.39; DE 51/28, section 4
DE 3	5.2.1	-	Testing of watertight compartments	MSC	DE		2	MSC 86/26, paragraph 23.36
DE 4	2.0.1	-	General requirements on electrical installations	MSC	DE		2	MSC 86/26, paragraph 23.36
DE 5	7.3.1	-	Guidelines on equivalent methods to reduce onboard NO_x emissions	MEPC	DE		2	MEPC 41/20, paragraph 8.22.1; BLG 10/19, paragraph 12.3; MEPC 55/23, paragraph 19.9

* Although these items are contained in the High-Level Action Plan and, therefore, should be included in the biennial agenda, the Sub-Committee, taking into account resolution A.1013(26), agreed to move them to the post-biennial agenda, as work on them is not envisaged to commence in this biennium.

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT (DE)								
ACCEPTED POST-BIENNIAL OUTPUTS				Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Timescale (sessions)	Remarks
Number	Reference to Strategic Directions	Reference to High-level Actions	Description					
DE 6	2.0.1	-	Mandatory application of the Performance standard for protective coatings for void spaces on bulk carriers and oil tankers	MSC	DE		2	MSC 76/23, paragraphs 20.41.2 and 20.48; DE 50/27, section 4
DE 7	2.0.1	-	Performance standard for protective coatings for void spaces on all types of ships	MSC	DE		2	MSC 76/23, paragraphs 20.41.2 and 20.48; DE 50/27, section 4
DE 8	2.0.1	-	Revision of the provisions for helicopter facilities in SOLAS and the MODU Code	MSC	DE		2	DE 52/21, paragraph 5.5; MSC 86/26, paragraph 23.39

ANNEX 10**DRAFT PROVISIONAL AGENDA FOR DE 54***

Opening of the session

- 1 Adoption of the agenda
- 2 Decisions of other IMO bodies
- 3 Consideration of IACS unified interpretations
- 4 Guidance to ensure a consistent policy for watertight doors to remain open during navigation
- 5 Interpretation on application of SOLAS, MARPOL and Load Line requirements for major conversions of oil tankers
- 6 Application of amendments to SOLAS chapter III and the LSA Code
- 7 Performance standards for recovery systems for all types of ships
- 8 Safety provisions applicable to tenders operating from passenger ships
- 9 Guidelines for a visible element to general alarm systems on passenger ships
- 10 Development of a new framework of requirements for life-saving appliances
- 11 Amendments to resolution A.744(18)
- 12 Thermal performance of immersion suits
- 13 Development of a mandatory Code of ships operating in polar waters
- 14 Protection against noise on board ships
- 15 Amendments to the Revised recommendation on testing of life-saving appliances
- 16 Test standards for type approval of add-on equipment
- 17 Measures to promote integrated bilge water treatment systems
- 18 Guidelines for a shipboard oil waste pollution prevention plan
- 19 Manually operated alternatives in the event of pollution prevention equipment malfunctions
- 20 Work programme and provisional agenda for DE 55

* Subject to relevant decisions of MSC 87.

- 21 Election of Chairman and Vice-Chairman for 2011
- 22 Any other business
- 23 Report to the Maritime Safety Committee

ANNEX 11

REPORT ON THE STATUS OF PLANNED OUTPUTS FOR THE DE SUB-COMMITTEE

Planned output number in the High-level Action Plan for 2010-2011	Description ^a	Target completion year ^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1 ^c	Status of output for Year 2 ^c	References ^d
1.1.2.2	Consideration of IACS unified interpretations	Continuous	MSC		DE	Ongoing		DE 53/26, section 17; MSC 78/26, paragraph 22.12
2.0.1.6	Guidance to ensure a consistent policy for watertight doors to remain open during navigation	2010 (for DE) 2010 (for MSC)	MSC	SLF	DE SLF	In progress		DE 53/26, section 9; SLF 52/19, section 7; MSC 82/24, paragraph 21.47
2.0.1.29	Interpretation on application of SOLAS, MARPOL and Load Line requirements for major conversions of oil tankers	2010 (for DE) 2010 (for MSC) 2010 (for MEPC)	MSC MEPC	DE		In progress		DE 53/26, section 16; MSC 85/26, paragraph 23.28
2.0.1.[30]	Application of amendments to SOLAS chapter III and the LSA Code	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 19; MSC 86/26, paragraphs 3.18 and 23.31
5.1.1.1	Performance standards for recovery systems for all types of ships	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 6; MSC 81/25, paragraph 23.49.1
5.1.1.7	Safety provisions applicable to tenders operating from passenger ships	2011 (for DE) 2012 (for MSC)	MSC	DE	FP, COMSAR, NAV, SLF, STW	In progress		DE 53/26, section 14; MSC 84/24, paragraph 22.50

Planned output number in the High-level Action Plan for 2010-2011	Description ^a	Target completion year ^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1 ^c	Status of output for Year 2 ^c	References ^d
5.1.1.8	Alternative arrangements for the bottom inspection requirements for passenger ships other than ro-ro passenger ships	2010 (for DE) 2010 (for MSC)	MSC	DE		Completed		DE 53/26, section 12; MSC 84/24, paragraph 22.52
5.1.1.10	Guidelines for a visible element to general emergency alarm systems on passenger ships	2012 (for DE) 2012 (for MSC)	MSC	DE	FP	In progress		DE 53/26, section 20; MSC 86/26, paragraph 23.35
5.1.2.1	Measures to prevent accidents with lifeboats Making the provisions of MSC.1/Circ.1206/Rev.1 mandatory Guidelines for standardization of lifeboat control arrangements	2010 (for DE) 2010 (for MSC)	MSC	DE	FSI, NAV, STW	In progress		DE 53/26, section 3; MSC 74/24, paragraph 21.34
5.1.2.2	Guidance on compatibility of life-saving appliances	2010 (for DE) 2010 (for MSC)	MSC	DE		Completed		DE 53/26, section 15; MSC 78/26, paragraph 24.37.1
5.1.2.4	Development of a new framework of requirements for life-saving appliances	2012 (for DE) 2012 (for MSC)	MSC	DE		In progress		DE 53/26, section 8; MSC 82/24, paragraph 21.49
5.2.1.1/ 5.3.1.1	Amendments to resolution A.744(18)	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 52/21, section 3
5.2.1.3	Provisions for gas-fuelled engine installations in ships	2 sessions	MSC	BLG	DE	Postponed		MSC 78/26, paragraph 24.39; DE 51/28, section 4

Planned output number in the High-level Action Plan for 2010-2011	Description ^a	Target completion year ^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1 ^c	Status of output for Year 2 ^c	References ^d
5.2.1.8	Cargo oil tank coating and corrosion protection Supporting guidelines for cargo oil tank coating and corrosion protection	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 7; MSC 82/24, paragraphs 21.51 and 23.12
5.2.1.13	Development of safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III	2011 (for DE) 2011 (for MSC)	MSC	DE		Postponed		MSC 84/24, paragraphs 3.92 and 21.52
5.2.1.14	Thermal performance of immersion suits	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 11; MSC 84/24, paragraph 22.48
5.2.1.15	Amendments to the LSA Code for free-fall lifeboats with float-free capability	1 session	MSC	DE		Postponed		MSC 76/23, paragraphs 20.41.3 and 20.48; DE 47/25, paragraph 19.2
5.2.1.19	Development of a mandatory Code for ships operating in polar waters	2012 (for DE) 2012 (for MSC)	MSC	DE		In progress		DE 53/26, section 18; MSC 86/26, paragraph 23.32
5.2.1.24	Revision of resolution A.760(18)	2011 (for DE) 2012 (for MSC)	MSC	DE		In progress		DE 53/26, section 5; DE 46/32, paragraph 31.23

Planned output number in the High-level Action Plan for 2010-2011	Description^a	Target completion year^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1^c	Status of output for Year 2^c	References^d
5.2.1.26	Protection against noise on board ships	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 10; MSC 83/28, paragraph 25.41
5.2.1.27	Amendments to the Revised recommendation on testing of life-saving appliances	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 13; MSC 84/24, paragraph 22.49
5.2.1.28	Classification of offshore industry vessels and consideration of the need for a Code for offshore construction support vessels	2010 (for DE) 2010 (for MSC)	MSC	DE		In progress		DE 53/26, section 15; MSC 85/26, paragraph 23.27
7.1.2.27	Test standards for type approval of add-on pollution prevention equipment	2011 (for DE) 2011 (for MEPC)	MEPC	DE		In progress		DE 53/26, section 21; MEPC 59/24, paragraph 20.20
7.1.2.28	Measures to promote integrated bilge water treatment systems	2011 (for DE) 2011 (for MEPC)	MEPC	DE		In progress		DE 53/26, section 21; MEPC 59/24, paragraph 20.20
7.1.2.29	Guidelines for a shipboard oil waste pollution prevention plan	2011 (for DE) 2011 (for MEPC)	MEPC	DE		In progress		DE 53/26, section 22; MEPC 59/24, paragraphs 20.10 to 20.13 and 20.22
7.1.2.30	Manually operated alternatives in the event of pollution prevention equipment malfunctions	2011 (for DE) 2011 (for MEPC)	MEPC	DE		In progress		DE 53/26, section 23; MEPC 59/24, paragraphs 10.29 to 10.31 and 20.21

Planned output number in the High-level Action Plan for 2010-2011	Description ^a	Target completion year ^b	Parent organ(s)	Coordinating organ(s)	Associated organ(s)	Status of output for Year 1 ^c	Status of output for Year 2 ^c	References ^d
12.1.2.2	Casualty analysis	Continuous	MSC	FSI	DE	Ongoing		MSC 70/23, paragraphs 9.17 and 20.4; DE 50/27, section 17

Notes:

- a When individual outputs contain multiple deliverables, the format should report on each individual deliverable.
- b The target completion date should be specified as a year, or indicate that the item is continuous. This should not indicate a number of sessions.
- c The entries under the “Status of output” columns are to be classified as follows:
 - “completed” signifies that the outputs in question have been duly finalized;
 - “in progress” signifies that work on the related outputs has been progressed, often with interim outputs (for example, draft amendments or guidelines) which are expected to be approved later in the same biennium;
 - “ongoing” signifies that the outputs relate to work of the respective IMO organs that is a permanent or continuous task; and
 - “postponed” signifies that the respective IMO organ has decided to defer the production of relevant outputs to another time (for example, until the receipt of corresponding submissions).
- d If the output consists of the adoption/approval of an instrument (e.g., resolution, circular, etc.), that instrument should be clearly referenced in this column.

ANNEX 12**DRAFT MSC CIRCULAR****UNIFIED INTERPRETATION OF SOLAS REGULATION II-1/3-5**

1 The Maritime Safety Committee, at its [eighty-eighth session (...)], with a view to ensuring a uniform approach towards the application of SOLAS regulation II-1/3-5 concerning the interpretation of the term “new installation of materials containing asbestos” and following the recommendation made by the Sub-Committee on Ship Design and Equipment at its fifty-third session, approved a unified interpretation of SOLAS regulation II-1/3-5, as follows:

“In the context of this regulation, “new installation of materials containing asbestos” means any new physical installation on board. Any material purchased prior to 1 January 2011 being kept in the ship’s store or in the shipyard for a ship under construction, should not be permitted to be installed after 1 January 2011 as a working part.”

2 Member Governments are invited to use the above interpretation when applying the relevant provisions of SOLAS regulation II-1/3-5 and to bring it to the attention of all parties concerned.

ANNEX 13

DRAFT MSC RESOLUTION

**ADOPTION OF AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL
PURPOSE SHIPS, 2008 (2008 SPS CODE)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution MSC.266(84), by which it adopted the Code of Safety for Special Purpose Ships, 2008 (2008 SPS Code),

NOTING the need to amend respective provisions of the Code,

HAVING CONSIDERED, at its [eighty-seventh] session, amendments to the 2008 SPS Code proposed by the Sub-Committee on Ship Design and Equipment, at its fifty-third session,

1. ADOPTS amendments to the Code of Safety for Special Purpose Ships, 2008, the text of which is set out in the Annex to the present resolution;
2. DETERMINES that the said amendments should become effective on [...].

ANNEX

AMENDMENTS TO THE CODE OF SAFETY FOR SPECIAL PURPOSE SHIPS, 2008

Chapter 5 – Periodically unattended machinery spaces

- 1 Paragraph 5.1 is amended as follows:

“Special purpose ships carrying not more than 240 persons on board should comply with regulations 46 to 53 of chapter II-1 of SOLAS, as amended.”

Chapter 8 – Life-saving appliances

- 2 In paragraph 8.3, the words “sail training” are inserted before the word “ship”.

Annex – Form of Safety Certificate for Special Purpose Ships

**Appendix – Record of Equipment for the Special Purpose Ship Safety Certificate
(Form SPS)**

2 – Details of life-saving appliances

- 3 In item 2.2, the reference “section 4.6” is replaced with the reference “section 4.5”.
- 4 Item 2.3 is deleted and items 2.4, 2.5, 2.5.1 and 2.5.2 are renumbered as 2.3, 2.4, 2.4.1 and 2.4.2, respectively.
- 5 In renumbered item 2.3, the reference “section 4.9” is replaced with the reference “section 4.6”.
- 6 Items 6, 6.1 and 6.2 are deleted and items 7, 8, 9, 9.1, 9.2, 10, 11, 11.1 and 11.2 are renumbered as 6, 7, 8, 8.1, 8.2, 9, 10, 10.1 and 10.2, respectively.
-