INTERNATIONAL MARITIME ORGANIZATION

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SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT
2nd session
Agenda item 20

SSE 2/20
8 April 2015
Original: ENGLISH

REPORT TO THE MARITIME SAFETY COMMITTEE

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LIST OF ANNEXES

1 GENERAL

1.1 The Sub-Committee on Ship Systems and Equipment (SSE) held its second session from 23 to 27 March 2015 under the chairmanship of Dr. S. Ota (Japan). The Vice-Chairman, Mr. K. Hunter (United Kingdom), was also present.

1.2 The session was attended by delegations from Members Governments and Associate Member of IMO; by representatives from United Nations and specialized agencies; and by observers from intergovernmental organizations and non-governmental organizations in consultative status, as listed in document SSE 2/INF.1.

Opening address

1.3 The Assistant Secretary-General, Mr. A. Winbow, on behalf of the Secretary-General, welcomed participants and delivered the opening address. In particular, he expressed, on behalf of the IMO membership and the Secretariat, deepest sympathy and heartfelt condolences to the Member States affected by Cyclone Pam. The full text of the opening address can be downloaded from the IMO website at the following link: http://www.imo.org/MediaCentre/SecretaryGeneral/Secretary-GeneralsSpeechesToMeetings

Statements by the delegations of Vanuatu and Tuvalu

1.4 In acknowledging the remarks made by Mr. Winbow regarding Cyclone Pam, the delegations of Vanuatu and Tuvalu expressed their deep appreciation for all the help and support provided by Member Governments and international organizations and updated the Sub-Committee on the most recent information. The full text of their statements is set out in annex 20.

Chairman's remarks

1.5 In responding, the Chairman, having also expressed, on the Sub-Committee's behalf, deepest sympathy and condolences to the delegations of Member States affected by Cyclone Pam, thanked Mr. Winbow for his words of guidance and encouragement and assured him that his advice and requests would be given every consideration in the deliberations of the Sub-Committee.

Adoption of the agenda and related matters

1.6 The Sub-Committee adopted the agenda (SSE 2/1/Rev.1) and agreed to be guided in its work, in general, by the annotations contained in document SSE 2/1/1 (Secretariat) and the arrangements in document SSE 2/1/2 (Secretariat). The agenda, as adopted, together with the list of documents considered under each agenda item, is set out in document SSE 2/INF.6.

2 DECISIONS OF OTHER IMO BODIES

2.1 The Sub-Committee noted the decisions and comments pertaining to its work made by PPR 1, MEPC 66, MSC 93, NCSR 1, MEPC 67, MSC 94 and SDC 2, as reported in documents SSE 2/2, SSE 2/2/Add.1, SSE 2/2/1 and SSE 2/2/2 (Secretariat), and took them into account in its deliberations when dealing with the relevant agenda items.

2.2 In this connection, the Sub-Committee also noted that MSC 94 approved the *Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments* (MSC.1/Circ.1500) and instructed its subsidiary bodies to start using the guidance with immediate effect.

3 SMOKE CONTROL AND VENTILATION

General

3.1 The Sub-Committee recalled that SSE 1 established the Correspondence Group on Fire Protection and instructed it to consider the draft performance standard and functional requirements for the assessment of smoke control systems, and submit a report to this session.

Report of the correspondence group and related submission

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

.1 SSE 2/3 (Germany and Netherlands), providing the report of the Correspondence Group on Fire Protection related to smoke control and ventilation and containing the draft Performance standard, functional requirements and system requirements for the assessment of smoke management systems; and

.2 SSE 2/3/1 (China), providing suggestions related to fire test performance criteria of smoke dampers and their application; comments on the application of smoke management systems and ventilation and air-conditioning systems in case of fire and the use of smoke dampers when two types of systems are combined; and proposal on adding a definition of "smoke extraction damper".

3.3 In considering the above documents, the Sub-Committee noted the following views expressed on this matter:

.1 the draft Performance standard, functional requirements and system requirements for the assessment of smoke management systems, as set out in the annex to document SSE 2/3, were too general and contained a lot of texts in square brackets, which needs further discussion in a working group;

.2 no amendments to SOLAS chapter II-2 should be proposed without submitting a justification for extension of this output or a proposal for a new unplanned output; and

.3 the Performance standard, functional requirements and system requirements for the assessment of smoke management systems, if finalized, should be applied on a voluntary basis.

Amendments to SOLAS chapter II-2

3.4 Following the discussion, the Sub-Committee agreed that no amendments to SOLAS chapter II-2 should be proposed, without submitting a justification for extension of the scope of this output or proposal for a new output.

Establishment of a Working Group on Fire Protection

3.5 Having considered the above documents, the Sub-Committee established the Working Group on Fire Protection and instructed it, taking into account the comments made in plenary, to finalize the draft Performance standard, functional requirements and system requirements for the assessment of smoke management systems, as set out in the annex to document SSE 2/3, taking into account the comments and proposals in document SSE 2/3/1 (see also paragraphs 4.7, 5.4, 15.6, 19.31, 19.39 and 19.43).

Report of the Working Group on Fire Protection

3.6 Having considered the part of the report of the working group (SSE 2/WP.4) related to this item, the Sub-Committee approved it in general and took action as described in paragraphs 3.7 to 3.12.

3.7 The Sub-Committee noted that the group could not agree to the proposal for the definition of the term "smoke extraction damper" (SSE 2/3/1, paragraph 9), taking into account that this was a new definition that was not defined in any mandatory instrument and was not used in the industry, therefore, there were no related standards for testing and maintenance.

3.8 The Sub-Committee also noted that the group, having considered the materials for smoke management system and ducts, decided to avoid the use of the term "non-combustible material", as SOLAS chapter II-2 refers to the term "steel and equivalent", and agreed that the ducts used for smoke extraction should be insulated depending on the type of spaces they pass through, without specifying the insulation class, as those requirements are contained in relevant SOLAS regulations.

3.9 Notwithstanding the concern that the requirements in section 4.8 of the draft Performance standard could be in excess of SOLAS regulation 9.7.4.4.3 by requiring all ducts used to be made of steel or equivalent and regardless whether the ducting was in a part of the system where hot gas may exist, the Sub-Committee, recalling the agreement to the IACS Unified Interpretation (UI) SC264 on non-combustible material as "steel or equivalent" for ventilation ducts, as detailed in SOLAS regulation II-2/9.7.1.1 (see paragraph 11.4), noted that according to the agreed UI such ducts could be used for smoke extraction system.

3.10 The Sub-Committee, having noted the group's view that the Performance standard should not have prescriptive values for the minimum pressure differential between smoke control areas and for the door opening forces and taking into account the recommendatory nature of the Performance standard, agreed that a qualitative solution would be more appropriate, permitting more flexibility in its application.

3.11 Having considered the above matters, the Sub-Committee agreed to the draft *Performance standard, functional requirements and system requirements for the assessment of smoke management systems* and the associated draft MSC circular, as set out in annex 1, for submission to MSC 95 for approval.

Completion of the work on the output

3.12 The Committee was invited to note that the work on this output had been completed.

4 AMENDMENTS TO SOLAS REGULATION II-2/20 AND ASSOCIATED GUIDANCE ON AIR QUALITY MANAGEMENT FOR VENTILATION OF CLOSED VEHICLE SPACES, CLOSED RO-RO AND SPECIAL CATEGORY SPACES

General

4.1 The Sub-Committee recalled that SSE 1, having noted the discussion on draft amendments to the *Design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* (MSC/Circ.729), decided to establish a Correspondence Group on Fire Protection with the terms of reference set out in paragraph 6.13 of document SSE 1/21.

4.2 The Sub-Committee further recalled that MSC 94 instructed the Sub-Committee to review the approved draft amendments to SOLAS regulation II-2/20.3, as set out in annex 11 to document MSC 94/21, in conjunction with SOLAS regulation II-2/19, for purposes of consistency, and advise MSC 95, as appropriate.

Report of the Correspondence Group on Fire Protection

4.3 The Sub-Committee had for its consideration document SSE 2/4 (Germany and Netherlands), reporting on the work of the correspondence group for the development of guidance on air quality management for ventilation of closed vehicle spaces, closed ro-ro spaces and special category spaces and proposing draft amendments to the *Design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* (MSC/Circ.729).

4.4 Having considered the report of the correspondence group, the Sub-Committee approved it in general and, in particular:

.1 agreed, in principle, to the proposed draft amendments to MSC/Circ.729; and

.2 referring to the number of amendments proposed by the correspondence group, decided that the draft *Revised design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* and the associated draft MSC circular should be prepared instead of amending MSC/Circ.729.

4.5 Following the discussion, the Sub-Committee noted the comment by the observer of IACS that the footnote in SOLAS regulation II-2/20.3.1, referring to MSC/Circ.729, needed to be updated accordingly and requested the Secretariat to take action, as appropriate.

Draft amendments to SOLAS regulation II-2/20.3

4.6 Referring to the request in paragraph 4.2 above, the Sub-Committee, having considered the modification of the last sentence in the draft amendment to SOLAS regulation II-2/20.3.1.2.4 proposed by the Chairman, agreed to the proposed modification, as set out in annex 2, for consideration with a view to adoption at MSC 95.

Instruction to the Working Group on Fire Protection

4.7 Having considered the above matters, the Sub-Committee instructed the Working Group on Fire Protection, established under agenda item 3 (Smoke control and ventilation), taking into account the comments and decisions made in plenary, to finalize the draft *Revised design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* and prepare the associated draft MSC circular.

Report of the Working Group on Fire Protection

4.8 Having considered the part of the report of the Working Group on Fire Protection (SSE 2/WP.4) related to this agenda item, the Sub-Committee took action as outlined hereunder.

4.9 The Sub-Committee endorsed the group's view that the reference to the standard ISO 9785:2002 should be contained in the relevant paragraphs of the revised design guidelines and any revisions to the standard should be brought to the attention of the Sub-Committee for further consideration, as possible revisions may not be applicable to the revised design guidelines. In this connection, the Sub-Committee noted the information provided by ISO that they would inform IMO regarding any possible future revision of the aforementioned ISO standard.

4.10 The Sub-Committee noted that the group, having considered the concern that, in paragraph 4.1 of appendix 1 to the draft revised design guidelines (SSE 2/4, annex), the relative concentration of the atmosphere to the Lower Explosion Limit (LEL) was higher than 20%, which did not take into account toxic gases (i.e. benzene), agreed that this section was clearly drafted for CO, NO_2 and LEL with toxicity of substances being under appendix 3 and agreed that a better solution was to lower the LEL to 10%.

4.11 In view of the above, the Sub-Committee agreed to the draft *Revised design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* and the associated draft MSC circular, as set out in annex 3, for submission to MSC 95 for approval.

Completion of the work on the output

4.12 The Committee was invited to note that the work on this output had been completed.

5 DEVELOPMENT OF LIFE SAFETY PERFORMANCE CRITERIA FOR ALTERNATIVE DESIGN AND ARRANGEMENTS FOR FIRE SAFETY (MSC/CIRC.1002)

General

5.1 The Sub-Committee recalled that SSE 1, having noted the views expressed on the output (SSE 1/21, paragraph 7.4), decided to establish the Correspondence Group on Development of life-safety performance criteria for alternative design and arrangements for fire safety with the terms of reference set out in paragraph 7.5 of document SSE 1/21.

Report of the correspondence group and related submission

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

.1 SSE 2/5 (United States), providing the report of the Correspondence Group on Development of life-safety performance criteria for alternative design and arrangements for fire safety and containing the draft *Guidelines for the selection of life-saving performance criteria*; and

.2 SSE 2/5/1 (Germany), summarizing the background of IMO approach for alternative design and providing a proposal for its future structuring.

5.3 In considering the above documents, the Sub-Committee, having noted the following views expressed on this matter:

.1 further analysis was needed if the Determine the Available Safe Egress Time (ASET) in all cases exceeds the Determine the Required Safe Egress Time (REST);

.2 height of the lower boundary of the smoke layer should not be the only criteria for determining ASET;

.3 the proposed method might be too restrictive and a definition of "smoke layer" is necessary;

.4 the values of "Maximum gas temperature", "Maximum radiant heat flux", "Minimum visibility" and "Maximum CO concentration" should be more conservative;

.5 time of exposure should be considered for the determination of criteria for "CO concentration" and "radiant heat flux"; and

.6 MSC.1/Circ.1002 should not be replaced by MSC.1/Circ.1455, but a reference to MSC.1/Circ.1455 should be added as a footnote in MSC.1/Circ.1002,

decided to forward the draft Guidelines to the Working Group on Fire Protection with a view towards finalization at this session.

Instructions to the Working Group on Fire Protection

5.4 Having considered the above views, the Sub-Committee instructed the Working Group on Fire Protection, established under agenda item 3 (Smoke control and ventilation), taking into account the comments and decisions made in plenary, to:

.1 consider the draft guidelines for the selection of life-saving performance criteria, as set out in the annex to document SSE 2/5, with a view to finalization at this session; and

.2 consider the proposals in document SSE 2/5/1 and advise the Sub-Committee on how best to proceed.

Report of the Working Group on Fire Protection

5.5 Having considered the part of the report of the Working Group on Fire Protection (SSE 2/WP.4) related to this agenda item, the Sub-Committee took action as described in paragraphs 5.6 to 5.10.

5.6 The Sub-Committee, having noted that the delegation of China and the observer of IACS proposed a different method to determine ASET from document SSE 2/5, agreed that further information was necessary to progress the work.

5.7 Bearing in mind that the group was not able to finalize the draft *Guidelines for the selection of life safety performance criteria*, the Sub-Committee agreed to establish a correspondence group to carry out this work, with a view to finalization at SSE 3.

5.8 In this connection, the Sub-Committee noted that the delegation of Germany, supported by other members, was of the opinion that the assessment method proposed in the draft *Guidelines for the selection of life safety performance criteria* (SSE 2/5, annex) was counteracting the general philosophy for alternative design and arrangements. This delegation was of the view that the proposed method would lead to more strict performance requirements than given by prescriptive SOLAS requirements (e.g. SOLAS regulation II-2/17 and the corresponding circulars). The delegation also pointed that for such an increase of safety requirements there was no mandate given by the parent Committee, and this Sub-Committee should keep the basic approach of safety equivalence. However, the delegation of Germany, supported by other delegations, suggested that the generic evaluation criterion for alternative design and arrangement should remain a safety equivalence investigation, based on the risk analysis.

Re-establishment of a Correspondence Group on Life Safety Performance Criteria for Alternative Design and Arrangements for Fire Safety (MSC/Circ.1002)

5.9 Having considered the above matters and in order to progress the work intersessionally, the Sub-Committee decided to re-establish a Correspondence Group on Life Safety Performance Criteria for Alternative Design and Arrangements for Fire Safety (MSC/Circ.1002), under the coordination of the ISO*, and instructed it, taking into account documents MSC 90/25/3, SSE 1/7, SSE 1/7/1, SSE 1/INF.6, SSE 1/21, SSE 2/5, SSE 2/5/1 and SSE 2/WP.4, to:

.1 develop life safety performance criteria for alternative design and arrangements for fire safety, taking into account the required level of safety for SOLAS chapter II-2 compliant prescriptive designs as well as the above-mentioned documents and decisions;

.2 consider the method for evaluating the Available Safe Egress Time (ASET), and choose an appropriate type of method to determine this time limit (e.g. using either the proposed smoke layer height approach in paragraph 4.2 of the annex to document SSE 2/5, or a different method such as the time required to maintain tenability within the affected space);

.3 define the life safety performance criteria against which the ASET will be measured. For clarity, references for proposed values should be stated; and

.4 submit a report to SSE 3.

Extension of the target completion year

5.10 Consequently, the Sub-Committee invited the Committee to extend the target completion year for this output to 2016.

6 NEW FRAMEWORK OF REQUIREMENTS FOR LIFE-SAVING APPLIANCES

General

6.1 The Sub-Committee recalled that SSE 1, having agreed with the view of the Working Group on Life-Saving Appliances (LSA) that before it started its work on updating the work plans for LSA requirements and for SOLAS chapter II-1 and III, it was necessary to address the draft *Goal-based guidelines on the framework of requirements for ships' life-saving appliances* (DE 57/WP.5, annex 1), endorsed the following main uses of the Goal-based guidelines identified by the group:

.1 restructuring/rearrangement of SOLAS chapter III in order to give the chapter an improved user-friendly structure; in this case, no new or additional requirements should be introduced or added; and

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.2 evaluating the feasibility, adequacy and effectiveness of future proposals on new requirements.

6.2 The Sub-Committee also recalled that SSE 1 noted:

.1 that the draft Goal-based guidelines should be further developed to:

.1 amend paragraph 1.3 in the preamble by incorporating the decision taken at MSC 82 (MSC 82/24, paragraph 21.49);

.2 agree on Tier I (Goals), in principle;

.3 improve further Tier II (Functional requirements); and

.4 establish Tier IV (Basic requirements);

.2 that the contents of Tier II (Functional requirements) and Tier-IV (Basic requirements) were related to each other and, in particular, that the text of Tier II could be rearranged during the development of Tier-IV; and

.3 that the LSA Working Group proposed the draft amended paragraph 1.3 of the preamble of the draft Goal-based guidelines (SSE 1/21, paragraph 8.15).

6.3 The Sub-Committee further recalled that, in connection with draft Goal-based guidelines, SSE 1 established an LSA Correspondence Group with the terms of reference set out in paragraph 8.19 of document SSE 1/21.

Outcome of MSC 94

6.4 The Sub-Committee recalled also that MSC 94, having noted concerns over possible discrepancies between different instruments using the GBS framework, and the need for harmonization among those instruments, which should be undertaken by experts on GBS/SLA, instructed SSE 2 to report the outcome of its work on the development of the *draft Goal-based guidelines on the framework of requirements for ships' life-saving appliances* to MSC 95.

6.5 The Sub-Committee recalled further that MSC 94 also instructed the LSA Correspondence Group to consider the report on the incident of the **Swanland**, as well as its analysis and comments, relating to the issue of the compatibility of immersion suits and buoyancy aids, with a view to reporting to SSE 2 and to subsequently advise MSC 95.

Outcome of SDC 2

6.6 The Sub-Committee also recalled that SDC 2 highlighted that removing the linkage of LSA arrangements to the formula for the required subdivision index *R* is not a judgment regarding equivalency of different LSA arrangements, and invited SSE 2 to consider the matter regarding any possible consequences for SOLAS regulation III/21 and take action as deemed appropriate.

Report of the correspondence group and related documents

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

.1 SSE 2/6 (Japan), reporting the progress made by the LSA Correspondence Group relating to the new framework of requirements for life-saving appliances, proposing amendments to the draft Goal-based guidelines and providing the draft revised regulation mapping;

.2 SSE 2/6/1 (Germany), providing proposals on how the development of the new framework and functional requirements should be continued and suggesting a draft framework of requirements for life-saving appliances and a work plan for its finalization;

.3 SSE 2/6/2 (Japan), proposing to complete this output at this session (i.e. finalize the draft *Goal-based guidelines on the framework of requirements for ships' life-saving appliances*, with assignment of requirements in part B of SOLAS chapter III to the guidelines, based on annexes 1 and 2 to document SSE 2/6) and advising that the Goal-based guidelines can be used for the purpose of clarification of safety objectives and the functional requirements of regulations in part B of SOLAS chapter III;

.4 SSE 2/6/3 (Norway), commenting on the report of the correspondence group, in particular on the development of functional requirements and further work, and supporting the way forward as proposed in document MSC 94/5/2 (Germany); and

.5 SSE 2/6/4 (Germany and Netherlands), suggesting to come back to earlier proposals regarding the need to develop the "new framework of requirements for life-saving appliances" within this Sub-Committee, in conjunction with the support of the MSC working group on GBS-SLA, and proposes further steps to be done by the Sub-Committee.

6.8 Having considered the above documents, the Sub-Committee noted the following views expressed on this matter:

.1 the finalization of the draft *Goal-based guidelines on the framework of requirements for ships' life-saving appliances*, as set out in annex 1 to document SSE 2/6, might be sufficient to complete this outcome at this session;

.2 the scope of this output should be clarified by the Committee;

.3 development of functional requirements needed to be supported by risk assessment, based on safety level approach;

.4 consistency of the terminology in the draft guidelines (e.g. "escape", "evacuation", "abandonment") should be further considered, taking into account the outcome of SDC 2 on evacuation analysis; and

.5 possible options (e.g. sets of homogeneous functional requirement) needed to be proposed at this stage, for further consideration by the MSC Working Group on GBS-SLA; or at least, elements needed for further development of functional requirements should be identified.

6.9 Taking the above views into account, the Sub-Committee, having approved the report in general, took the following action, as requested in paragraph 48 of the report of the correspondence group (SSE 2/6):

.1 noted the group's discussion on the scope of this output and agreed to instruct a working group to further consider the actions requested in paragraphs 48.1 to 48.6; and

.2 bearing in mind that the LSA Correspondence Group did not have time to discuss the report on the incident of the **Swanland**, as well as its analysis and comments relating to the issue of the compatibility of immersion suits and buoyancy aids, invited interested Member Governments and international organizations to submit comments and proposals for consideration at SSE 3 under agenda item on "Any other business".

Linkage of LSA arrangements to the formula for the required subdivision index *R*

6.10 The Sub-Committee considered the outcome of SDC 2 (see paragraph 6.6) and, having considered the different views expressed on existence of a link between the requirements of SOLAS regulation III/21 and the formula for the required subdivision index *R,* noted that there is no reference to damage stability requirements in SOLAS regulation III/21. Therefore, the Sub-Committee decided that no specific action on this issue was needed and agreed to advise the SDC Sub-Committee accordingly.

Establishment of the LSA Working Group

6.11 Recalling the relevant decision at MSC 94, the Sub-Committee established an LSA Working Group and instructed it, taking into account the comments and decisions made in plenary, to further consider the report of the correspondence group (SSE 2/6), taking into account documents SSE 2/6/1, SSE 2/6/2, SSE 2/6/3 and SSE 2/6/4, with a view to finalizing, in general, the draft *Goal-based guidelines on the framework of requirements for ships' life-saving appliances* at this session and preparing options for future work, for further consideration at MSC 95 (see also paragraphs 19.3 and 19.13).

Report of the LSA Working Group

6.12 Having considered the relevant part of the report of the working group (SSE 2/WP.3) related to this item, the Sub-Committee approved it in general and took action as described in the following paragraphs.

6.13 The Sub-Committee noted that, due to parallel activities by the MSC Working Group on GBS-SLA since the inclusion of this agenda item at MSC 82, some of the work initially foreseen had been overtaken by events as the Committee had developed the *Generic guidelines for developing IMO goal-based standards* (MSC.1/Circ.1394) and the *Guidelines for the approval of alternative design and equivalence as provided for in various IMO instruments* (MSC.1/Circ.1455), in particular, the Generic guidelines had the structure of the framework for such developments.

6.14 In considering how to proceed with the *Goal-based guidelines on the framework of requirements for ships' life-saving appliances*, the Sub-Committee noted the following views of the group:

.1 the loss of a clear scope to this output following the above-mentioned development of the Generic guidelines had significant impact on the work and the draft *Goal-based guidelines on the framework of requirements for ship's life-saving appliances* itself;

.2 there was no benefit in further developing these guidelines without change in direction;

.3 the outcome of the Sub-Committee's work should remain available for the future developments such as the development of functional requirements related to SOLAS chapter III; and

.4 to provide a basis for any further activities related to the further development of functional requirements for SOLAS chapter III, which would form the next step, clear instructions from the Committee on the scope and direction of work items concerned were needed.

6.15 In view of the above, the Sub-Committee agreed to the options regarding the future work plan, as set out in annex 4, and invited MSC 95 to consider them, with a view to deciding on the scope and direction of the outputs concerned.

Completion of the work on the output

6.16 The Committee was invited to note that the work on this output had been completed.

7 SAFETY OBJECTIVES AND FUNCTIONAL REQUIREMENTS OF THE GUIDELINES ON ALTERNATIVE DESIGN AND ARRANGEMENTS FOR SOLAS CHAPTERS II-1 AND III

General

7.1 The Sub-Committee recalled that SSE 1 endorsed the decision of the Working Group on Life-Saving Appliances (LSA) that the *Guidelines for the approval of alternatives and equivalents as provided for in various IMO instruments* (MSC.1/Circ.1455) should be used for the purpose of approval of alternative design and arrangements for SOLAS chapters II-1 (parts C, D and E) and III, and further that, for the purpose of paragraph 5.1.3 of these guidelines, the framework requirement in SOLAS chapters II-1 (parts C, D and E) and III should be developed.

7.2 The Sub-Committee also recalled that SSE 1 agreed to the updated work plans for the new framework of requirements for life-saving appliances and to the draft safety objectives and functional requirements of the guidelines on alternative design and arrangements for SOLAS chapters II-1 and III, as set out in annexes 2 and 3 to document SSE 1/WP.4.

7.3 The Sub-Committee further recalled that SSE 1, in connection to safety objectives and functional requirements of the *Guidelines on alternative design and arrangements for SOLAS chapter II-1, (parts C, D and E) and III*, instructed the LSA Correspondence Group to consider the draft goal for the framework of requirements for approval of alternative design and arrangements for SOLAS chapter II-1 (parts C, D and E) and instructed it to submit a report to this session.

Report of the correspondence group

7.4 The Sub-Committee had for its consideration document SSE 2/7 (Japan), providing the report of the LSA Correspondence Group related to consideration of the draft goal for the framework of requirements for approval of alternative design and arrangements for SOLAS chapter II-1 (parts C, D and E).

7.5 In considering the report of the correspondence group, the Sub-Committee, having approved it in general, noted the following views expressed on this matter:

.1 the work plan for SOLAS chapter II-1 would be difficult to achieve, taking into account that the correspondence group has not yet considered the aforementioned chapter and it took about six years (since DE 52) to get to where IMO is now on SOLAS chapter III, which still requires significant amount of work; and

.2 the most efficient way forward would be to focus the work on SOLAS chapter III as a first step with a view to developing a good model that can be used when reviewing SOLAS chapter II-1 (and any other chapters).

7.6 The Sub-Committee, having noted that no concrete proposals related to this output could be forwarded to the LSA Working Group for consideration at this session, encouraged Member Governments and international organizations to submit comments and concrete proposals to SSE 3.

Extension of the target completion year

7.7 Consequently, the Sub-Committee invited the Committee to extend the target completion year for this output to 2016.

8 MEASURES FOR ONBOARD LIFTING APPLIANCES AND WINCHES

General

8.1 The Sub-Committee recalled that SSE 1, having considered the report of the Working Group on Development of requirements for onboard lifting appliances and winches, agreed with the recommendations on incident data analysis methodology and the list of items associated with the focus of potential measures that could be considered at the initial stage, and endorsed the group's views on the types of equipment (SSE 1/21, paragraphs 13.12 to 13.14) and types of ships (SSE 1/21, paragraphs 13.16 to 13.18).

8.2 The Sub-Committee also recalled that SSE 1 noted the discussion regarding the application of potential measures, in particular the following: if the measures address operation, maintenance, training, inspection, testing and certification, these provisions might be applicable to new and existing ships; if, however, the measures address the issue of design and construction, such provisions might apply to newly-installed equipment, regardless of whether the equipment would be installed on new or existing ships; and if this item is included in potential measures, a transitional period for existing ships should be considered.

8.3 The Sub-Committee further recalled that SSE 1 noted that, with regard to training, ILO should be consulted and included in further consideration of potential measures and, with regard to the status of potential measures for onboard lifting appliances and winches, the issue of the future status of the measures for onboard lifting appliances and winches should be considered by SSE 2 after a draft framework had been produced and the focus of the measures had been refined by the correspondence group.

8.4 The Sub-Committee recalled also that SSE 1, having agreed, in principle, to the detailed work plan for developing measures for onboard lifting appliances and winches (SSE 1/WP.5, annex), established the Correspondence Group on Onboard lifting appliances and winches with the terms of reference set out in paragraph 13.25 of document SSE 1/21.

Report of the correspondence group

8.5 The Sub-Committee, having considered the report of the correspondence group (SSE 2/8 and SSE 2/INF.2), approved it in general and in particular noted:

.1 the proposed framework for potential measures under the following headings: Types of equipment; Types of ships, including new and existing; Focus of the measures; and Status of the measures;

.2 the recommendation on the need of further work on the scope and application of potential measures and on development of the draft guidelines or amendments to mandatory instruments under the proposed framework; and

.3 a summary of the group's work and the individual views of members.

8.6 The Sub-Committee also had the following documents for consideration:

.1 SSE 2/8/1, SSE 2/8/1/Corr.1 and SSE 2/INF.5 (Vanuatu and IMCA), providing the view that the casualty trend data did not support a broad new SOLAS regulation that would apply to all ships and proposing to develop more specific guidance on the implementation of safety management system to suggest a number of alternative mitigation measures, based on additional analysis of the incident data;

.2 SSE 2/8/2 (Antigua and Barbuda, New Zealand or ICHCA), proposing potential ways to amend existing instruments (i.e. SOLAS chapters II-1 and VI or the ISM Code);

.3 SSE 2/8/3 (Japan), providing the view that the types of equipment should be clearly defined, in order to clarify the scope of application, and the design criteria should be documented for onboard use; and

.4 SSE 2/8/4 (ICHCA), advising that the data analysed by the correspondence group did not present a total picture of the frequency of severe incidents across the world fleet.

8.7 In considering the above documents, the Sub-Committee had an extensive discussion on how this output should be moved forward and, in particular, whether there was a need for amending any mandatory IMO instruments (e.g. SOLAS, the ISM Code, etc.) and preparing associated guidelines. During the discussion, the Sub-Committee noted the following general views expressed on the matter:

.1 while some delegations were of the view that the incident data and analysis provided to date was not sufficient to justify a compelling need to develop mandatory requirements, other delegations felt that the data provided to date was sufficient to justify developing mandatory SOLAS requirements;

.2 while some delegations were of the view that the issues raised under this output could be adequately addressed with supplementary guidelines on how to apply the ISM Code, in particular, to wire rope, cargo-handling equipment and SMS guidance for cargo-handling related equipment, other delegations were of the view that the issue could be adequately addressed with certain amendments to the ISM Code. In both cases, some delegations felt that the ISM Code was not sufficient for dealing with this issue and that design and construction issues also need to be considered within the scope of this work;

.3 analysing the incident data currently available was still necessary to identify the types of ships and onboard equipment to which any new measures should be applied, taking into account that additional data and analysis would be provided by ICHCA International; and

.4 any new measures developed by IMO should not be inferior to the relevant standards set by ILO and that such standards should be taken into account in the course of this work.

8.8 In this regard, the Sub-Committee also noted the statements made by the observers of ILAMA and ITF, the full texts of which are set out in annex 20.

8.9 Following the discussion, the Chairman of the Sub-Committee concluded that:

.1 there was unanimous agreement that more robust guidelines for the safety of onboard lifting appliances and winches should be developed;

.2 the majority of those who spoke on the matter supported the need of amending SOLAS, with a view to making the requirements for safety of onboard lifting appliances and winches mandatory; and

.3 a correspondence group may be established, subject to decision by MSC 95, to progress the work intersessionally.

8.10 Recalling the decision of MSC 89 that the Sub-Committee should first agree on the specific deliverables before undertaking any technical work and seek the Committee's approval accordingly (MSC 89/25, paragraph 22.26), the Sub-Committee agreed to forward the conclusions in paragraph 8.9 above to MSC 95 and invited the Committee to decide on whether mandatory SOLAS requirements should be prepared in addition to the development of guidelines (see also paragraphs 8.11.1 and 8.14 to 8.16).

Establishment of a working group

8.11 With a view to providing MSC 95 with some specific deliverables, the Sub-Committee established the Working Group on Onboard Lifting Appliances and Winches and instructed it, taking into account the comments made in plenary, to:

.1 develop recommendations on matters related to the scope and application of potential guidelines, taking into account the documents submitted for consideration at this session; and

.2 consider whether it is necessary to establish a correspondence group and, if so, prepare terms of reference for its future work, subject to decision by MSC 95.

Report of the Working Group on Onboard Lifting Appliances and Winches

8.12 Having considered the report of the working group (SSE 2/WP.5), the Sub-Committee approved it in general and took action as described in paragraphs 8.13 to 8.17.

8.13 The Sub-Committee noted the following group's views:

.1 Onboard lifting appliances could be provisionally defined as "any stationary or mobile load-handling appliances used on board ships for suspending, raising or lowering loads, or moving loads from one position to another, while suspended". This broad definition might allow for the possibility of the potential guidelines to include generic safety requirements for all onboard lifting appliances and winches, if deemed appropriate during the

development of such guidelines, and might help in addressing types of lifting appliances and winches that have not been considered in detail to date, if additional incident data, risk assessments and proposals are submitted by interested Member Governments and international organizations.

.2 The scope of the potential guidelines may be further refined, particularly with regard to the term "load", during the development of the potential guidelines.

.3 Lifting appliances dedicated for a particular purpose and already covered by IMO instruments, such as accommodation ladders, pilot ladders and any lifting appliances covered by the LSA Code, should be provisionally excluded from the scope of potential guidelines. Personnel/passenger elevators (lifts), non-powered load-handling appliances, detachable hoists, sludge winches could also be excluded.

.4 Based on the analysis of available data, the potential guidelines should include provisions for lifting appliances and winches used in cargo handling operations, including pedestal cranes and hatch cover gantry cranes, and lifting appliances and winches utilizing wire rope.

.5 Based on accident investigations that had led to the adoption of national requirements, the potential guidelines could include provisions for stores cranes and engine-room cranes.

.6 The potential guidelines should apply to all SOLAS ships, and exclude vessels certified under the MODU Code.

.7 Fishing vessels may need to be addressed in future.

.8 The potential guidelines should address routine inspection, maintenance, training and design and construction, taking into account the specific areas of focus and attention identified by the group.

.9 ILO should be kept informed of the progress on the development of potential guidelines and should be consulted, particularly if the issue of training of shore-based staff arises.

.10 Provisions in the potential guidelines addressing inspection, maintenance and training could be applicable to new and existing equipment on new and existing ships, whereas provisions addressing design, fabrication and construction could apply only to newly installed equipment on new and existing ships.

8.14 In view of the above, the Sub-Committee agreed to forward the views set out in paragraph 8.13 to MSC 95, as recommendations on matters related to the scope and application of potential guidelines, for consideration with a view to the Committee deciding on the development of draft guidelines and, if agreed, to authorize the related correspondence group to begin its work. In this connection, the Sub-Committee noted the statement made by the delegation of Vanuatu, the full text of which is set out in annex 20.

8.15 The Sub-Committee also agreed to the group's recommendation to re-establish the Correspondence Group on Onboard Lifting Appliances and Winches, subject to decision by MSC 95 (see also paragraph 8.9.3).

Re-establishment of a Correspondence Group on Onboard Lifting Appliances and Winches

8.16 Having considered the above matters and in order to progress the work intersessionally, the Sub-Committee decided to re-establish a Correspondence Group on Onboard Lifting Appliances and Winches, subject to decision by MSC 95, under the coordination of Japan*, and instructed it, taking into account the outcome of SSE 2 and comments and decisions made at MSC 95, to:

.1 develop draft guidelines taking into account documents SSE 2/WP.5 and SSE 1/13/3, available standards such as those listed in annex 2 to document DE 57/WP.7, and identify additional elements of existing instruments that could be cross-referenced (e.g. ILO instruments, SOLAS, STCW, ISM Code, BLU Code, HSSC Guidelines, PSC Guidelines, etc.; and

.2 submit a report to SSE 3.

Extension of the target completion year

8.17 Consequently, the Sub-Committee invited the Committee to extend the target completion year for this output to 2017.

9 CONSIDERATIONS RELATED TO THE DOUBLE SHEATHED LOW-PRESSURE FUEL PIPES FOR FUEL INJECTION SYSTEMS IN ENGINES ON CRUDE OIL TANKERS

General

9.1 The Sub-Committee recalled that SSE 1, having briefly considered documents MEPC 58/17/2 and MEPC 58/INF.2 (Denmark), providing information on the FSA study on crude oil tankers carried out within the research project SAFEDOR, noted the views expressed on the matter (SSE 1/21, paragraph 14.2) and invited Member Governments and international organizations to submit comments and proposals for consideration at this session.

9.2 In this regard, the Sub-Committee also recalled that MSC 94 approved draft amendments to section 4 of the Committees' Guidelines (MSC-MEPC.1/Circ.4/Rev.3) and added a new annex 6, containing the guidelines for considering and reviewing the outcomes of FSA studies (MSC 94/21/Add.1, annex 23), as well as the draft amendments to paragraph 9.3.3 of the *Revised guidelines for Formal Safety Assessment (FSA) for use in the IMO rule-making process* (MSC-MEPC.2/Circ.12) (MSC 94/21/Add.1, annex 24).

9.3 The Sub-Committee had for its consideration document SSE 2/9 (China), analysing the technical effectiveness of the double sheathed low-pressure fuel pipes in engine-rooms as per RCO 9 and checking the indices on the cost-effectiveness of the RCO.

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9.4 In considering the above document, the Sub-Committee noted the following views expressed on this matter:

.1 the double sheathed low-pressure fuel pipes in engine-rooms could not effectively reduce the fire accidents caused by oil leakage and the cost-effectiveness of RCO 9 was not in compliance with the criteria recommended in the FSA Guidelines;

.2 the risk of oil leakage of low-pressure fuel oil pipes might be reduced by means such as reducing the number of pipe joints, improving the quality of joint wrapping, enhancing the maintenance of joints by the crew, etc. rather than by the sheathed low-pressure fuel pipes;

.3 the analysis of technical effectiveness and cost-effectiveness provided in the document was not well documented, i.e. it did not contain clear background information for the conclusions made; and

.4 the provisions of the *Guidelines for measures to prevent fires in engine-rooms and cargo pump-rooms* (MSC.1/Circ.1321) did not exist at the time of developing the RCO.

9.5 Based on the above views and overwhelming support of the conclusions in document SSE 2/9, the Sub-Committee agreed that no further action needed to be taken on this matter.

Completion of the work on the output

9.6 Subsequently, the Sub-Committee invited the Committee to note that the work on this output had been completed.

10 AMENDMENTS TO THE REQUIREMENTS FOR FOAM-TYPE FIRE EXTINGUISHERS IN SOLAS REGULATION II-2/10.5

General

10.1 The Sub-Committee recalled that SSE 1, having considered document SSE 1/16 (China), proposing to amend the existing SOLAS regulation II-2/10.5.1.2.2 regarding the arrangement of 135 *l* foam-type extinguishers in boiler rooms, and having noted both supporting and differing views expressed by delegations during the discussion, decided that further consideration of this issue was necessary and invited Member Governments and international organizations to submit comments and proposals for consideration at this session.

10.2 The Sub-Committee had for its consideration document SSE 2/10 (China), proposing to amend SOLAS regulation II-2/10.5.1.2.2 regarding the arrangements of 135 *l* foam-type extinguishers. In considering the above document, the Sub-Committee noted the views expressed that the proposal should be editorially amended to keep the consistency of the wording of the regulation and that to clarify the amended regulation should apply to new and existing ships.

10.3 Taking into account the above views, the Sub-Committee agreed to the draft amendments to SOLAS regulations II-2/1 and II-2/10, as set out in annex 5, for submission to MSC 96 with a view to approval and subsequent adoption.

10.4 The Sub-Committee, taking into account the provisions of MSC.1/Circ.1500, authorized the Secretariat to prepare, after the session, part III of the check/monitoring sheet and records for regulatory development, for submission to MSC 96 for consideration in conjunction with the draft amendments to SOLAS regulations II-2/1 and II-2/10.

Completion of the work on the output

10.5 The Committee was invited to note that the work on this output had been completed.

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

General

11.1 The Sub-Committee recalled that this was a continuous item on its biennial agenda, established by MSC 78, so that IACS could submit any newly-developed or updated unified interpretations for consideration of the Sub-Committee with a view to developing appropriate IMO interpretations, if deemed necessary.

11.2 The Sub-Committee also recalled that the Assembly, at its twenty-eighth session, had expanded the output to include all proposed unified interpretations to provisions of IMO safety, security, and environment related Conventions, so that any newly-developed or updated draft unified interpretation could be submitted for the consideration of the Sub-Committee, with a view to developing an appropriate IMO interpretation.

Non-combustible material as "steel or equivalent" for ventilation ducts – SOLAS regulation II-2/9.7.1.1

11.3 In considering document SSE 2/11 (IACS), providing a copy of IACS Unified Interpretation (UI) SC264 on non-combustible material as "steel or equivalent" for ventilation ducts, as detailed in SOLAS regulation II-2/9.7.1.1, the Sub-Committee agreed to the proposed interpretation and noted that UI SC264 would be applied by IACS Societies on ships contracted for construction on or after 1 July 2015, unless provided with written instruction to apply a different interpretation by the Administration on whose behalf they are authorized to act as a recognized organization.

11.4 Following discussion, the Sub-Committee agreed to the draft Unified Interpretation of SOLAS chapter II-2 and the associated draft MSC circular, as set out in annex 6, for submission to MSC 96 for approval.

Arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers – SOLAS regulation II-2/4.5.7.3.1

11.5 Having considered document SSE 2/11/1 (IACS), providing a copy of IACS UI SC268 on arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers, as detailed in SOLAS regulation II-2/4.5.7.3.1, the Sub-Committee agreed to the proposed interpretation and noted that UI SC268 would be applied by IACS Societies on ships contracted for construction on or after 1 July 2015, unless provided with written instruction to apply a different interpretation by the Administration on whose behalf they are authorized to act as a recognized organization.

11.6 Following discussion, the Sub-Committee agreed to the draft Unified Interpretation of SOLAS chapter II-2 and the associated draft MSC circular, as set out in annex 6, for submission to MSC 96 for approval.

Draft unified interpretation of SOLAS regulation II-2/4 on application of materials other than steel on engine, turbine and gearbox installations

11.7 In considering document SSE 2/11/2 (IACS), clarifying the conditions under which materials other than steel may be permitted for components mounted on engines, turbines and gearboxes and providing a draft unified interpretation of SOLAS regulation II-2/4 for consideration, the Sub-Committee noted that it needed to be clarified that the pressure criterion (i.e. not less than 0.18 N/mm^2) was applicable not only to the components themselves but to all the elements contained therein.

11.8 Following discussion and having agreed to the minor modification related to pressure criterion, the Sub-Committee agreed to the draft Unified Interpretation of SOLAS chapter II-2 and the associated draft MSC circular, as set out in annex 6, for submission to MSC 96 for approval.

Fixed gas fire-extinguishing systems and fixed fire detection and fire alarm systems

11.9 The Sub-Committee recalled that SSE 1 considered document SSE 1/17/11 (IACS) that discussed the following two issues:

.1 two different understandings of paragraph 2.2.1.7 of chapter 5 of the FSS Code regarding the number of setting points to the discharge control for the fire-extinguishing medium; and

.2 two different understandings of paragraph 2.2.4 of chapter 9 of the FSS Code regarding the time period for the power supply to the fire detection and fire alarm system.

11.10 The Sub-Committee also recalled that, as a result of the discussion on a number of setting points to the discharge control for the fire-extinguishing medium, SSE 1 invited IACS to prepare a draft MSC circular that "includes understanding 1 from paragraph 5 of document SSE 1/17/11".

11.11 The Sub-Committee further recalled that SSE 1 had a lengthy discussion on the time period for the power supply to the fire detection and fire alarm system and, having noted the view expressed by some delegations that 30 minutes had specifically been added by the FP Sub-Committee to the period specified in SOLAS, SSE 1 invited IACS to include both options proposed in paragraph 6 of document SSE 1/17/11 in the draft MSC circular, for further consideration at this session.

11.12 Having considered document SSE 2/11/3 (IACS), providing a draft unified interpretation relating to paragraph 2.2.1.7 of chapter 5 of the FSS Code and proposing two options for a unified interpretation relating to paragraph 2.2.4 of chapter 9 of the FSS Code, the Sub-Committee, bearing in mind that there was no unanimous agreement on the two options proposed by IACS on the time period for the power supply to the fire detection and fire alarm system, decided that no unified interpretation could be prepared at this stage and agreed that to solve the problem the FSS Code might be amended in future.

11.13 Notwithstanding the above decision, the Sub-Committee agreed to the draft Unified Interpretation of chapters 5, 6 and 9 of the FSS Code, regarding the number of setting points to the discharge control for the fire-extinguishing medium, and the associated draft MSC circular, as set out in annex 7, for submission to MSC 96 for approval.

Standards for individually identifiable fixed fire detection and alarm systems (chapter 9 of the FSS Code)

11.14 In considering document SSE 2/11/4 (IACS), seeking clarification on the intent and technical background related to the apparently more onerous standards for individually identifiable systems introduced by the amendments to chapter 9 of the FSS Code, as adopted by resolution MSC.311(88), the Sub-Committee agreed to the views that the change in the fault requirements in paragraph 2.1.6.1 of chapter 9 of the FSS Code, as amended by resolution MSC.311(88), was intentional and that UI SC117 was still acceptable for section identifiable systems.

11.15 Following discussion, the Sub-Committee invited IACS to note the above views and submit comments and proposals, if any, for further consideration by SSE 3. Member Governments were invited to consider whether any amendments to the FSS Code needed to be proposed in this regard.

Replacement of non-corrosion resistant components fitted outside a lifeboat

11.16 In considering document SSE 2/11/5 (IACS), requesting clarification on the need to replace backing plates and bolts which are found to be in good condition, the Sub-Committee noted the following views expressed on this matter:

.1 Referring to paragraph 21 of the annex to MSC.1/Circ.1392, it was understood that components not made of material that was corrosion resistant in the marine environment should be replaced unless they were installed in a sheltered position inside the lifeboat, i.e. replacement was required even if the component was in a good condition.

.2 When MSC.1/Circ.1392 was drafted, the possible impacts of requiring replacement on an FRP lifeboat were not fully debated. Replacement of backing plates and bolts (which were still in good condition) could involve remedial FRP works. This could result in delays to the re-hooking process and could have an impact on the existing structural integrity of the boat, which would need to be verified with an additional load test as per paragraph 5.3.4 of part 2 of the *Revised recommendation on testing of life-saving appliances* (MSC.81(70)), as amended by resolution MSC.226(82).

.3 Backing plates and bolts, being categorized as part of the hook fastening arrangement, were subject to an annual thorough examination as prescribed by paragraph 2.4.5 of the appendix to annex 1 to the *Measures to prevent accidents with lifeboats* (MSC.1/Circ.1206/Rev.1); thereby ensuring that their condition was monitored at regular intervals. In addition, being located outside the lifeboat, these components were normally easily accessible for inspection.

.4 A decision on whether backing plates and bolts which were found to be in good condition should be taken by the Administration on a case-by-case basis.

.5 The method of assessment of backing plates and bolts to confirm that they were in "good condition" was needed.

11.17 Following discussion, the Sub-Committee invited IACS to note the above views and submit draft amendments to MSC.1/Circ.1392, for further consideration by SSE 3 under the agenda item on "Any other business".

Post-installation testing referred to in the Guidelines for evaluation and replacement of lifeboat release and retrieval systems (MSC.1/Circ.1392)

11.18 Having considered document SSE 2/11/6 (IACS), providing comments on paragraphs 24.2 and 24.3 and appendix 4 of the annex to MSC.1/Circ.1392 related to post-installation testing, the Sub-Committee noted the following views expressed on this matter:

.1 the load test required by paragraph 24.2 of the annex to MSC.1/Circ.1392 was allowed to be waived according to the same paragraph, only if the structural connections of the release mechanism were not modified;

.2 it would facilitate clarification to all interested parties if appendix 4 of the annex to MSC.1/Circ.1392 was amended in order to allow the attending surveyor to document if the post installation test in accordance with paragraph 5.3.4 of part 2 of the *Revised recommendation on testing of life-saving appliances* (MSC.81(70)) had been carried out, or had not been carried out because the fixed structural connections of the release mechanism of the lifeboat had not been modified; and

.3 it would similarly facilitate a common understanding if the text in appendix 4 of the annex to MSC.1/Circ.1392 was amended in order to allow the attending surveyor to document if the post installation test in accordance with paragraph 5.4 of part 2 of the *Revised recommendation on testing of life-saving appliances* (MSC.81(70)), as referred to in paragraph 24.3 of the annex to MSC.1/Circ.1392, had been, or was not required to be, carried out.

11.19 Following discussion, the Sub-Committee agreed to the following editorial modifications of appendix 4 to the annex of the *Guidelines for evaluation and replacement of lifeboat release and retrieval systems* (MSC.1/Circ.1392):

".2 The replacement release and retrieval system construction and the equipment of the above-mentioned ship was found to comply with the provisions of SOLAS regulation III/4 when tested in accordance with the following paragraphs of the Revised recommendation on testing of life-saving appliances (resolution MSC.81(70)), part 2~~, section 5.3.1. [The test required by paragraph 5.3.4 is waived as impracticable for this replacement procedure.]~~*

□ section 5.3.1
□ section 5.3.4*
□ section 5.4.

* The test required by paragraph 5.3.4 may be waived if the fixed structural connections of the release mechanism of the lifeboat is not modified."

and requested the Secretariat to issue a corrigendum to MSC.1/Circ.1392 accordingly.

11.20 The Sub-Committee, bearing in mind that MSC.1/Circ.1206/Rev.1 might be superseded by a new mandatory MSC resolution, noted that the reference to MSC.1/Circ.1206/Rev.1, which currently exists in paragraph 16 of the annex to MSC.1/Circ.1392, might need to be updated accordingly in future.

Proposed amendment to MSC/Circ.1120 on Unified interpretations of SOLAS chapter II-2, the FSS Code, the FTP Code and related fire test procedures

11.21 In considering document SSE 2/11/7 (IACS), proposing to update the existing unified interpretation for SOLAS regulation II-2/10.2.2.3.2.2, as set out in the annex to MSC/Circ.1120, the Sub-Committee noted that IACS Unified Requirement (UR) E15 on *Electrical Services Required to be Operable Under Fire Conditions and Fire Resistant Cables* had been reviewed and updated. While this had resulted in no changes to the technical content of paragraph 1 of this UR (as referred to in MSC/Circ.1120), paragraph 1 had been renumbered as paragraph 2(a) in UR E15.

11.22 Consequently, the Sub-Committee requested the Secretariat to issue a corrigendum to MSC.1/Circ.1120 accordingly.

Implementation of the requirements related to lifeboat release and retrieval systems (paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89))

11.23 Having considered document SSE 2/11/8 (IACS), providing a copy of IACS UI SC267 regarding the implementation of the requirements relating to lifeboat release and retrieval systems (paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89)), the Sub-Committee agreed to the proposed interpretation and noted that UI SC267 would be uniformly implemented by IACS Societies for approvals issued in accordance with SOLAS regulation III/34 and the LSA Code on or after 1 January 2016, unless provided with written instruction to apply a different interpretation by an Administration on whose behalf they are authorized to act as a recognized organization.

11.24 Following discussion, the Sub-Committee agreed to the draft Unified Interpretation of paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89), and the associated draft MSC circular, as set out in annex 8, for submission to MSC 96 for approval.

General emergency alarms and public address systems in ro-ro spaces

11.25 The Sub-Committee recalled that SSE 1, having considered document DE 57/3/8 (IACS), which provided a draft revised version of IACS UI SC145 on application of provisions in SOLAS and the LSA Code relating to the general emergency alarms and public address systems, and noted the views expressed on this matter, invited IACS to finalize the revision of UI SC145 for consideration at this session.

11.26 Having considered document SSE 2/11/9 (IACS), providing a further draft revised version of IACS UI SC145, the Sub-Committee agreed to the draft Unified Interpretation of SOLAS regulations III/6.4 and III/6.5 and section 7.2 of the LSA Code and the associated draft MSC circular, as set out in annex 9, for submission to MSC 96 for approval.

Fixed foam fire-extinguishing systems – foam-generating capacity (FSS Code, chapter 6, paragraphs 3.2.1.2 and 3.3.1.2)

11.27 The Sub-Committee recalled that SSE 1, having noted the views expressed regarding IACS UI SC262, requested IACS to further revise UI SC262 for consideration at this session.

11.28 Having considered document SSE 2/11/10 (IACS), providing a draft revised version of UI SC262, the Sub-Committee noted that:

.1 a definition of the term "largest protected space" had been included in the latest draft revised version together with explanatory figures; and

.2 it had been made clear that other fire risk items should be considered.

11.29 Following discussion, the Sub-Committee agreed to the draft Unified Interpretation of chapters 5, 6 and 9 of the FSS Code and the associated draft MSC circular, as set out in annex 7, for submission to MSC 96 for approval.

Fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck

11.30 In considering document SSE 2/11/11 (IACS), providing a copy of IACS UI SC270 on fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck, the Sub-Committee agreed to the proposed interpretation.

11.31 Following discussion, the Sub-Committee, having noted the IACS intention to further consider the need to amend UI SC270, with a view to clarifying the requirements on the diameter of the fire main, invited IACS to submit a modified interpretation for consideration at SSE 3, with a view to subsequent submission to MSC 96 for approval.

Additional indicating unit in the cargo control room

11.32 The Sub-Committee recalled that SSE 1 agreed with the following understanding of paragraph 2.5.1.3 of chapter 9 of the FSS Code, as amended by resolution MSC.339(91):

> "A space in which a cargo control console is installed, but does not serve as a dedicated cargo control room (e.g. ship's office, machinery control room), should be regarded as a cargo control room for the purposes of paragraph 2.5.1.3 of chapter 9 of the FSS Code, as amended by resolution MSC.339(91), and therefore, be provided with an additional indicating unit."

11.33 Having considered document SSE 2/11/12 (IACS), providing a copy of IACS UI SC271 relating to the additional indicating unit of fire detection and fire alarm systems in cargo control rooms, as required by paragraph 2.5.1.3 of chapter 9 of the FSS Code, the Sub-Committee agreed to the proposed interpretation and noted that UI SC271 would be uniformly implemented by IACS Societies on cargo ships contracted for construction on or after 1 January 2016, unless they are provided with written instruction to apply a different interpretation by an Administration on whose behalf they are authorized to act as a recognized organization.

11.34 Following discussion, the Sub-Committee agreed to the draft Unified Interpretation of chapters 5, 6 and 9 of the FSS Code and the associated draft MSC circular, as set out in annex 7, for submission to MSC 96 for approval.

Sizing of pumps and pressure tank for automatic sprinkler systems

11.35 The Sub-Committee noted document SSE 2/INF.4 (Finland) containing clarification on the practical differences between dimensioning a sprinkler system to the actual number and to the nominal number of sprinklers within the design area.

12 REVIEW OF THE MODU CODE, LSA CODE AND MSC.1/CIRC.1206/REV.1

General

12.1 The Sub-Committee recalled that MSC 93, having considered document MSC 93/20/5 (Marshall Islands, United States and IADC), proposing to review the MODU and LSA Codes and MSC.1/Circ.1206/Rev.1 in light of the investigations of the 2010 **Deepwater Horizon** incident, agreed to include in the provisional agenda of SSE 2 an unplanned output on "Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1", with a target completion date of 2016, in association with the HTW Sub-Committee as and when requested by the SSE Sub-Committee.

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

.1 SSE 2/12 (United States), proposing amendments to the 2009 MODU Code, the LSA Code, the *Revised recommendation on testing of life-saving appliances* (MSC.81(70)), the *Measures to prevent accidents with lifeboats* (MSC.1/Circ.1206/Rev.1) and the *Recommendations for the training and certification of personnel on mobile offshore units (MOUs)* (A.1079(28)), for application as a minimum to new MODUs, and inviting the Sub-Committee to consider the extent to which operational measures in particular should apply to existing MODUs; and

.2 SSE 2/12/1 (Liberia, Vanuatu and IADC), supporting, in principle, the proposals in document SSE 2/12 and providing comments for further consideration.

12.3 In considering the above documents, the Sub-Committee noted the following views expressed on this matter:

.1 bearing in mind that MSC.1/Circ.1206/Rev.1 might be superseded by a new mandatory MSC resolution, references to this circular might need to be updated accordingly in future;

.2 the LSA and/or FTP Codes should not be amended and any new requirements should only apply to MODUs;

.3 it should be carefully evaluated how changes to the MODU Code would affect other IMO instruments (e.g. the LSA Code and MSC.1/Circ.1206/Rev.1); and

.4 a correspondence group should be established to progress the work intersessionally.

12.4 Following discussion, the Sub-Committee agreed that a correspondence group should be established to progress this work and invited interested Member Governments and international organizations to prepare draft terms of reference for consideration at this session.

Establishment of a correspondence group

12.5 Having considered the proposed draft terms of references (SSE 2/WP.7), the Sub-Committee established the Correspondence Group on Review of the MODU and LSA Codes and MSC.1/Circ.1206/Rev.1, under the coordination of the United States*, and instructed it, taking into account the comments made and decisions taken at SSE 2, to:

.1 prepare draft amendments to the MODU Code and, if deemed appropriate, to the LSA Code and MSC.1/Circ.1206/Rev.1, based on the annex to document SSE 2/12, taking into account document SSE 2/12/1;

.2 consider the applicability of the draft amendments and provide recommendations on whether the amendments should be applied to new or existing units, in particular with regard to major structural modifications;

.3 advise on how the draft amendments may impact, either directly or consequentially, on other IMO instruments and potential consequences on other types of ships or units; and

.4 submit a report to SSE 3.

12.6 The Sub-Committee also agreed to refer the proposals and comments related to manning, as contained in documents SSE 2/12 (annex, paragraphs 12 and 13), and SSE 2/12/1 (paragraph 12), to HTW 3, for consideration with a view to providing general advice and input to SSE 3.

13 AMENDMENTS TO THE GUIDELINES FOR VESSELS WITH DYNAMIC POSITIONING (DP) SYSTEMS (MSC/CIRC.645)

General

13.1 The Sub-Committee recalled that MSC 90, having considered document MSC 90/25/17 (United States, IADC and IMCA), proposing to amend and update the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645) to address the current technology employed on modern vessels of growing size and operating in deeper waters, agreed to include in the post-biennial agenda of the Committee an output on "Development of amendments to the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645)", with two sessions needed to complete the item, assigning the DE Sub-Committee as the coordinating organ.

13.2 The Sub-Committee also recalled that MSC 93 approved the biennial status report and the provisional agenda for SSE 2 with the output on "Development of amendments to the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645)" included.

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13.3 The Sub-Committee had for its consideration document SSE 2/13 (Antigua and Barbuda et al.), proposing amendments to the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645) in order to reflect advances in technology and operations since the publication of the circular in 1994.

13.4 In considering the above document, the Sub-Committee noted:

.1 a number of changes needed to reflect key advances in technology and operations in deeper waters and, therefore, further work would be needed on the proposed draft amendments to ensure a clear robust approach;

.2 the applicability of any proposed amendments to new and existing vessels should be carefully considered; and

.3 a correspondence group should be established to progress the work of this matter intersessionally.

13.5 Following the discussion, the Sub-Committee agreed that a correspondence group should be established, and invited interested Member Governments and international organizations to prepare draft terms of reference for consideration at this session.

Establishment of a correspondence group

13.6 Having considered the proposed draft terms of references (SSE 2/WP.7), the Sub-Committee established the Correspondence Group on Amendments to the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645), under the coordination of Norway*, and instructed the group, taking into account the comments made and decisions taken at SSE 2, to:

.1 prepare the draft amendments to the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645), based on the annex to document SSE 2/13;

.2 consider the applicability of any revisions to the guidelines and make a recommendation as to whether the revisions should be applied to new and/or existing vessels; and

.3 submit a report to SSE 3.

Extension of the target completion year

13.7 Consequently, the Sub-Committee requested the Committee to extend the target completion year for this output to 2016.

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14 REVIEW OF FLASHPOINT REQUIREMENTS FOR OIL FUEL IN SOLAS CHAPTER II-2

General

14.1 The Sub-Committee recalled that MSC 94 considered document MSC 94/18/5 (Canada and the United States), proposing to lower the allowable minimum flashpoint for oil fuel in SOLAS chapter II-2 from 60°C to 52°C, to be consistent with widely available automotive diesel fuels, and to amend regulation II-2/3 to define oil fuels, together with the comments provided in document MSC 94/18/9 (Denmark).

14.2 The Sub-Committee also recalled that in considering document MSC 94/18/5, the Committee, having noted the following concerns expressed by some delegations:

.1 the reference to 60°C was used in different mandatory IMO instruments and, therefore, a detailed evaluation on its consequences prior to making amendments to the SOLAS Convention and other instruments was needed;

.2 this subject could not be treated in isolation, as the regulations governing products carried as bunkers should remain consistent with the regulations governing the same products carried as cargo; and

.3 apart from the issue of inerting of cargo, many automotive fuels contained a percentage of biodiesel, which, when carried as a fatty acid methyl ester (FAME) cargo, whether a pure product or in a blend, was subject to the IBC Code regulations governing toxic products with regard to piping and venting arrangements. In this connection, the PPR Sub-Committee should be involved in the consideration of the impact on the IBC Code,

included, in the 2014-2015 biennial agenda of the Sub-Committee and the provisional agenda of SSE 2, a new unplanned output on "Review of flashpoint requirements for oil fuel in SOLAS chapter II-2", with a target completion date of 2016.

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

.1 SSE 2/14 (EUROMOT), supporting, in principle, the proposal that the minimum low-flashpoint value of oil fuel in SOLAS chapter II-2 could be lowered from 60°C to 52°C and proposing, with a view to a possibly increased fire risk, to accompany the process by also reviewing the applicable risk assessment processes; and

.2 SSE 2/14/1 (Germany), proposing that there is a need to review the impact of the proposed lowering of the allowable minimum flashpoint for oil fuel in SOLAS chapter II-2 from 60°C to 52°C in detail, pointing out that some of the necessary work to this extent is already under way in the Correspondence Group on Amendments to the IGF Code and development of guidelines for low-flashpoint fuels, which will be reporting to CCC 2, and suggesting that a liaison of the experts looking into this matter may be a good way forward to expedite a result.

14.4 In considering the above documents, the Sub-Committee noted the following views expressed on this matter:

.1 it is necessary to ensure that any agreement to lower the flashpoint criterion for oil fuels does not have an adverse effect in other existing IMO provisions where 60°C was also used as a limiting point (e.g. the requirements of SOLAS chapter II-2 and the IGF Code, provisions in MSC.1/Circ.1321);

.2 the 60°C has been used for many years as the criterion of "flammability", including, but not limited to, oil fuels (e.g. dangerous goods) and, therefore, this matter needs to be carefully considered;

.3 the proposed lowering of the allowable minimum flashpoint for oil fuel might impact the effectiveness of water-based firefighting systems;

.4 a common approach on assessing potential consequences was needed before any detailed work commences; and

.5 the outcome of the work being carried out by the IGF Correspondence Group, which will be reported to CCC 2 should also be carefully considered.

14.5 Following the discussion, the Sub-Committee agreed that this output was within the scope of the IGF Code and, to avoid a duplication of work, this issue should be considered in the IGF Correspondence Group established by the CCC Sub-Committee. Consequently, the Sub-Committee invited interested Member Governments and international organizations to submit comments and proposals directly to the IGF Correspondence Group or to CCC 2.

Completion of the work on the output

14.6 In view of the above decision, the Sub-Committee invited the Committee to note that the work on this output had been completed.

15 REVISION OF REQUIREMENTS FOR AUTOMATIC SPRINKLER SYSTEMS

General

15.1 The Sub-Committee recalled that, at MSC 92, the Bahamas provided the information on findings from the testing automatic sprinkler systems on passenger ships (MSC 92/INF.10) and expressed the view that the scope of testing in the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) might not adequately assess the actual condition of automatic sprinkler systems.

15.2 The Sub-Committee also recalled that, at MSC 94, the Bahamas updated the Committee on findings from the testing programme on automatic sprinkler systems on passenger ships and provided proposals on how to address these findings by revising MSC.1/Circ.1432 and preparing amendments to chapter 8 of the FSS Code (MSC 94/20/2).

15.3 The Sub-Committee further recalled that MSC 94, in response to concerns raised by the Bahamas, approved MSC.1/Circ.1493 on *Interim guidance for in-service testing of automatic sprinkler systems*, to be used in addition to the provisions of MSC.1/Circ.1432, for dissemination with a view to raising the awareness of this important issue, and, taking into account the complex nature of this work, agreed to forward document MSC 94/20/2 to SSE 2 for consideration, with a view to revising MSC.1/Circ.1432 and preparing amendments to chapter 8 of the FSS Code, as appropriate.

Consideration of findings from the testing programme on automatic sprinkler systems on passenger ships

15.4 In considering document MSC 94/20/2 (Bahamas), the Sub-Committee, having noted the general views expressed on this matter, agreed to forward document MSC 94/20/2 to the Working Group on Fire Protection for consideration with a view towards preparation of draft amendments to MSC.1/Circ.1432 and the FSS Code.

15.5 In this connection, the Sub-Committee considered document SSE 2/INF.4, as requested by the delegation of Finland, and decided that the aforementioned document was not directly related to the proposals in document MSC 94/20/2 and, therefore, decided to consider document SSE 2/INF.4 under agenda item 11 (see paragraph 11.35).

Instructions to the Working Group on Fire Protection

15.6 Having considered the above matters, the Sub-Committee instructed the Working Group on Fire Protection, established under agenda item 3 (Smoke control and ventilation), taking into account the comments and decisions made in plenary, to prepare draft amendments to MSC.1/Circ.1432 and chapter 8 of the FSS Code, based on the proposals in document MSC 94/20/2.

Report of the Working Group on Fire Protection

15.7 Having considered the part of the report of the Working Group on Fire Protection (SSE 2/WP.4) related to this agenda item, the Sub-Committee took action as outlined hereunder.

15.8 The Sub-Committee noted that the group, having considered document MSC 94/20/2, agreed, in general, to the proposals in the document, except for the proposal F related to flushing and draining of sprinklers systems (MSC 94/20/2, paragraph 18).

15.9 Having noted that the majority of the group was of the view that automatic water mist system had been installed and used on board passenger ships in many cases, and there was no reason to consider separately automatic sprinkler system and automatic water mist system, which had been used on board as automatic sprinkler system, and bearing in mind that the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) considered both automatic sprinkler system and water mist system, the Sub-Committee endorsed the group's view that water mist systems were within the scope of this output.

15.10 In connection to the above, the Sub-Committee, having also noted that the group agreed to use the flow chart for the testing and replacement of sprinkler heads and water mist nozzles and prepared a provision for water quality testing, agreed to the draft amendments to the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) and the associated MSC circular, as set out in annex 10, for submission to MSC 95 for approval.

15.11 The Sub-Committee also agreed to the draft amendments to chapter 8 of the FSS Code, as set out in annex 11, for submission to MSC 95 for approval and subsequent adoption.

15.12 The Sub-Committee, taking into account the provisions of MSC.1/Circ.1500, authorized the Secretariat to prepare, after the session, part III of the check/monitoring sheet and records for regulatory development, for submission to MSC 95 for consideration in conjunction with the draft amendments to chapter 8 of the FSS Code.

15.13 The delegation of the Bahamas, supported by CLIA, expressed its appreciation for the work accomplished at this session and noted the importance of design, manufacture and commissioning of equipment and systems. Taking into account the safety issues raised, the delegation of the Bahamas requested Member Governments to act accordingly, while approving equipment and systems, to ensure that systems and equipment are robust, reliable and fit for their intended service.

Completion of the work on the output

15.14 In connection to the above, the Sub-Committee invited the Committee to note that the work on this output had been completed.

16 REVISION OF REQUIREMENTS FOR ESCAPE ROUTE SIGNS AND EQUIPMENT LOCATION MARKINGS IN SOLAS AND RELATED INSTRUMENTS

General

16.1 The Sub-Committee recalled that MSC 94 considered document MSC 94/18/6 (United States and ISO), proposing to clarify and harmonize existing requirements for escape route signs and equipment location markings in SOLAS regulations II-2/13, III/11 and III/20, to develop a new chapter of the FSS Code for this purpose, and to review related non-mandatory instruments for potential consolidation or consequential amendment.

16.2 The Sub-Committee also recalled that MSC 94 included, in the 2014-2015 biennial agenda of the Sub-Committee and in the provisional agenda for SSE 2, a new unplanned output on "Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments", with a target completion date of 2016, assigning the Sub-Committee as the coordinating organ, in association with the HTW Sub-Committee as and when requested by the Sub-Committee.

Clarification and harmonization of the requirements for escape route signs and equipment location markings in SOLAS and related instruments

16.3 In considering document MSC 94/18/6, the Sub-Committee noted the following views expressed on this matter:

.1 Limited guidance on how the signs and markings required by SOLAS regulations II-2/13.3.2.5.1, III/11.5, and III/20.10 were to be implemented was provided in MSC/Circ.699, A.760(18), MSC/Circ.777, and A.752(18). These regulations and guidelines were vague and inconsistent in some areas and, as a result were open to differing interpretation. In this connection, there might be broad inconsistency in the application of these regulations, and in the effectiveness of the required signs and markings.

.2 The loss of the **Costa Concordia** illustrated the compelling need to ensure consistent and effective signs and markings to facilitate the rapid evacuation of passengers in an emergency. Despite the crew being responsible for assisting the passengers to their assigned assembly/embarkation stations, language difficulties between the various nationalities on board resulted in a chaotic, disorganized abandonment. The recently boarded passengers, having spent only a limited time on the ship, lacked a thorough familiarity with its layout and the established escape routes, resulting in a prolonged evacuation.

.3 Uniform escape route signs and marking of fire protection equipment and life-saving appliances were vital to the safety of passengers and crew. The current inconsistencies in the regulations could result in confusion over the proper direction of escape travel in an emergency, hindering the safe escape of passengers. The benefit of harmonizing these markings would be improved comprehension of the escape routes, which would be expected to reduce evacuation times in an emergency, and thus reduce the potential for casualties. It would also facilitate consistent interpretation by shipbuilders and operators.

16.4 Following the discussion, the Sub-Committee invited interested Member Governments and international organizations to further consider the proposal in document MSC 94/18/6, taking into account the views expressed at this session, and submit comments and proposals to SSE 3.

17 BIENNIAL AGENDA AND PROVISIONAL AGENDA FOR SSE 3

Outcome of MSC 93

17.1 In considering matters related to the biennial agenda and provisional agenda, the Sub-Committee recalled that MSC 93 agreed to include in the 2014-2015 biennial agenda of the Sub-Committee and the provisional agenda of SSE 2 an unplanned output on "Review the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1", with a target completion date of 2016, in association with the HTW Sub-Committee as and when requested by the Sub-Committee.

Outcome of MSC 94

17.2 The Sub-Committee also recalled that MSC 94 agreed to include, in the 2014-2015 biennial agenda of the Sub-Committee and the provisional agenda of SSE 2, the following new unplanned outputs on:

.1 "Review of flashpoint requirements for oil fuel in SOLAS chapter II-2", with a target completion date of 2016;

.2 "Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments", with a target completion date of 2016, assigning the SSE Sub-Committee as the coordinating organ, in association with the HTW Sub-Committee as and when requested by the Sub-Committee; and

.3 "Revision of requirements for automatic sprinkler systems", with a target completion date of 2015.

17.3 The Sub-Committee noted that MSC 94, in preparation of the High-level Action Plan for the 2016-2017 biennium, instructed the sub-committees to prepare their proposed biennial agendas for the coming biennium at their forthcoming sessions, for consideration at MSC 95, and requested the Secretariat to assist them in the usual manner.

Biennial status report and proposed biennial agenda for the 2016-2017 biennium

17.4 Taking into account the progress made at the session, the Sub-Committee prepared the biennial status report (SSE 2/WP.2, annex 1) and the proposed biennial agenda for the 2016-2017 biennium (SSE 2/WP.2, annex 2), as set out in annexes 12 and 13, respectively, for consideration by MSC 95.

Proposed provisional agenda for SSE 3

17.5 Taking into account the progress made at the session, the Sub-Committee prepared the proposed provisional agenda for SSE 3 (SSE 2/WP.2, annex 3), as set out in annex 14, for consideration by MSC 95.

Correspondence groups established at the session

17.6 The Sub-Committee established correspondence groups on the following subjects, due to report to SSE 3:

.1 life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002) (see paragraph 5.9);

.2 onboard lifting appliances and winches* (see paragraph 8.16);

.3 review of the MODU and LSA Codes and MSC.1/Circ.1206/Rev.1 (see paragraph 12.5); and

.4 dynamic positioning (DP) systems (see paragraph 13.6).

Arrangements for the next session

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

.1 life-saving appliances (LSA) (agenda item 4 and 12);**

.2 fire protection (agenda items 3);

.3 review of the MODU and LSA Codes and MSC.1/Circ.1206/Rev.1 (agenda item 6);

.4 onboard lifting appliances and winches (agenda item 5);

.5 dynamic positioning (DP) systems (agenda item 7),

whereby the Chairman, taking into account the submissions received on the respective subjects, would advise the Sub-Committee before SSE 3 on the final selection of such groups.

Date of the next session

17.8 The Sub-Committee noted that the third session of the Sub-Committee has been tentatively scheduled to take place from 14 to 18 March 2016.

* Subject to decision by MSC 95.

** Refer to annex 14.

Urgent matters to be considered by MSC 96

17.9 The Sub-Committee, having noted the close proximity between SSE 3 and MSC 96, invited the Committee to agree that MSC 96 would consider only the following urgent matters emanating from SSE 3, with the remainder being considered by MSC 97:

.1 Development of life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002); and

.2 Safety objectives and functional requirements of the *Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III*;

.3 Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1;

.4 Amendments to the *Guidelines for vessels with dynamic positioning (DP) systems* (MSC/Circ.645);

.5 Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments;

.6 Draft unified interpretation of fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck;

.7 Periodic servicing and maintenance of lifeboats, launching appliances and release gear; and

.8 Report on the incident of the **Swanland** – compatibility of immersion suits and buoyancy aids.

18 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2016

18.1 In accordance with the Rules of Procedure of the Maritime Safety Committee, the Sub-Committee unanimously re-elected Dr. S. Ota (Japan) as Chairman and elected Mr. Umut Senturk (Turkey) as Vice-Chairman, both for 2016.

Expression of appreciation

18.2 The Sub-Committee expressed sincere thanks and appreciation to Mr. Kevin Hunter of the United Kingdom for his excellent services during the last two years when he served this Sub-Committee as its Vice-Chairman.

19 ANY OTHER BUSINESS

Scope of application and drafting of amendments to the LSA Code

19.1 The Sub-Committee recalled that MSC 94 instructed SSE 2 to follow the guidance provided in paragraphs 4.1.6 and 4.2.6 of the *Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments* (MSC.1/Circ.1500) when finalizing amendments to the LSA Code.

Report of the correspondence group

19.2 In considering document SSE 2/19/1 (Japan), providing the report of the LSA Correspondence Group, with regard to the scope of application and drafting of amendments to the LSA Code, the Sub-Committee noted that the options proposed by the correspondence group for amending paragraph 1.2.1 of the LSA were not in line with MSC.1/Circ.1500 and require further consideration.

Instruction to the LSA Working Group

19.3 Following the discussion, the Sub-Committee instructed the LSA Working Group, established under agenda item 6 (New framework of requirements for life-saving appliances), to consider the proposals in document SSE 2/19/1, taking into account the instructions of MSC 94 and the comments made in plenary, and advise the Sub-Committee accordingly.

Report of the LSA Working Group

19.4 Having noted the information verbally presented by the Chairman of the LSA Working Group on this matter, the Sub-Committee took action as outlined in paragraphs 19.5 to 19.8.

19.5 The Sub-Committee noted that, due to the time constrains, the group could address the matter related to the consideration of different options for drafting of application provisions for the LSA Code (SSE 2/19/1) only after the group's report (SSE 2/WP.3) had been finalized.

19.6 The Sub-Committee also noted the group's conclusion that the options set out in document SSE 2/19/1 were not in compliance with MSC.1/Circ.1500 as the task on reconsidering the application provisions of the LSA Code had been assigned significantly before MSC 94 adopted MSC.1/Circ.1500 and, subsequently, the work done by the correspondence group was not based on the provisions of the circular.

19.7 Having noted the group's view that the application provisions provided in MSC.1/Circ.1500 were clear and should be applied to any future amendments of the LSA Code, the Sub-Committee endorsed the group's unanimous agreement that no specific action needed to be taken at this stage.

19.8 In this connection, the Committee was invited to note the information and the conclusions set out in paragraphs 19.6 and 19.7.

Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear

19.9 The Sub-Committee recalled that MSC 93, noting the number of inconsistencies between the requirements of the draft amendments to SOLAS regulations III/3 and III/20, as set out in annex 2 to document MSC 93/3, and the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*, as set out in annex 1 to document MSC 93/3/4, decided to refer the above-mentioned drafts to SSE 2 for further consideration under "Any other business", with one session needed to finalize the draft amendments.

19.10 In considering the instruction of MSC 94, the Sub-Committee agreed that:

.1 the views expressed in paragraph 3.27.3 of document MSC 93/22 could be used as a basis for solving the identified inconsistencies; and

.2 no amendments changing the intent of the draft amendments to SOLAS regulations III/3 and III/20, as approved by MSC 92 (MSC 93/3, annex 2), could be introduced at this stage; however, amendments providing more clarity on the practical application of the *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*, could be considered.

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

.1 SSE 2/19/3 (Liberia et al.), referring to the decision taken, and the comments made, at MSC 93 and proposing to further amend the draft amendments to SOLAS regulation III/20 and the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*;

.2 SSE 2/19/7 (China), proposing modifications to the draft MSC resolution on the *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*, as contained in document MSC 93/3/4, with regard to harmonization of paragraphs 3.1 to 3.2 and 6.2.1, definition of service provider and authorization document issued by the Administration; and

.3 SSE 2/19/10 (ILAMA), providing comments on the amendments to the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*, as proposed in document SSE 2/19/3.

19.12 In considering the above documents, the Sub-Committee noted the following views expressed on this matter:

.1 it was not acceptable for manufacturers and authorized service providers to have their competence placed at the same level as ship personnel because their experts must meet extensive training and certification requirements;

.2 allowing untrained and uncertified personnel to conduct maintenance, thorough examination, operational testing, repair and overhaul might result in a serious setback in the level of safety of LSA equipment that IMO had been working on for so many years;

.3 ship personnel should be permitted to carry out annual examinations and operational testing if certification is issued in accordance with the new Requirements;

.4 senior ship personnel were suitably qualified and experienced to be considered for specific training and certification; and

.5 the proposed new definition of "service provider" did not contribute to the clarification of the Requirements, taking into account that all service providers should fulfil the conditions specified in section 7 in the draft MSC resolution, regardless of whether the service provider was the original equipment manufacturer or not.

Instruction to the LSA Working Group

19.13 Following the lengthy discussion, the Sub-Committee instructed the LSA Working Group to finalize the draft amendments to SOLAS regulations III/3 and 20 as well as the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*, taking into account the proposals and comments in documents SSE 2/19/3, SSE 2/19/7 and SSE 2/19/10 as well as the comments and decisions made in plenary, with a view to submitting them to MSC 95 for adoption.

Report of the LSA Working Group

19.14 Having considered the part of the report of the LSA Working Group (SSE 2/WP.3) dealing with this matter, the Sub-Committee took action as outlined in paragraphs 19.15 to 19.22.

19.15 The Sub-Committee noted the following information provided by the group regarding the discussion on amendments to SOLAS regulations III/3 and III/20 and the three-tier approach described in paragraph 3.27.3 of document MSC 93/22:

.1 the group unanimously agreed that weekly and monthly maintenance might be carried out by the ship's crew and overhaul and repair were to be carried out by a service provider only;

.2 the group also unanimously agreed that, whichever person was carrying out the activity, qualification and specific training should always meet the standards provided for in the section of "Requirements for certification of personnel for servicing and maintenance of lifeboats (including free-fall lifeboats), rescue boats, launching appliances and release gear" of the draft MSC resolution;

.3 with the opposition of the delegation of Spain, the group agreed that authorization should only be required for service provider but not for ships' crew having the required certification;

.4 the delegation of Spain, supported by the delegations of France, Italy and the Russian Federation, offered a number of statements further detailing their position that the group had changed the intention of SOLAS regulation III/20; however, the majority of the group was of the view that the report accurately reflected the discussion and, as such, they were not in favour of including the aforementioned statements in the report or reopening the discussion;

.5 the agreement on the fundamentals in paragraphs 19.15.1 and 19.15.2 above was used by the group as the basis for the further considerations;

.6 the group agreed that it was difficult to introduce a definition for the three-tier approach, as described in paragraph 3.27.3 of document MSC 93/22, into the draft SOLAS amendment or the draft Requirements without significantly changing the draft SOLAS amendments and decided to go forward using the explicit text;

.7 in order to clarify the text and remove the undefined term "periodical servicing", the group followed the advice from MSC 93 to specify the activities as "maintenance, thorough examination, operational testing, overhaul and repair" and prepared draft amendments to SOLAS regulation III/3.25 and paragraphs 11 and 11.5 of SOLAS regulation III/20; and

.8 having noted that the draft Requirements contained requirements related to weekly and monthly inspection, the group agreed to further modify SOLAS regulation III/20.11.5 by removing the wording that exempted weekly and monthly inspections from the application of the Requirements.

19.16 In view of the above, the Sub-Committee agreed to the replacement of the term "periodical servicing" by "maintenance, thorough examination, operational testing, overhaul and repair", in the draft amendments to SOLAS regulations III/3 and III/20 and the Requirements.

19.17 The Sub-Committee, bearing in mind that MSC.1/Circ.1206/Rev.1 might be superseded by a new mandatory MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*, invited MSC 95 to note that references to this circular in SOLAS chapter III might need to be updated accordingly in future.

19.18 With regard to the progress made by the group in finalizing the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear* the Sub-Committee noted that:

.1 bearing in mind the deletion of the term "periodical servicing", the group modified the title of the draft MSC resolution to read "Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear ";

.2 the group agreed to add a new definition for "repair";

.3 having noted the duplication on qualification levels within the section 3 "Authorization" with section 4 "Qualification levels and certification", the group decided to combine these two sections into a new section 3 named "Authorization and certification";

.4 the group agreed that the records of all activities carried out in accordance with the Requirements should be maintained on board for the service life of the equipment; and

.5 the group also agreed that the manufacturer was the source of relevant information for the maintenance manuals and associated technical documentation relating to the annual thorough examination, operational testing and overhaul.

19.19 In view of the above, the Sub-Committee noted the concern by the observer of ILAMA regarding intellectual property rights and possible effects on the proprietary information of the manufacturer.

19.20 The Sub-Committee had a lengthy discussion on the draft amendments proposed by the group to SOLAS regulations III/3 and III/20 and the draft MSC resolutions on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*.

19.21 Following discussion, the Sub-Committee, having noted that a number of delegations expressed a view that the proposal to allow "certified personnel" to carry out annual examinations and five-year operational tests was not in line with the instructions by MSC 93, decided that draft amendments to SOLAS regulations III/3 and III/20 as well as the draft MSC resolution could not be submitted to the Committee for adoption at this stage.

19.22 In this connection, the Sub-Committee requested MSC 95 to:

.1 note the progress made at this session on further developing draft amendments to SOLAS regulations III/3 and III/20 and the draft MSC resolution, as set out in annexes 15 and 16, respectively;

.2 provide clear instructions on who is allowed to carry out annual examinations and five-year operational tests;

.3 confirm whether the Sub-Committee is allowed to propose any further amendments to SOLAS chapter III while finalizing the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear*; and

.4 endorse the view that the work should be continued at SSE 3, under agenda item on "Any other business", based on the decisions to be made at MSC 95.

Inconsistent terminology in section 2.2 of the LSA Code, as amended by resolution MSC.207(81)

19.23 In considering document SSE 2/19/4 (Germany), providing an observation of the inconsistency in paragraphs 2.1.1.7 and 2.1.3.6 of chapter II of the LSA Code, as amended by resolution MSC.207(81), with respect to the required mass of lifebuoys, and proposing that the conflict in the above requirements needs to be addressed as a matter of urgency, the Sub-Committee agreed that there was no inconsistency in paragraphs 2.1.1.7 and 2.1.3.6 of chapter II of the LSA Code and, therefore, the existing paragraph 2.1.3.6 of chapter II of the LSA Code should be kept as it was.

Amendments to the 1994 and 2000 HSC Codes

19.24 The Sub-Committee recalled that MSC 94, having considered document MSC 94/8/1 (IACS) on application of paragraphs 8.10.1.4 to 8.10.1.6 of the 2000 HSC Code, instructed SSE 2 to prepare draft amendments to both the 1994 and 2000 HSC Codes for further consideration at MSC 95.

19.25 Having noted that document SSE 2/19/5 (Netherlands), proposing the amendments to the 1994 and 2000 HSC Codes, had been withdrawn by the Netherlands, the Sub-Committee invited interested Member Governments and international organizations to submit comments and proposals to SSE 3 and invited MSC 95 to note that no action had been taken by the Sub-Committee on this issue due to the withdrawal of document SSE 2/19/5.

Proposed amendments to the Revised recommendation on testing of life-saving appliances (MSC.81(70)), as amended

19.26 In considering document SSE 2/19/6 (China), proposing amendments to the *Revised recommendation on testing of life-saving appliances* (MSC.81(70)), as amended, with a view of putting them in line with the technology and practice of use of LED lights and lithium batteries, the Sub-Committee, having noted that the proposed amendments had received no support, decided that no further action needed to be taken on this issue.

Amendments to SOLAS regulation II-2/18.5 and related instruments to remove inconsistencies with MSC.1/Circ.1431

19.27 The Sub-Committee recalled that MSC 93 decided to refer the draft amendments to SOLAS regulation II-2/18, as presented in document MSC 93/3 (Secretariat) and document MSC 93/3/9 (Japan), to SSE 2 for further consideration under "Any other business", with one session needed to finalize the draft amendments.

19.28 The Sub-Committee also recalled that MSC 93, having considered document MSC 93/3/11 (IACS), agreed that the new requirements for helicopter facilities should apply to new ships only and instructed SSE 2 to clearly reflect the application requirements in the draft amendments.

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

.1 SSE 2/19/2 (United States), proposing to redraft the guidelines, which are currently annexed to the *Guidelines for the approval of helicopter facility foam firefighting appliances* (MSC.1/Circ.1431) as a new chapter of the FSS Code and consequential amendments to SOLAS regulation II-2/18.5, the 2009 MODU Code and the *Recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895), for the purpose of harmonizing the requirements for helicopter facility foam firefighting appliances; and

.2 SSE 2/19/8 (Japan and ICS), providing the revised draft performance standards, clarifying that the performance standards are applicable only to foam firefighting appliances for helideck, but not applicable to those for helicopter landing area, and proposing the modified draft amendments to SOLAS regulation II-2/18.5.

19.30 In considering the above documents, the Sub-Committee agreed to proceed further according to the proposals in document SSE 2/19/2.

Instruction to the Working Group on Fire Protection

19.31 Following the discussion, the Sub-Committee instructed the Working Group on Fire Protection, established under agenda item 3 (Smoke control and ventilation), taking into account the comments and decisions made in plenary, to:

.1 consider the draft amendments to SOLAS regulation II-2/18 and the FSS Code based on document SSE 2/19/2, with a view to finalization for approval at MSC 95 for subsequent adoption; and

.2 further consider the draft amendments to the 2009 MODU Code, MSC.1/Circ.1431 and MSC/Circ.895 proposed in documents SSE 2/19/2, with a view to advising the Sub-Committee on how best to proceed.

Report of the Working Group on Fire Protection

19.32 Having considered the part of the report of the Working Group on Fire Protection (SSE 2/WP.4) dealing with this matter, the Sub-Committee took action as outlined in paragraphs 19.33 to 19.37.

19.33 The Sub-Committee agreed to the draft new chapter 17 of the FSS Code, as set out in annex 11, for submission to MSC 95 for approval and subsequent adoption.

19.34 Having noted that the new chapter 17 of the FSS Code, if approved by MSC 95, will only enter into force on 1 January 2020, the Sub-Committee agreed to the draft MSC circular on *Early implementation of the new chapter 17 of the FSS Code*, as set out in annex 17, for submission to MSC 96 for approval in conjunction with the adoption of the draft new chapter 17 of the FSS Code.

19.35 The Sub-Committee, taking into account its decision, taken at this session, that the helicopter facility foam firefighting appliances should also be provided in the helicopter landing area where helicopter landing were taken place on an occasional or emergency basis, and having noted the need for a consequential amendment to SOLAS regulation II-2/18.2, agreed to the modification to the draft amendments to SOLAS regulation II-2/18, as set out in annex 2, for submission to MSC 95 for consideration with a view to adoption in conjunction with the adoption of the new chapter 17 of the FSS Code.*

19.36 Having considered draft consequential amendments to the 2009 MODU Code and the *Recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895) prepared by the group, the Sub-Committee agreed to:

.1 draft amendments to chapter 9 of the 2009 MODU Code, as set out in annex 18, for submission to MSC 95 for approval, in general, with a view to subsequent adoption, in conjunction with the adoption of the new chapter 17 of the FSS Code; and

.2 draft amendments to the *Recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895) and the associated draft MSC circular, as set out in annex 19, for submission to MSC 96 for approval, in conjunction with the adoption of the new chapter 17 of the FSS Code and amendments to chapter 9 of the 2009 MODU Code.

19.37 The Sub-Committee, taking into account the provisions of MSC.1/Circ.1500, agreed to forward part III of the check/monitoring sheet and records for regulatory development, as set out in appendices 3 and 4 to annex 11, respectively, to MSC 95 for consideration in conjunction with draft amendments to SOLAS regulation II-2/18 and the new chapter 17 of the FSS Code.

Possible omission in the International Code for Application of Fire Test Procedures, 2010 (2010 FTP Code)

19.38 In considering document SSE 2/19/9 (Norway), advising of a possible omission in the 2010 FTP Code and proposing amendments in order to correct the above omissions, the Sub-Committee noted that there was no unanimous agreement on the options proposed in the document.

Instruction to the Working Group on Fire Protection

19.39 Following the discussion, the Sub-Committee instructed the Working Group on Fire Protection, taking into account the comments made in plenary, to consider the amendments to the 2010 FTP Code proposed in document SSE 2/19/9 and advise the Sub-Committee accordingly.

Report of the Working Group on Fire Protection

19.40 Having considered the part of the report of the Working Group on Fire Protection (SSE 2/WP.4) dealing with this matter, the Sub-Committee, having noted the group's agreement that there was an omission in the text of the 2010 FTP Code, requested the Secretariat to prepare

* Refer to paragraph 3.12 of document MSC 93/22 and annex 2 to document MSC 93/3.

a corrigendum to resolution MSC.307(88) on the adoption of the International Code for Application of Fire Test Procedures, 2010 (2010 FTP Code), based on option 1 in paragraph 4 of document SSE 2/19/9.

Text of chapter 8 of the draft OSV Chemical Code

19.41 The Sub-Committee recalled that PPR 1 agreed to refer the draft text of chapter 8 of the OSV Chemical Code, as reproduced in the annex to document SSE 2/19 (Secretariat), to SSE 2 for consideration with a view to providing general advice and input.

19.42 In considering the annex to document SSE 2/19, the Sub-Committee noted the following views expressed on this matter:

.1 there was a potential conflict between the application date in SOLAS chapter II-2 and the application date in the OSV Chemical Code, i.e. the application date of the proposed Code had not yet been discussed at any length; and

.2 clean text of the draft OSV Chemical Code was not available for review.

Instruction to the Working Group on Fire Protection

19.43 Having considered the above views, the Sub-Committee instructed the Working Group on Fire Protection, taking into account the comments and decisions made in plenary, to consider the text of chapter 8 of the draft OSV Code as a matter of urgency, with a view to providing input to PPR 3.

Report of the Working Group on Fire Protection

19.44 Having considered the part of the report of the Working Group on Fire Protection (SSE 2/WP.4) dealing with this matter, the Sub-Committee took action as outlined in paragraphs 19.45 to 19.49.

19.45 The Sub-Committee noted that:

.1 the group reviewed and endorsed the provisions of the draft chapter and added or amended the text in square brackets (paragraphs 8.1.1.4, 8.1.1.9, 8.1.4, 8.3, 8.3.1, 8.3.2, 8.3.4 and 8.3.7);

.2 having considered and supported a proposal for protected areas within radius of certain fire hazards, the group did not propose any changes to the definition of "deck area", or clarification of the application of the SOLAS tanker regulations which appears in the text followed by the words "as defined in [paragraph 1.3.6]", as this was outside the scope of this work and still under consideration by the correspondence group established by PPR 2;

.3 the group noted that the cargo area was a critical parameter in the design of any deck foam system that might be required and that the size of the cargo area determined both the required flow to be delivered to the foam system and the placement of the foam monitors and nozzles;

.4 the group pointed out that defining the cargo area of an OSV was particularly difficult as these areas were highly variable with respect to flammable cargoes, type and location of cargo tanks, the presence of cofferdams and coamings, the extent to which flammable liquids could flow across the deck, and the degree to which deck areas surrounding flammable product valves, manifolds, vents and the like should be protected needed to be considered;

.5 the group also noted that the current OSV guidelines (resolution A.673(16)) did not provide foam system protection for products with a flashpoint exceeding 60°C, but chapter 8 of the draft OSV Chemical Code did; and

.6 the group deleted the bracketed language prohibiting protein foam, however, noted that the selection of foam concentrates compatible with the flammable cargo carried was already regulated by the IBC Code.

19.46 In connection to the above, the Sub-Committee agreed to the text of the draft chapter 8 of the OSV Chemical Code, as set out in annex 13 to document SSE 2/WP.4, for referral to PPR 3.

Chapter 5 of the draft OSV Chemical Code

19.47 The Sub-Committee recalled that SDC 2, having noted that chapter 5 of the draft OSV Chemical Code, as reproduced in the annex 2 to document SDC 2/24 (Secretariat), is on cargo transfer, agreed to refer this chapter to SSE 2 and CCC 2 for consideration and advise PPR 3 accordingly.

19.48 In considering annex 2 to document SDC 2/24, the Sub-Committee, having generally agreed to the text of chapter 5 of the draft OSV Code, noted that:

.1 the colour codes set out in paragraph 5.7.4 might differ from the codes used in national standards; and

.2 there was no unanimous support to the text proposed in paragraph 5.5.2.

19.49 Following discussion, the Sub-Committee agreed to delete paragraph 5.7.4 of chapter 5 of the draft OSV Code, with a view to avoiding possible conflict with the existing standards, and retain the text in the remaining paragraphs (including paragraphs in square brackets), as set out in annex 2 to document SDC 2/24, and invited the PPR Sub-Committee to note the above decision. The Sub-Committee also invited interested Member Governments and international organizations to submit comments and proposals on the text in paragraph 5.5.2 to PPR 3.

Transport of electric vehicles and vehicles with refrigeration units on board of ro-ro vessels

19.50 The Sub-Committee noted the document SSE 2/INF.3 (Germany), reporting the results of a study of transport processes of electric vehicles and vehicles with refrigeration units on ro-ro and ro-pax ships.

Test laboratories recognized by Administrations and availability of Halons

19.51 The Sub-Committee recalled that SSE 1 decided to request the Secretariat to issue all future circulars on test laboratories and Halon banking as SSE circulars, and to update them only as and when necessary in lieu of issuing them annually (i.e. as revisions to the base circulars).

19.52 In this regard, the Sub-Committee noted the following information provided by the Secretariat on the status of the aforementioned SSE circulars:

.1 the SSE circular on Test laboratories recognized by Administrations (SSE.1/Circ.1) was published on 11 June 2014 and the revised list of recognized laboratories (SSE.1/Circ.1/Rev.1) was published on 27 October 2014; and

.2 the SSE circular on Halon banking and reception facilities (SSE.1/Circ.2) was published on 27 October 2014.

Expressions of appreciation

19.53 The Sub-Committee expressed appreciation to the following delegates and members of the Secretariat, who had recently relinquished their duties, retired or been transferred to other duties, or were about to do so, for their invaluable contribution to its work and wished them a long and happy retirement or, as the case might be, every success in their new duties:

- Captain Marcelo Pamplona (Brazil) (on retirement)
- Dr. Leigh Mazany (Canada) (on transfer)
- Meindert Vink (Netherlands) (on retirement)
- Kurt Heinz (United States) (on retirement)
- Randy Eberly (United States) (on retirement)
- Gary Andrew Prosser (IALA) (on relocation)
- Captain Moin Ahmed (IMO) (on transfer)
- Wilma Pereira (IMO) (on retirement)
- Ian Giddings (IMCA) (on retirement)

20 ACTION REQUESTED OF THE COMMITTEE

20.1 The Maritime Safety Committee, at its ninety-fifth session, is invited to:

.1 approve the draft MSC circular on *Performance standard, functional requirements and system requirements for the assessment of smoke management systems* (paragraph 3.11 and annex 1);

.2 consider the proposed modification to the draft amendments to SOLAS regulation II-2/20.3, to be adopted at this session, and take action as appropriate (paragraph 4.6 and annex 2);

.3 approve the draft MSC circular on *Revised design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* (paragraph 4.11 and annex 3);

.4 note that, due to time constraints, the report on the incident of the **Swanland** will be further considered at SSE 3 under agenda item "Any other business" (paragraph 6.9.2);

.5 consider the options regarding the future work plan on the GBS framework for life-saving appliances, with a view to deciding on the scope and direction of the outputs concerned (paragraph 6.15 and annex 4);

.6 consider the views and decisions related to the work on measures for onboard lifting appliances and winches with a view to deciding on whether mandatory SOLAS requirements need to be prepared in addition to the development of guidelines for safety onboard lifting appliances and winches (paragraphs 8.7, 8.9 and 8.10);

.7 consider the views on matters related to the scope and application of potential guidelines and re-establishment of the related correspondence group and take action as appropriate (paragraphs 8.13 to 8.16);

.8 note that matters related to the review of flashpoint requirements for oil fuel in SOLAS chapter II-2 were considered to be under the IGF Code and interested Member Governments and international organization were invited to submit their comments and proposals directly to the IGF Correspondence Group established by the CCC Sub-Committee or to CCC 2 (paragraph 14.5);

.9 approve the draft MSC circular on *Amendments to the revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) (paragraph 15.10 and annex 10);

.10 approve the draft amendments to chapter 8 of the FSS Code with a view to subsequent adoption, taking into account the check/monitoring sheet and records for regulatory development prepared by the Secretariat (paragraphs 15.11, 15.12 and annex 11);

.11 approve the proposed biennial status report of the Sub-Committee for the 2014-2015 biennium and the proposed biennial agenda for the 2016-2017 biennium (paragraph 17.4 and annexes 12 and 13);

.12 approve the proposed provisional agenda for SSE 3 (paragraph 17.5 and annex 14);

.13 agree on the urgent matters emanating from SSE 3 to be reported to MSC 96 (paragraph 17.9);

.14 note the information and conclusion on the scope of application and drafting of amendments to the LSA Code (paragraphs 19.6 to 19.8);

.15 note that MSC.1/Circ.1206/Rev.1 may be superseded by a new mandatory MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear* and, therefore, references to this circular in SOLAS chapter III may need to be updated accordingly in future (paragraph 19.17);

.16 note the progress made by the Sub-Committee on further developing draft amendments to SOLAS regulations III/3 and III/20 and the draft Requirements (paragraph 19.22.1 and annexes 15 and 16);

.17 consider the views on periodic servicing and decide on who can be allowed to carry out annual examinations and five-year operational tests (paragraph 19.22.2);

.18 confirm whether the Sub-Committee is authorized to propose any further amendments to SOLAS chapter III while finalizing the draft MSC resolution on *Requirements for periodic servicing and maintenance of lifeboats and rescue boats, launching appliances and release gear* (paragraph 19.22.3);

.19 endorse the view that the work on periodic servicing can be continued at SSE 3 under agenda item on "Any other business", based on the decisions to be made at MSC 95 (paragraph 19.22.4);

.20 note that no action has been taken on preparing amendments to the 1994 and 2000 HSC Codes (MSC 94/21, paragraph 8.17) due to the withdrawal of the base proposal (SSE 2/19/5) (paragraph 19.25);

.21 approve the draft new chapter 17 of the FSS Code with a view to subsequent adoption, taking into account the check/monitoring sheet and records for regulatory development prepared by the Sub-Committee (paragraph 19.33 and annex 11);

.22 consider the consequential modification to the draft *Amendments to SOLAS regulation II-2/18 approved at MSC 92*, with a view to adoption in conjunction with the adoption of the new chapter 17 of the FSS Code, and take action as appropriate (paragraph 19.35 and annex 2);

.23 approve, in general, the draft MSC resolution on *Amendments to chapter 9 of the 2009 MODU Code* with a view to subsequent adoption, in conjunction with the adoption of the new chapter 17 of the FSS Code (paragraph 19.36.1 and annex 18); and

.24 note that the text of chapters 5 and 8 of the draft OSV Chemical Code has been reviewed and forwarded to PPR 3 for coordination process (paragraphs 19.46 and 19.49).

20.2 The Maritime Safety Committee, at its ninety-sixth session, is invited to:

.1 approve the draft *Amendments to SOLAS regulations II-2/1 and II-2/10* with a view to subsequent adoption, taking into account the check/monitoring sheet and records for regulatory development prepared by the Secretariat (paragraphs 10.3, 10.4 and annex 5);

.2 approve the draft MSC circular on Unified interpretations of SOLAS chapter II-2 (paragraphs 11.4, 11.6 and 11.8 and annex 6);

.3 approve the draft MSC circular on Unified interpretations of chapters 5, 6 and 9 of the FSS Code (paragraphs 11.13, 11.29 and 11.34 and annex 7);

.4 approve the draft MSC circular on Unified interpretations of paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89) (paragraph 11.24 and annex 8);

.5 approve the draft MSC circular on Unified interpretations of SOLAS regulations III/6.4 and III/6.5 and section 7.2 of the LSA Code (paragraph 11.26 and annex 9);

.6 approve the draft MSC circular on *Early implementation of the new chapter 17 of the FSS Code*, in conjunction with the adoption of the draft new chapter 17 of the FSS Code (paragraph 19.34 and annex 17); and

.7 approve the draft MSC circular on *Amendments to the recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895), in conjunction with the adoption of the new chapter 17 of the FSS Code and amendments to chapter 9 of the 2009 MODU Code (paragraph 19.36.2 and annex 19);

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ANNEX 1

DRAFT MSC CIRCULAR

PERFORMANCE STANDARD, FUNCTIONAL REQUIREMENTS AND SYSTEM REQUIREMENTS FOR THE ASSESSMENT OF SMOKE MANAGEMENT SYSTEMS

1 The Maritime Safety Committee, at its [ninety-fifth session (3 to 12 June 2015)], recognizing the need to provide guidance on smoke management systems installed on new passenger ships and having considered a proposal by the Sub-Committee on Ship Systems and Equipment, at its second session (23 to 27 March 2015), approved the Performance standard, functional requirements and system requirements for the assessment of smoke management systems, as set out in the annex.

2 Member Governments are invited to bring the annexed Performance standard, functional requirements and system requirements for the assessment of smoke management systems to the attention of ship designers, shipyards, passenger ship owners and other parties concerned.

ANNEX

PERFORMANCE STANDARD, FUNCTIONAL REQUIREMENTS AND SYSTEM REQUIREMENTS FOR THE ASSESSMENT OF SMOKE MANAGEMENT SYSTEMS

1 Purpose

The purpose of this annex is to provide performance standard and functional as well as system requirements applicable to smoke management systems if installed on new passenger ships.

2 Definition

For the purposes of this Performance standard, the following definitions apply:

2.1 *Smoke management system* is an engineered system including all methods that can be used singly or in combination to handle smoke movement ensuring a safe evacuation of persons in case of fire by preventing the contamination of smoke into escape routes. The life-safety performance criteria for safe evacuation should be acceptable to the Administration.

2.2 *Smoke extraction system,* which may form part of a smoke management system, is intended to extract smoke from escape routes by means such as exhaust fans.

3 Functional requirements

3.1 The systems should be designed as to maintain sufficiently smoke free escape routes in case of fire.

3.2 The systems may be either independent systems or part of or combined with the general air conditioning and ventilation systems.

3.3 The systems should be provided with an alternative source of power in order to remain operational when the initial source of power is lost.

3.4 After fire or smoke has been detected, activation of the systems should be in a controlled manner, either automatic or manual from the continuously manned central control station and/or the safety centre.

3.5 The system should remain operational or available for the duration required.

4 Principal system requirements

4.1 The system should be arranged for manual operation. Automatic operation with manual override may be accepted by the Administration.

4.2 The system should be arranged in sections such that the smoke will be retained in the space of origin by using smoke barriers made of non-combustible material and/or pressure differentials, whereby any section should not serve more than one main vertical zone.

4.3 The system covering large volume spaces like atrium or other multi-deck spaces should be designed based on respective fire scenarios.

4.4 The system should be capable to maintain the stairway enclosure with a positive pressure compared to the adjacent areas in order to prevent the ingress of smoke. This may be achieved by supplying more air then extracting from the stairway or respective active pressurization system.

4.5 The minimum pressure differential for each section should prevent smoke spread across the smoke control boundary, as applicable, considering the most demanding ventilation arrangement. The pressure difference should not cause any constraint of opening doors in escape routes.

4.6 The system should be designed to be fully operational within 2 minutes after activation, regardless of manual or automatic.

4.7 The system should be provided with at least two independent power sources.

4.8 All ducts used for smoke extraction should be made of steel or equivalent and insulated depending on the type of spaces passing through.

4.9 System components of smoke management systems in contact with smoke should be made of materials able to withstand temperatures expected during operation.

4.10 The system should be so arranged that extracted smoke will not affect external means of escape and the embarkation deck.

4.11 Consideration should be given to the requirement for the automatic fire dampers in SOLAS regulation II-2/9.7. Measures should be implemented to ensure that fire integrity of the ventilation duct is not impaired.

5 Commissioning and operation

5.1 The system should be tested during commissioning using theatrical hot smoke, or other means, that are sufficient to overcome any stratification effects, if applicable, as acceptable to the Administration.

5.2 A design, installation, operation and maintenance manual should be provided on board.

5.3 The smoke management system should be included in the ship's maintenance plan as required by SOLAS regulation II-2/14.2.2.

5.4 An operational strategy as when and how to use a smoke management system should be prepared and included in crew's training plan as well as the regular fire drills.

6 Performance standard

The systems should be tested, approved and maintained, as acceptable to the Administration.

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ANNEX 2

PROPOSED MODIFICATIONS TO THE DRAFT AMENDMENTS TO SOLAS CHAPTER II-2, TO BE ADOPTED BY MSC 95[*]

Part G
Special requirements

Regulation 18 – Helicopter facilities

1 A new paragraph 2.3 is added after the existing paragraph 2.2, as follows:

"2.3 Ships constructed on or after [*date of entry into force*] having a facility for helicopter landing operation on an occasional or emergency basis shall be provided, with a foam application system which complies with the relevant provisions of chapter 17 of the Fire Safety Systems Code.",

and the subsequent paragraphs are renumbered accordingly.

2 The renumbered paragraph 2.4 is amended as follows:

"2.4 Notwithstanding the requirements of paragraph 2.2 or 2.3 above, ro-ro passenger ships without helidecks shall comply with regulation III/28."

3 A new paragraph 5.1.6 is added after the existing paragraph 5.1.5 as follows:

".6 in lieu of the requirements of paragraphs 5.1.3 through 5.1.5, on ships constructed on or after [*date of entry into force*] a foam application system complying with the provisions of the Fire Safety Systems Code.",

and the remaining paragraphs renumbered accordingly.

Regulation 20 – Protection of vehicle, special category and ro-ro spaces

4 The following new paragraph 3.1.2.4 is added after the existing paragraph 3.1.2.3:

"3.1.2.4 For all ships, where an air quality control system is provided based on the guidelines developed by the Organization,[*] the ventilation system may be operated at a decreased number of air changes and/or a decreased amount of ventilation. This relaxation does not apply to spaces to which at least ten air changes per hour is required by paragraph 3.2.2 of this regulation and spaces subject to regulations 19.3.4.1 and 20-1."

[*] Refer to the [*Revised design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* (MSC/Circ.[…])]."

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[*] Refer to annex 2 to document MSC 93/3 and annex 11 to document MSC 94/21.

ANNEX 3

DRAFT MSC CIRCULAR

REVISED DESIGN GUIDELINES AND OPERATIONAL RECOMMENDATIONS FOR VENTILATION SYSTEMS IN RO-RO CARGO SPACES

1 The Maritime Safety Committee, at its sixty-sixth session (28 May to 6 June 1996), approved the *Design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces* (MSC/Circ.729).

2 The Sub-Committee on Ship Systems and Equipment, at its second session (23 to 27 March 2015), revised the aforementioned guidelines, taking into account advances in technology related to air quality management for ventilation of closed vehicle spaces, closed ro-ro and special category spaces.

3 The Maritime Safety Committee, at its [ninety-fifth session (3 to 12 June 2015), after having considered the above proposal by the Sub-Committee on Ship Systems and Equipment, at its second session, approved the *Revised design guidelines and operational recommendations for ventilation systems in ro-ro cargo spaces*, as set out in the annex.

4 Member Governments are invited to bring the *Revised design guidelines to the attention of ship designers, shipyards, shipowners and other parties concerned*. Member Governments are also invited to apply the revised design guidelines to all ships on a voluntary basis.

5 This circular supersedes MSC/Circ.729.

ANNEX

REVISED DESIGN GUIDELINES AND OPERATIONAL RECOMMENDATIONS FOR VENTILATION SYSTEMS IN RO-RO CARGO SPACES

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PART 1

DESIGN GUIDELINES FOR VENTILATION SYSTEMS IN RO-RO CARGO SPACES

INTRODUCTION

This document provides general guidelines for the design of suitable ventilation systems for vehicle decks on ro-ro ships, car carriers and car ferries.

Exhaust gas composition

Exhaust gases from motor vehicles contain hazardous substances. Carbon monoxide (CO) from petrol engines, and nitric oxide (NO) and nitrogen dioxide (NO_2) from diesel engines are the substances whose health hazards are discussed in this document. These hazardous substances can affect people in many different ways. Certain substances have a tangible, immediate effect. Others only show injurious effects after a person has been exposed to them for some time. The effect of a substance normally depends on how long a person has been exposed to them and the quantity inhaled.

Carbon monoxide (CO) is a colourless and odourless gas which, to a lesser or greater extent inhibits the ability of the blood to absorb and transport oxygen. Inhalation of the gas can cause headaches, dizziness and nausea and in extreme cases causes weakness, rapid breathing, unconsciousness and death.

Nitric oxide (NO) and nitrogen dioxide (NO_2) are compounds of nitrogen and oxygen, together commonly referred to as oxides of nitrogen or NO_x. NO, a colourless gas is the main oxide of nitrogen formed in the combustion process. NO itself is not of great concern as regards health effects; however, a proportion of the NO formed will combine with oxygen to form NO_2, which is of concern from the point of view of human health. NO_2 is a brown gas which has a stinging, suffocating odour. It exerts a detrimental effect on the human respiratory system. Asthmatics in particular are susceptible to exposure.

Measures

Measures should be considered as follows:

A reduction in exhaust gas emissions;

Provision of an adequate ventilation system;

Limitation of exposure to the gases; and

Prevention of accumulation of hazardous and flammable gasses

1 REQUIREMENTS

1.1 Definition of exposure limits and flammability limit

An exposure limit value means the highest acceptable average concentration (time-weighted mean value) of a substance or, in some cases, of a mixture of substances in the air breathed by the occupants. The concentrations are usually given in parts per million (ppm) or mg/m^3. An exposure limit value refers either to a long-term exposure level or a maximum limit value. Short-term exposure level is also used.

Long-term exposure level, means the exposure limit value for exposure during the entire working day (normally 8 hours).

Maximum exposure level means the highest concentration reached.

A short-term exposure level means the time-weighted mean exposure value over a short period of 10 or 15 minutes, dependent on the national occupational exposure standards.

Lower Explosion Limit (LEL) means concentration of flammable gas, vapour or mist in air below which an explosive gas atmosphere will not be formed. Also known as Lower flammability limit.

1.2 Pollutants of interest

The exhaust gases generated by internal combustion engines contain hundreds of chemical substances. The main part of them are nitrogen (N_2), carbon dioxide (CO_2), oxygen (O_2), carbon monoxide (CO), nitric oxide (NO), nitrogen dioxide (NO_2) aldehydes such as formaldehyde, polyaromatic hydrocarbons such as benzo(a)pyrene and organic and particulate bound lead.

Among the pollutants emitted in the exhaust gases of petrol and diesel engines, CO is generally of the most significant concern for petrol engines and NO_x for diesel engines. Lead, particulate matter (PM) and benzo(a)pyrene are also of a significant concern.

Knowledge of the effects of other pollutants to the health is at present insufficient. However, considerable research is being undertaken.

Monitoring of occupational hygiene should be planned and its results should be assessed by a qualified expert, with special training in this field. The studies should be carried out in cooperation with the monitoring staff, the management of the ship concerned and the relevant Administrations.

1.3 Rate of air change

Regulations II-2/19.3.4 and 20.3 of the 1974 SOLAS Convention, as amended, provides requirements for rate of air changes which are intended to limit maximum concentration of pollutants during loading and unloading and also to prevent a build-up of hazardous and flammable gases in the ro-ro cargo spaces when the ship is at sea with a cargo of motor vehicles. These regulations provide the minimum acceptable standards for ventilation.

2 VENTILATION

2.1 Ventilation on board ships

Ventilation systems for ro-ro cargo spaces on board ship generally operate according to the principle of dilution ventilation, whereby the supply air flow to the area is sufficient for the exhaust gases to mix thoroughly with the air and be removed.

There are two main types of dilution ventilation: exhaust air ventilation and supply air ventilation. Briefly, in exhaust air ventilation, fans remove air from a ro-ro cargo space, and this is then replaced by outdoor air entering through open ramps, doors and other openings. Exhaust air ventilation is employed when sub-atmospheric pressure is required in the ro-ro cargo space. The sub-atmospheric pressure prevents the pollution from spreading to adjacent areas.

Supply air ventilation works in the opposite way. Fans deliver outdoor air into the ro-ro cargo space and the air is then exhausted through ramps and other openings. Supply air ventilation usually creates slight pressurization of the ro-ro cargo space. If supply air ventilation is used exclusively, pollutants may mix with the supply air, be pushed up the internal ramps and contaminate other decks. However, if sufficient mixing with supply air does not occur, contaminants may remain on the deck in question. Particularly, hazardous conditions may occur on lower decks.

Ventilation systems on board ship often combine these two principles. The fans can then be reversible, so that they can either supply air into the ro-ro cargo space or exhaust air from it.

2.2 Air pollutant dispersion

Exhaust gas dispersion will depend upon air flow patterns within the vehicle deck. These will not be uniform but will be dependent upon the capacity, design and mode of operation of the ventilation system; volume and configuration of the cargo space; natural ventilation patterns and the number and location of vehicles on the vehicle deck.

Although the overall rate of air change on vehicle decks may be high, areas with low rates of air change may remain. High velocity air jets are sometimes installed in an attempt to "stir" the air so that the supply air will be evenly distributed throughout the vehicle space.

2.3 Conditions and guidelines for calculating air requirements

The function of a ventilation system in a ro-ro cargo space is to dilute and remove the vehicle exhaust gases and other hazardous gases, to protect persons working in the area from being exposed to a hazardous or disagreeable level of air pollution. The basic particulars necessary for calculating the supply air required are contained in ISO 9785:2002 or national versions of this standard. These may be used as reference in the planning of new installations or in the assessments of the capacity of existing installations.

The formula given in ISO 9785:2002 is similar to that used for calculating the supply air required for ro-ro cargo spaces in ships. However, the formula also takes into account the fact that the outdoor air supplied contains a certain amount of pollutant and also includes a dilution factor. The latter takes into account the degree of estimated or possible dilution of the pollutants in the air (see ISO 9785:2002, paragraph 5).

In addition to the supply air required to dilute and remove the exhaust gases and flammable gases, it is also important to ensure air circulation in the ro-ro cargo space.

2.4 Air flow distributions

Ventilation systems may be operated at decreased capacity when controlled by a detection system that monitors the flammable and harmful gases in the space. Air quality management is based on the measuring and controlling of CO, NO_2 and LEL values. Guidance on how to conduct air quality management is given in appendix 1.

It is not possible to draw up or recommend any universal solutions for the distribution of air flow in different types of ship. Duct runs and the location of supply air and exhaust air openings should be made to suit the design of the individual ship, the estimated vehicle handling and exhaust emissions in areas occupied by the crew and other workers.

The following generally applies:

- The air flow should reach all parts of the ro-ro cargo space. However, ventilation should be concentrated in those areas in which the emissions of exhaust gases are particularly high and which are occupied by the crew or other workers.

- Consideration should be given to the likelihood of unventilated zones being screened behind an object, and also to the fact that exhaust gases readily accumulate in low-lying spaces under the vehicles and in decks beneath the one being unloaded. Furthermore, depending on air flow patterns, it may be possible for contaminants to move into decks above the one actually being off-loaded.

- The air flow on vehicle deck should be suited to the height of the deck.

- The air flow will follow the path of least resistance, and most of the air will thus flow in open spaces, such as above the vehicles, etc.

- Polluted air from ro-ro cargo spaces should be prevented from being dispersed into adjacent spaces, for instance accommodation and engine-rooms.

- Whenever possible, places which are sheltered from the airflow should be indicated on the plan. The actual locations of such spaces on the deck should be painted in a conspicuous manner to indicate that personnel should not stand on that part of the deck, and signs should be hung on the bulkhead to provide a backup warning.

2.5 Determination of air flow requirements

To assess the number of vehicles which may be in operation at the same time in a cargo space without the occupants being exposed to a hazardous or discomforting level of pollution the guidance contained in ISO 9785:2002 for estimating the flow of outdoor air required to dilute and remove the gases exhausted by a vehicle should be followed.

Consideration should be given to the fact that the exhaust gases may not mix completely with the outdoor air supplied, that the exposure limit values should not be reached and that the outdoor air itself will contain a certain level of pollution.

This guidance applies to vehicles with a normal emission of exhaust gases, operating under normal conditions. It should be remembered that the measured or estimated air flow may deviate from the actual air flow and that the concentration of pollutants in the exhaust gases can vary widely.

The guidance specifies the supply air requirement per vehicle, to ensure that the level of pollution is kept below the exposure limit. Nevertheless, subjective (individual) symptoms of discomfort may be felt, particularly from diesel exhaust gases, with supply airflows at or above the recommended levels.

The air flow can be determined by means of direct measurement or by calculation based methodology (such as computational fluid dynamics and/or the use of established empiric formulae) to be accepted by the Administration.

3 TESTING THE VENTILATION SYSTEM

3.1 General

Testing the ventilation system when the ship is delivered is primarily aimed at confirming that the design supply air flow is obtained. The test results apply to empty vehicle deck and the weather prevailing at the time of testing.

The values recorded during testing are neither representative of nor equivalent to those that need to be applied during loading and unloading of the various types of vehicles under varying weather conditions.

To utilize the ventilation system in the ro-ro cargo spaces on a ship most effectively, knowledge should be acquired of its capacity from experience and through simple tests. It is important that guidelines, rules and routines be established for using the ventilation system in typical loading and unloading conditions. It is also important that experience gained will be documented and passed on, to provide guidance for the ship's crew.

The factors that need to be determined are the quantities of air supplied to and exhausted from the ro-ro cargo spaces and the circulation of air within the vehicle deck. Guidelines for suitable testing are contained in appendix 2.

By systematic use of visible smoke, it is possible to assess the air circulation in a ro-ro cargo space, and an anemometer can be used for determining the rate of flow of supply air. If the results are compared with detailed documentation of actual conditions, they can be used to provide a firm foundation for effective measures.

It is important that the conditions prevailing at the time of the test, which are likely to influence the results, are carefully documented since air flow patterns will vary according to loading conditions. The test results are obviously only applicable to the conditions existing at the time of the tests.

3.2 Determining the rate of air change

The rate of air change is governed by the flow of supply air admitted to the ro-ro cargo spaces through the supply air openings. The flow of air can be determined using a direct reading of anemometer or other instrument of equivalent reliability.

Since the velocity profile of the air entering the vehicle deck through supply air openings on ships is generally highly unstable and fluctuates widely, the air flow should be measured by someone experienced in such measurements. However, after some training, responsible members of the crew should also be able to make these measurements.

Even when the measurements are made by competent personnel, allowance should be made for deviations of at least 20% from the actual air flow, when readings are taken by means of anemometers.

A description of air flow measurement procedures is given in appendix 2. Note that a high air change rate does not guarantee low contaminant levels. Poor mixing within the deck could lead to high contaminant levels and potentially high exposures, even though the fans appear to be providing a large amount of air. Once the ventilation system has been fully characterized, spot checks of the system should be made during actual loading or off-loading operations to ensure that the system is operating as expected. Further guidance is provided in part 2 (Operational recommendations for minimizing air pollution in ro-ro cargo spaces).

3.3 Smoke and gas for tracing the air distribution

To improve the quality of the air at the workplace knowledge should be gained of how the pollution from the vehicles is diffused through the air in the ro-ro cargo space.

Visual tests using visible smoke do not provide any direct readings of the rate of air change or air distribution in a ro-ro cargo space, although they often provide sufficient indication of a satisfactory picture to be obtained of the air circulation, the existence of any stagnant or screened zones and the rate at which pollutants are removed by the ventilation system. Recommended methods using visible smoke or tracer gas are given in appendix 2.

The visible smoke method is simple and can readily be carried out by the officer responsible for ro-ro cargo space ventilation.

The use of tracer gas will give a more reliable picture of air changes and the air circulation in the ro-ro cargo space. However, the procedure for using tracer gas is more complicated. As the same measurement points are used, it is expedient to use tracer gas in combination with stationary monitoring of pollutant concentration in a ro-ro cargo space.

3.4 Testing of sensors used for air quality management system

On regular time intervals, such as monthly, for sample detectors and yearly for the complete system, sensors should be calibrated, maintained and tested according to the manufacturer's instructions, taking part 2 of these guidelines into account.

4 DOCUMENTATION

4.1 Operation manual

An operation manual should be supplied and should include a plan of the ventilation system, showing fans, supply air and exhaust air openings and doors, ramps, hatches, etc. The location of the control panel for the ro-ro cargo space ventilation system should also be marked.

The plan should show the various options for operation of the ventilation system. It should include details of the design air flow and of the estimated number of different types of vehicles in the different ro-ro cargo spaces under various loading and unloading conditions.

The plan should be periodically revised and/or supplemented on the basis of the experience gained from the normal vehicle loading and unloading conditions. A number of blank drawings should therefore be kept on board.

On the basis of such experience, it should also be possible to draw up guidelines for the maximum number of vehicles that should be allowed to operate simultaneously.

Whenever possible, places which are sheltered from the air flow should be indicated on the plans.

The operation manual should include guidance for the service and maintenance of the systems.

4.2 Control panels

The control panel on the ship should be installed in a convenient location.

A plan of the ship's ro-ro cargo spaces, showing the location of fans and openings, should be kept at the control panel. Each fan should be given an individual designation.

Indications as to which fans should be used for a given ro-ro cargo space under various loading conditions should also be on display at the control panel.

For safety reasons and to facilitate control of the ventilation system, the control panel should include means of indicating which fans are running.

The individual control and indicator lights should be marked with the same designation as the fans to which they relate.

As far as possible, indicator lights and controls for fans that normally operate simultaneously should be located in groups. This will help to make the function of the controls readily apparent and will therefore facilitate correct use of the controls.

Automatic control of the air quality management system should be indicated at the control panel.

Reference is made to the *Code on Alerts and Indicators, 2009* (A.1021(26)).

PART 2

OPERATIONAL RECOMMENDATIONS FOR MINIMIZING AIR POLLUTION IN RO-RO CARGO SPACES

INTRODUCTION

The operational recommendations contained in this document are primarily directed at those involved with cargo handling in cargo spaces on ro-ro ships or working in similar environments. The main purpose of the recommendations is to suggest ways in which exposure to exhaust gas emissions can be restricted, but the hazards associated with pollution from exhaust gases are also dealt with. A copy of the recommendations should be kept on board the ship.

1 TRAINING AND INFORMATION

Personnel should be properly trained, possess the necessary skills and follow established procedures.

In order to improve/monitor air quality on vehicle decks a process should be established to record and investigate complaints where persistently poor air quality is perceived by shore gang and crew.

Drivers should be given appropriate instructions for embarkation/disembarkation. These should be aimed at minimizing the air pollution generation.

Training and information should be reviewed following a significant change in the operation of the vessel.

2 INSPECTION, MAINTENANCE AND REPAIRS

Inspection, maintenance and repairs should be carried out in a professional manner. Owners should ensure that this is done and that the necessary skills, equipment and spares are available.

Annual testing of the vehicle space ventilation system should be conducted by the ship's safety delegate. Third party testing of the vehicle space ventilation system should be undertaken before entry into service of a new ship and at periodical intervals of 5 years thereafter.

3 TESTING THE VENTILATION SYSTEM

3.1 Effective use of the ventilation system

When optimizing the ventilation of a ro-ro cargo space, all appropriate options should be considered. Such options include; different fan speeds, fan configurations and the use of natural ventilation through hull openings. Consideration should also be given to the relative safety and environmental conditions.

3.2 Testing of the air quality

When a new ship is put in operation, the air quality should be tested by a competent qualified person with specialist training in occupational exposure. The tests should be carried out in consultation with the ship's safety delegate and any other relevant authorities.

Shipowners and operators should consider testing the air quality in conjunction with tests of the ventilation system to ensure proper maintenance and functioning of the ventilation system. Situations which indicate the necessity to conduct air quality monitoring include worker complaints (e.g. headache, dizziness, stinging of the eyes or respiratory system), indications that the ventilation system itself has deteriorated, and changes in vessel operation which are substantially different from that for which the original ventilation system was verified.

All tests results verifying the adequacy of the ventilation system should be documented and kept with the ship's records. Appendix 3 provides recommendations for conducting air quality monitoring in ro-ro cargo spaces.

4 SHIPS IN OPERATION

4.1 Loading and unloading

Even if the cargo handling on a ship is well planned and the ventilation system is well suited to the planned traffic density, this may still not be enough to ensure that acceptable air quality is maintained under all vehicle handling conditions.

It is extremely important that the ventilation system is operated in the most effective manner under the prevailing operational and weather conditions.

The personnel responsible for loading and unloading of vehicles should consult with the officer responsible for vehicle deck ventilation to familiarize himself with the ventilation system on board (the supply and exhaust air openings and the design air flow) and decide whether the ventilation is adequate in the light of the traffic density, vehicle type and other considerations on a given occasion.

It is important that the supply air has free passage to the ro-ro cargo spaces and ventilation openings should not be unnecessarily obstructed.

If auxiliary air-jet systems have been installed, vehicles should be stowed in such a way that the air jets are allowed to operate at maximum effectiveness for as long as possible.

4.2 Limitation of exhaust emission production

The most effective way of reducing exhaust emissions is to ensure that vehicles spend as little time as possible on board with their engines running. This applies not only to cargo-handling vehicle (trucks, tractors, etc.) but also to vehicles being carried as cargo (cars, coaches, long-distance trucks, etc.). The speed at which the vehicles are driven on board should also be appropriate to the prevailing conditions.

Exhaust emissions are greatly influenced by driving techniques and the temperature at which an engine is running. Smooth and steady driving of a vehicle with a warm engine will generate the lowest exhaust gas emissions. Sudden and heavy acceleration will cause a substantial and often unnecessary rise in the pollution level. This is particularly true when an engine is cold. Since slow speeds and slow acceleration produce significantly lower levels of air pollutants than high speeds and quick accelerations, vehicles should be accelerated very slowly and kept at low speeds.

The essential points to note include the following:

- condition of the engines;
- driving techniques;

- organization of the work (as few engines as possible running at the same time);
- ensuring that drivers do not start their engines sooner than necessary; and
- ensuring that the traffic flows steadily (thereby eliminating heavy acceleration and high speeds). Exhaust emission control equipment for both diesel and petrol engines may influence air quality during embarkation. However, this is likely to have little effect during disembarkation due to cold starting of engines.

4.3 Limitation of exposure

The car decks on ferries are usually equipped with exhaust air ventilation. The supply air is generally admitted through the ramp and the air is removed by exhaust air fans at the other end of the car deck.

A person carrying out heavy manual work uses up twice as much air as a person doing light work. As a result, he will inhale a correspondingly higher proportion of pollutants. Consequently, the work should be organized so that heavy physical work is avoided in areas where the pollution level is high. Nobody should be unnecessarily exposed to hazardous concentrations of exhaust gases.

4.4 Recommendations for specific ship types

4.4.1 Car ferries

During disembarkation at peak times, the highest average concentration of pollution (exhaust gases) in the vehicle deck will occur furthest away from the ramp, in the proximity of the exhaust air fans. Work on the car deck should therefore be organized to eliminate the need for personnel occupying the area of the car deck in which the pollution concentration is highest.

The embarkation and disembarkation should be organized so that no direct queues form inside the ship or in the ramp opening. The embarkation rate should be suited to the capacity of the fans and the flow of outdoor air supplied.

Embarkation should be organized so that ventilation openings, or air jets in an auxiliary system, are not unnecessarily obstructed.

Drivers should be given printed instructions for embarkation/disembarkation. A suitable leaflet could be given to drivers when the tickets are issued or notices posted for examples: Exhaust fumes constitute a health hazard. Do not start your engine before the signal is given and obey instructions.

On enclosed vehicle decks, instructions to start engines should not be given until doors leading to the ramps are open.

4.4.2 Ro-ro ships carrying heavy vehicles

Most of the cargo on ro-ro ships is handled by vehicles. Large trucks and tractors are used for cargo loading and unloading. Trucks of various sizes are used to stow the cargo in the ro-ro cargo spaces. On enclosed vehicle decks, instructions to start engines should not be given until doors leading to the ramps are open.

It is important to eliminate unnecessary exhaust emissions during cargo handling. The vehicles should be kept moving and queues should not be allowed to form. Avoid having vehicles standing with their engines idling. This applies particularly to any waiting during loading and unloading on board and to vehicles on lifts. At these times the ro-ro cargo spaces should be well ventilated.

It is also important to ensure that supply air and exhaust air openings are kept clear and are not obstructed unnecessarily. Failure to observe this can result in the ventilation system not performing effectively.

Attention should be drawn to the fact that exhaust gases can accumulate in poorly ventilated areas and in low-lying areas. A cold engine discharges twice as much pollution as a warm engine.

4.4.3 Car carriers

Owing to the general uniformity of cargo on car carriers, effective organization of embarkation/disembarkation should be possible, thereby avoiding the formation of queues and the resulting unnecessary exhaust emissions.

Drivers should be given printed instructions for driving techniques and should be informed of the importance of not running the engines more than necessary. A vehicle driven slowly and with slower acceleration will emit much less pollutant than a vehicle driven faster and with higher acceleration. Furthermore, a cold engine will often emit twice as much pollutant as a warm engine.

It is therefore recommended that engines be warmed up before the vehicles are driven on board. Vehicles with engines running should not be permitted in the vicinity of the "lashing gang".

5 PERSONAL SAFETY EQUIPMENT

The use of personal safety equipment should always be seen as a last resort, only to be adopted when all else has failed. With regard to exhaust gases, the practical possibilities are limited, since all of the pollutants contained in the emissions are difficult to filter out, which generally rules out the use of masks and the like. Consequently, if the problem is to be solved using personal safety equipment, breathing apparatus should be used. Such apparatus is inconvenient in practice because the oxygen should come either from cylinders carried or worn on the back of the user or through a hose.

APPENDIX 1

VENTILATION OF RO-RO CARGO SPACES – AIR QUALITY CONTROL AND MANAGEMENT SYSTEM

1 General

This appendix gives directions for measuring the quality of air and to regulate the air flow accordingly. This system is called air quality control.

Air quality control may be used as an instrument to regulate the air flow in closed vehicle spaces, closed ro-ro and special category spaces.

Air quality control is based on measurement of CO, NO_2 and LEL values. Based on the measured values the amount of air can be regulated by changing the number of revolutions of the supply and/or discharge ventilators.

2 Requirements

2.1 Monitoring frequency and the resulting response of the ventilation system on air quality in the ro-ro spaces should be sufficient to keep the concentration of flammable and harmful gases below limits.

2.2 Maintenance provisions should be provided by the manufacturer and indicate at least frequency of testing and adjustment of the sensors.

2.3 The system should be capable of automatic operation, with a manual override.

2.4 The power supply, sensors and control equipment should be monitored. An alarm should be generated upon failure, including the manual override.

2.5 Upon any failure in the system including power failure of the control system, the ventilators should switch to the capacity as required in SOLAS regulation II-2/20.3.1.1.

2.6 Maximum section size for sensor equipment should be one hold.

2.7 Periodic onboard test and calibration of sensors should be according to the manufacturer's instructions.

2.8 Alarms as provided in paragraph 2.4 should be sufficient and indicated in the space where the controls for the power ventilation serving the vehicle decks are located on the navigation bridge.[1]

2.9 Gas detection equipment including wiring should be fit for ro-ro cargo hold conditions and meet the relevant standards.

2.10 When CO, or NO_2, or concentration of flammable gasses (LEL) exceeds the threshold concentration, an audible and visual alarm should be given at a continuously manned location.

2.11 The control system should be continuously powered and should have an automatic changeover to a standby power supply in case of loss of normal power supply.

[1] Refer to the *Code on Alerts and Indicators, 2009* (resolution A.1021(26)).

3 Air quality control systems

3.1 Air quality control is a system to ensure flammable and hazardous gas concentrations are kept below prescribed levels.

3.2 In ro-ro cargo spaces the following gases should be monitored and managed in order to limit the concentration of harmful exhaust gases when vehicles are being loaded and unloaded, and prevent the build-up of flammable gases while the ship is at sea:

.1 for gasoline powered vehicles, carbon monoxide (CO);

.2 for diesel engines nitrogen oxide (NO_2); and

.3 the Lower Explosion Limit (LEL).

3.3 Factors to be taken into consideration when determining what type of system should be specified:

.1 Size of space to be monitored: In areas comprised of dividers, sections, corners and other barriers to free movement of air should be condensed to one sensor per 900 m^2. Lesser number of sensors may be accepted based on calculations or measurements of the response time on air quality in the holds.

.2 Sensor Placement: When installing sensors in a space, care should be taken to keep them away from areas which may have an effect on readings. These include overhead doors (entrances and exits) as well as areas close to the outside air intake or exhaust fans.

4 Minimum quantity of air based on measurements of CO, NO_2 and LEL

4.1 Ventilators should be controlled by the air quality control system in order to provide the appropriate number of air changes to restore the normal values of CO, NO_2 and LEL as soon as those levels are exceeded during 5 minutes. The ventilation regime should be continuously regulated in relation to the increase of gas concentration and to restore normal levels of CO or NO_2 as soon as possible.

4.2 Alarm should be given when the level exceeds 40 mg/m^3 CO or 4 mg/m^3 NO_2 long-term exposure according to the standard ISO 9785:2002 or when a relative concentration of the atmosphere to the LEL is higher than 10%. Other, more stringent exposure limits may be used when determined by the Administration, taking national/local occupational regulations into account.

4.3 The minimum amount of ventilation should give sufficient flow for the measurement devices to operate.

5 Detection of CO, NO_2 and LEL

The installation and location of the detectors is dependent on the air flow in the holds. To assess the location and number of detectors, the flow of air in the hold should be taken into consideration. In any case, the detectors should be installed to provide the performance required in paragraph 3 and as indicated below:

.1 suitable height above deck according to the instruction of the manufacturer;

.2 such that each detector covers max 900 m^2. Lesser number of sensors may be accepted but with sufficient response time to keep the concentration of harmful gases below exposure and flammable limits; and

.3 in accordance with paragraph 3 of part 2 of this guideline and with the manufacturer's instructions concerning sensor placement.

6 Approval Test

A test on board to verify the performance of the air quality control systems according to these guidelines should be performed. Real scale tests may be replaced by model tests to the satisfaction of the Administration.

APPENDIX 2

VENTILATION OF RO-RO CARGO SPACES – AIR FLOW TESTING PROCEDURES

1 Scope and field of application

This appendix gives directions for measuring nominal air change and air distribution in connection with testing of ventilation plants in ro-ro ship's cargo spaces where running of vehicles with internal combustion engines occurs.

The nominal air change is measured by calculation of the air flow in supply air and exhaust air terminal devices. The air distribution is normally estimated visually with visible smoke, or by measuring with tracer gas.

2 Nominal air change

In order to verify that the calculated quantity of air is supplied to the ro-ro cargo spaces, the air flow rate should be measured in each supply air and, where appropriate, exhaust air terminal device.

2.1 Instruments for Measurement of Air Flow

Although alternative techniques, such as the pilot traverse method are available, anemometers are generally employed for low velocity air flow measurements. There are two general types of anemometers:

.1 The direct-reading anemometer of the electronic type which registers the air velocity almost instantaneously. This has a distinct non-uniform airflow as any instability or random changes of velocity are immediately seen and the true mean of the velocity at a point can be judged. It is also very quick to use.

.2 The mechanical type of direct reading anemometer with a rotating vane. The movement is a rotary deflection against the action of a spring.

These types of anemometer are small and compact, easy to read and use, give reasonably steady readings and any fault or inconsistency developing is usually quite apparent. Where a correction chart is supplied with an anemometer the correction factors should be applied to the measured velocities before comparing them. With a good quality instrument in proper repair used by an experienced operator, the probable error on the comparative value obtained will range from a maximum of ± 2% when comparing similar velocities to a maximum of ± 5% when comparing widely differing velocities.

2.2 Air Flow Measurement Procedure[2]

For supply or extract grilles the anemometer is used as follows:

The gross grille area is divided into 150-300 mm squares, depending upon the size of grille and variation in the velocity pattern.

[2] Abstracted from the Chartered Institute of Building Services, Commissioning Codes, Series A, Air Distribution, CIBS, London, 1971.

The anemometer is held at the centre of each square with the back of the instrument touching the louvres which should be set without deflection. The instrument will give an immediate reading of the indicated velocity at each square and this reading should be recorded. When the indicated velocities at the centre of all squares have been recorded, the average value of these velocities should be calculated; this average value should be taken as the "indicated velocity" for the whole grille.

This method will normally provide repeatable results. In practice the only inconsistency which is necessary to consider appears where the grille damper is well closed down, causing the air to strike the anemometer vanes in separate jets rather than with uniform velocity. In this case a hood may have to be used with the anemometer.

2.3 Calculations

The air flow rate at each supply-extract grille is calculated as follows:

Air flow rate (m^3/s) = "indicated velocity" (m/s) x area of supply/extract grille (m^2)

The global rate of air change per hour achieved by the vehicle deck system(s) is subsequently calculated as follows:

$$\text{Air changes per hour} = \sum \frac{\text{Air flow rates at extract grilles } (\text{m}^3/\text{s}) \text{ x } 60 \text{ x } 60}{\text{Volume of vehicle deck } (\text{m}^3)}$$

2.4 Report

A report should be drawn up in accordance with paragraph 4 of this appendix.

3 Air distribution

3.1 Visual study with visible smoke

In order to assess air change rate the movement of air and the existence of poorly ventilated areas, visible smoke can be released into the space. With the ventilation system operating, the movement of air and the dissipation of smoke can be studied and the air change rate estimated.

3.2 Measurement with tracer gas

By use of tracer gas it is possible to estimate air change rate and air distribution in chosen points in the ro-ro cargo space.

Measurement with tracer gas involves mixing a gaseous component with the air. The atmosphere in the space is examined to determine how dilution of the tracer gas is tracked at chosen points in the ro-ro cargo space whilst the ventilation system is operational.

This method should be carried out with and without vehicles.

3.2.1 Test procedures

The placing of the measurement probes should be chosen with regard to the purpose of the measurement. The probes are not to be placed near to the supply air terminal devices or at places where a so-called ventilation shadow can be expected, such as behind pillars, webs, etc. As a rule the probes are placed at the head height and in the vicinity of persons working on the deck.

The tracer gas should be spread and mixed in the air as completely as possible. The mixing may be done by the ordinary ventilation plant or with help of external fans. In order to reach an adequate accuracy, the concentration of the tracer gas ought to reach at least 50 times the detection limit of the analytical instrumentation.

When the tracer gas concentration is adequate the ventilation plant as well as the measurement equipment should be started. Tracer gas concentration should be recorded until the detection level is reached.

3.2.2 Calculation

With a dilution ventilation system the logarithm of the concentration of tracer gas will be linear with regard to time (see figure 1 below).

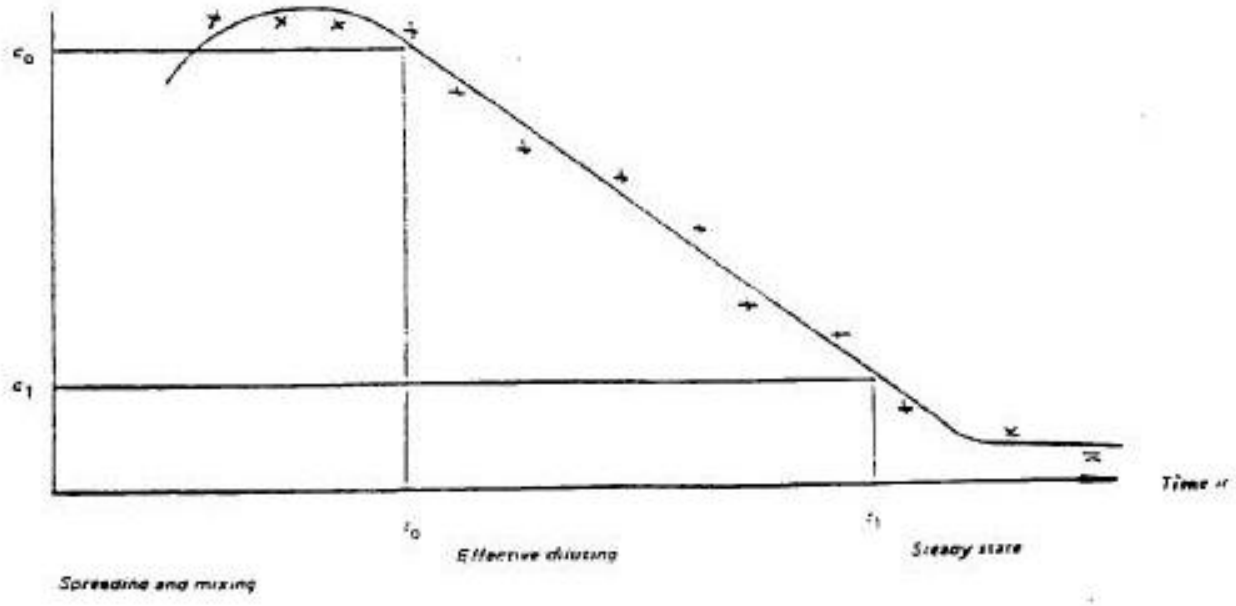

Figure 1 – The logarithm of the concentration of tracer gas

The relation between the concentration of tracer gas and time (the inclination of the graph) is a straight measure of the effect to the ventilation expressed in number of air changes according to the following formula:

$$N = \frac{ln\frac{c_0}{c_1}}{t_1 - t_0}$$

where

N = number of changes
c_0 = the concentration at the beginning of the effective dilution
c_1 = the concentration at the end of the effective dilution
t_0 = the point of time at the beginning of the effective dilution
t_1 = the point of time at the end of the effective dilution

3.3 Alternatives

As an alternative to the tests in paragraphs 3.1 and 3.2, air flow distribution in the ro-ro cargo space may be evaluated by use of an anemometer; or

The air flow can be determined by means of a calculation based methodology (such as Computational Fluid Dynamics and/or the use of established empiric formulae) to be accepted by the Administration.

4 Report

A written report should be provided containing the following information:

Ship's data	including, ship name, register, number, length, breadth, draught, GT, owner, shipyard, name of contractor carrying out the test.
Weather conditions	Wind speed and direction in general and in relation to the longitudinal of the ship during measurements.
Vehicle deck measurements	Deck length, breadth, height, and volume.
Ventilation	A plan of the deck indicating the location of supply and exhaust fans, together with information on grille surface area, design capacity and actual capacity of each unit. The use of additional air mixing equipment (e.g. dirivent) should also be noted. An indication of the status of all other openings to the deck during sampling should also be provided.
Activity	Details of loading and unloading should be included. These should comprise the time taken for each loading/unloading operation, the number of personnel working, the number and type of vehicles present.
Measurements	Time and date of the measurements Instrumentation Calibration Measurement procedure Sample locations Details of sample analysis
Results	Measurement results Calculation of occupational exposure

5 Conclusions/Recommendations

In addition to the statement of results the report should contain a plan of the ro-ro cargo space with supply air and exhaust air ducts shown. Where appropriate, the measurement points, type and number of vehicles, etc. should be indicated. Notes should be made regarding circumstances that affect the ventilation systems and/or air flow patterns on the deck.

When conducting a visual study with visible smoke, a detailed description of discharge and dissipation of the smoke as well as lapse of time should be given.

APPENDIX 3

RECOMMENDATIONS FOR THE EVALUATION OF AIR QUALITY IN RO-RO CARGO SPACES

1 General

Air quality testing should be planned and results evaluated by competent persons with specialist training in air quality evaluation and occupational exposure. Tests should be carried out in consultation with the ship's safety delegate and any other relevant authorities.

The duration of the tests will depend on the operating cycles and working practices on board the vessel. Monitoring should be carried out during several "normal" cycles, i.e. with representative vehicles, activities and ventilation practices.

Both short-term and long-term (over the working day) exposure to air pollutants should be investigated. Either static or personal samplers or ideally a combination of bath techniques should be used in order to provide the most accurate picture of contaminant concentrations and occupational exposure.

2 Air quality measurements

Air quality measurements should be representative of all exposed persons.

Pollutants

The concentrations of the following pollutants should be determined; nitric oxide (NO), nitrogen dioxide (NO_2), carbon monoxide (CO). In addition concentrations of benzene, toluene, xylene and suspended particulate matter (SPM) should also be determined whenever possible.

There are two general approaches to air quality sampling that can be adopted. Static site monitoring, typically involving continuous monitoring techniques and personal sampling which employs both passive and active methods. Static site monitoring usually includes the more accurate and sensitive techniques, but as the sampling site is fixed the measurements are not entirely representative of exposure. Personal samplers are worn by a representative sub-set of exposed individuals throughout the sampling period. Personal sampling techniques are not usually as sensitive or accurate. Ideally, personal sampling methods should be validated using more sophisticated techniques at regular intervals.

The following exemplary methods are recommended.

Static site monitoring

Pollutant:	Sampling and analysis method:
Nitrogen dioxide analysis	Chemiluminescence, reagent tube, grab sampling/laboratory
Nitric oxide	Chemiluminescence reagent tube, grab sampling/laboratory analysis

Carbon monoxide	Non-dispersive infra-red absorption, reagent tube, grab sampling/laboratory analysis
Benzene	Real time gas chromatography
Toluene	Real time gas chromatography
Xylene	Real time gas chromatography
Suspended particulates*	Dual beam radiation absorption, Tapered Element Oscillating Microbalance, gravimetric

* Suspended particulate matter can be sampled as total suspended particulate matter, PM10 respirable dust (≤ 5 µm).

Personal monitoring

Pollutant:	Sampling and analysis method:
Nitrogen dioxide	Passive (badge) sampler-ion chromatography
Nitric oxide	Electrochemical*
Carbon monoxide	Electrochemical*
Benzene	Passive badge sampler-gas chromatography/FID (Flame Ionization Detection)
Toluene	Passive badge sampler-gas chromatography/FID
Xylene	Passive badge sampler-gas chromatography/FID
Suspended particulates**	Personal sampler, gravimetric

* Electrochemical methods are susceptible to interference, therefore it is recommended that these methods are regularly validated by intercomparison with other techniques in the test environment.

** Suspended particulate matter can be sampled as total suspended particulate matter or respirable dust (≤ 5 µm).

Supplementary measurements of local air velocity, temperature and relative humidity should also be undertaken.

3 Calculation of occupational exposure to air pollutants

Long-term Reference Period

The occupational exposure over a 24-hour period is determined by treating the cumulative exposure over 24 hours as equivalent to a single uniform exposure. This is generally converted to an 8-hour time-weighted average (TWA) exposure and is represented mathematically by:

$$\frac{C_1T_1 + C_2T_2 + \cdots . + C_nT_n}{8}$$

where C_n is the occupational exposure and T_n is the associated exposure time in hours in any 24-hour period.

Short-Term Reference Period

The short-term reference period generally relates to a period of 10 or 15 minutes, dependent upon the national occupational exposure standards. Exposure is therefore recorded as the average over a 10 or 15 minute reference period. Where the exposure period is less than 10 or 15 minutes, the measurement result is averaged over 10 or 15 minutes. Where the exposure period exceeds the short term reference period, results are averaged for the 10 or 15 minutes period during which maximum exposure occurs.

4 Report

A written report should be provided containing the following information: completed, taking into account paragraph 4 of appendix 2.

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ANNEX 4

OPTIONS FOR FUTURE WORK PLAN ON THE GBS FRAMEWORK FOR LIFE-SAVING APPLIANCES

1 The following two options are proposed to the Maritime Safety Committee for further consideration:

Option 1

.1 Agree to complete the planned outputs on "New framework of requirements for life-saving appliances" and "Safety objectives and functional requirements of the *Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III*", bearing in mind that the Committee has developed the *Generic guidelines for developing IMO goal-based standards* (MSC.1/Circ.1394) and the *Guidelines for the approval of alternative design and equivalence as provided for in various IMO instruments* (MSC.1/Circ.1455).

.2 Agree that to continue the work on the development of functional requirements for SOLAS a proposal for a new output needs to be submitted to the Committee in accordance with the *Guidelines on the organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.4/Rev.3).

Option 2

.1 Agree that the work under the planned output on "New framework of requirements for life-saving appliances" comprises the following work items:

.1 review of existing requirements for life-saving appliances;

.2 development of a new framework for life-saving appliances;

.3 development of functional requirements; and

.4 restructuring of the regulations (if necessary).

.2 Agree that the work on the planned output on "Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III" can only be undertaken when a clear understanding of the functional requirements for the new framework is established.

.3 Note the decision that the development of functional requirements for SOLAS chapter II-1 would be premature before testing the philosophy of such an approach with SOLAS chapter III.

.3*bis* Agree that the proposals for developing functional requirements for SOLAS chapter II-1 should not be considered under the current planned output but should be addressed separately, after finishing the work on SOLAS chapter III.

.4 In view of the above, agree that the work on the planned output on "New framework of requirements for life-saving appliances" can be completed and the outcome of the work already undertaken, as presented in documents SSE 2/6 and SSE 2/6/1, should be used while reviewing the existing requirements for life-saving appliances and developing a comprehensive set of functional requirements for SOLAS chapter III, in accordance with the work plan set out below.

.5 Further agree that the output regarding the development of a new framework for SOLAS chapter III has already been achieved by virtue of the *Generic guidelines for developing IMO goal-based standards* (MSC.1/Circ.1394).

Future Work Plan

Timeline		Action	Outcome
2015	MSC 95	Consider to restructure the current Planned Outputs as a new "Goals and functional requirements for SOLAS chapter III", with clear specification of the structure and scope of functional requirements.	Work plan and method of work
2016	SSE 3	Develop draft functional requirements for life-saving appliances considering the mapping of regulations in table form as well as a function map.	Draft functional requirements for life-saving appliances and structure for functional requirements
2016	MSC 96	Review the draft functional requirements	Reviewed and commented functional requirements
2017	SSE 4	Finalize the functional requirements for life-saving appliances	Agreed functional requirements for life-saving appliances for adoption by MSC
2018	SSE 5	Restructure/relocate SOLAS chapter III and LSA Code as necessary	Restructured/relocated SOLAS chapter III and LSA Code as necessary
2018	MSC 100		New SOLAS chapter III
		Based on the experiences gained from life-saving appliances, consider to start a new progress on new "Goals and functional requirements for SOLAS chapters II-1 (parts C, D and E)"	Work plan for restructuring chapter II-1 (parts C, D and E)

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ANNEX 5

DRAFT AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA (SOLAS), 1974, AS AMENDED

CHAPTER II-2
CONSTRUCTION – FIRE PROTECTION, FIRE DETECTION AND FIRE EXTINCTION

PART A
GENERAL

Regulation 1 – Application

1 The following new paragraph is added after existing paragraph 2.8:

"2.9 Regulation 10.5.1.2.2, as amended by resolution MSC.[…]([…]), applies to ships constructed before [*date of entry into force*], including those constructed before 1 July 2012."

PART C
SUPPRESSION OF FIRE

Regulation 10 – Firefighting

2 In paragraph 5.1.2.2, the last sentence is amended to read as follows:

"In the case of domestic boilers of less than 175 kW, or boilers protected by fixed water-based local application fire-extinguishing systems as required by paragraph 5.6, an approved foam-type extinguisher of at least 135 *l* capacity is not required."

APPENDIX 1

CHECK/MONITORING SHEET FOR THE PROCESSING OF AMENDMENTS TO SOLAS REGULATIONS II-2/1 AND II-2/10

Part III – Process monitoring to be completed during the work process at the sub-committee and checked as part of the final approval process by the Committee (Refer to section 3.2.1.3)**

1	The sub-committee, at an initial engagement, has allocated sufficient time for technical research and discussion before the target completion date, especially on issues needing to be addressed by more than one sub-committee and for which the timing of relevant sub-committees meetings and exchanges of the result of consideration needed to be carefully examined.	yes
2	The scope of application agreed at the proposal stage was not changed without the approval of the Committee.	yes
3	The technical base document/draft amendment addresses the proposal's issue(s) through the suggested instrument(s); where it does not, the sub-committee offers the Committee an alternative method of addressing the problem raised by the proposal.	yes
4	Due attention has been paid to the *Interim guidelines for the systematic application of the grandfather clauses* (MSC/Circ.765-MEPC/Circ.315).	yes
5	All references have been examined against the text that will be valid if the proposed amendment enters into force.	yes
6	The location of the insertion or modified text is correct for the text that will be valid when the proposed text enters into force on a four-year cycle of entry into force, as other relevant amendments adopted might enter into force on the same date.	yes
7	There are no inconsistencies in respect of scope of application between the technical regulation and the application statement contained in regulation 1 or 2 of the relevant chapter, and application is specifically addressed for existing and/or new ships, as necessary.	yes
8	Where a new term has been introduced into a regulation and a clear definition is necessary, the definition is given in the article of the Convention or at the beginning of the chapter.	not applicable
9	Where any of the terms "fitted", "provided", "installed" or "installation" are used, consideration has been given to clarifying the intended meaning of the term.	not applicable
10	All necessary related and consequential amendments to other existing instruments, including non-mandatory instruments, in particular to the forms of certificates and records of equipment required in the instrument being amended, have been examined and included as part of the proposed amendment(s).	yes

Part III – Process monitoring to be completed during the work process at the sub-committee and checked as part of the final approval process by the Committee (Refer to section 3.2.1.3)**

11	The forms of certificates and records of equipment have been harmonized, where appropriate, between the Convention and its Protocols.	not applicable
12	It is confirmed that the amendment is being made to a currently valid text and that no other bodies are concurrently proposing changes to the same text.	yes
13	All entry-into-force criteria (building contract, keel laying and delivery) have been considered and addressed.	yes
14	Other impacts of the implementation of the proposed/approved amendment have been fully analysed, including consequential amendments to the "application" and "definition" regulations of the chapter.	yes
15	The amendments presented for adoption clearly indicate changes made with respect to the original text, so as to facilitate their consideration.	yes
16	For amendments to mandatory instruments, the relationship between the Convention and the related instrument has been observed and addressed, as appropriate.	yes
17	The related record format has been completed or updated, as appropriate.	yes

* Parts I and II should be completed by the submitter of a proposed new amendment, to the fullest extent possible.

** Part III should be completed by the drafting/working group that prepared the draft text using "yes", "no" or "not applicable".

APPENDIX 2

RECORDS FOR REGULATORY DEVELOPMENT

The following records should be created and kept updated for each regulatory development.

The records can be completed by providing references to paragraphs of related documents containing the relevant information, proposals, discussions and decisions.

1	**Title (number and title of regulation(s))**
SOLAS regulation II-2/1 – Application SOLAS regulation II-2/10 – Firefighting	
2	**Origin of the requirement (original proposal document)**
MSC 89/22/5 (China)	
3	**Main reason for the development (extract from the proposal document)**
According to the 1981 amendments to chapter II-2 of the 1974 SOLAS Convention, a 135 ℓ foam-type extinguisher shall be arranged in the boiler room of cargo ships. After nearly 30 years, China considered it necessary to re-evaluate the requirement for 135 ℓ foam-type extinguisher and if it was fit for the purpose.	
4	**Related output**
Amendments to the requirements for foam-type fire extinguishers in SOLAS regulation II-2/10.5 (5.2.1.28)	
5	**History of the discussion (approval of work programmes, sessions of sub-committees, including CG/DG/WG arrangements)**
MSC 89, having considered document MSC 89/22/5 (China), proposing to review SOLAS regulation II-2/10.5 for the arrangements of 135 and 45 litre foam-type extinguishers in the engine-rooms and boiler rooms of cargo ships based on the results of fire tests carried out by China, agreed to include in the post-biennial agenda of the FP Sub-Committee a new output on "Amendments to the requirements for foam-type fire extinguishers in SOLAS regulation II-2/10.5". **FP 56** considered documents FP 56/16 and FP 56/INF.6 (China), proposing to amend SOLAS regulation II-2/10.5.1 regarding the arrangement of 135 ℓ foam-type extinguishers in the boiler-rooms and the related information regarding extinguishing tests of foam-type extinguishers, and decided that additional justification was needed before making the 135 ℓ wheeled foam-type extinguishers obsolete.	

SSE 1, having considered document SSE 1/16 (China), proposing to amend the existing SOLAS regulation II-2/10.5.1.2.2 regarding the arrangement of 135 *l* foam-type extinguishers in boiler rooms, and, having noted both supporting and differing views expressed by delegations during the discussion, decided that further consideration of this issue was necessary and invited Member Governments and international organizations to submit comments and proposals for consideration at SSE 2.

SSE 2 having considered document SSE 2/10 (China), proposing to amend SOLAS regulation II-2/10.5.1.2.2 regarding the arrangements of 135 *l* foam-type extinguishers, noted the views expressed that the proposal should be editorially amended to keep the consistency of the wording of the regulation and that to clarify the amended regulation should apply to new and existing ships and agreed to the draft amendments to SOLAS regulations II-2/1 and II-2/10, for submission to MSC 96 with a view to approval and subsequent adoption.

6 Impact on other instruments (e.g. codes, performance standards, guidance circulars, certificates/records format, etc.)

N/A

7 Technical background

7.1 Scope and objective (to cross check with items 4 and 5 in part II of the checklist)

To review the carriage requirement for the 135 *l* foam-type extinguisher in engine-room for new and existing cargo ships

7.2 Technical/operational background and rationale (summary of FSA study, etc., if available or, engineering challenge posed, etc.)

N/A

7.3 Source/derivation of requirement (non-mandatory instrument, industry standard, national/regional requirement)

China carried out further investigation and research on the fire risks of boiler rooms focusing on basic construction, source of ignition, source of fuel and distribution of high-temperature surface of common marine boilers (SSE 2/10)

7.4 Short summary of requirement (what is the new requirement – in short and lay terms)

In the case of boilers protected by fixed local water-based firefighting systems, an approved foam-type extinguisher of at least 135 *l* capacity is not required

7.5 Points of discussions (controversial points and conclusion)

In considering document SSE 2/10 (China), the Sub-Committee noted the views expressed that the proposal should be editorially amended to keep the consistency of the wording of the regulation and that to clarify the amended regulation should apply to new and existing ships.

Taking into account the above views, the Sub-Committee finalized the draft amendments to SOLAS regulations II-2/1 and II-2/10, for submission to MSC 96 with a view to approval and subsequent adoption.

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ANNEX 6

DRAFT MSC CIRCULAR

UNIFIED INTERPRETATIONS OF SOLAS CHAPTER II-2

1 The Maritime Safety Committee, at its [ninety-sixth session ( )], with a view to providing more specific guidance on the conditions under which materials other than steel may be permitted for components mounted on engines, turbines and gearboxes; arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers; and non-combustible material as "still or equivalent" for ventilation ducts, approved unified interpretations on SOLAS chapter II-2, prepared by the Sub-Committee on Ship Systems and Equipment at its second session (23 to 27 March 2015), as set out in the annex.

2 Member Governments are invited to use the annexed unified interpretations as guidance when applying SOLAS regulations II-2/4 and II-2/9 and to bring the unified interpretations to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS OF SOLAS CHAPTER II-2

SOLAS REGULATION II-2/4

Application of materials other than steel on engine, turbine and gearbox installations

Materials other than steel may be assessed in relation to the risk of fire associated with the component and its installation. The use of materials other than steel is considered acceptable for the following applications:

.1 internal pipes which cannot cause any release of flammable fluid onto the machinery or into the machinery space in case of failure, or

.2 components that are only subject to liquid spray on the inside when the machinery is running, such as machinery covers, rocker box covers, camshaft end covers, inspection plates and sump tanks. It is a condition that the pressure inside these components and all the elements contained therein is less than 0.18 N/mm^2 and that wet sumps have a volume not exceeding 100 litres, or

.3 components attached to machinery which satisfy fire test criteria according to ISO 19921:2005/19922:2005 or other standards acceptable to the Administration, and which retain mechanical properties adequate for the intended installation.

SOLAS REGULATION II-2/4.5.7.3.1

Arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers

1 The term "cargo tanks" in the phrase "spaces adjacent to the cargo tanks" includes slop tanks except those arranged for the storage of oily water only.

2 The term "spaces" in the phrase "spaces under the bulkhead deck adjacent to cargo tanks" includes dry compartments such as ballast pump-rooms and bow thruster rooms and any tanks such as freshwater tanks, but excludes fuel oil tanks.

3 The term "adjacent" in the phrase "adjacent to the cargo tanks" includes ballast tanks, void spaces, other tanks or compartments located below the bulkhead deck located adjacent to cargo tanks and includes any spaces or tanks located below the bulkhead deck which form a cruciform (corner to corner) contact with the cargo tanks.

SOLAS REGULATION II-2/9.7.1.1

Non-combustible material as "steel or equivalent" for ventilation ducts

With respect to SOLAS regulation II-2/9.7.1.1, a ventilation duct made of material other than steel may be considered equivalent to a ventilation duct made of steel, provided the material is non-combustible and has passed a standard fire test in accordance with annex 1 to part 3 of the FTP Code as a non-load bearing structure for 30 minutes, following the requirements for testing "B" class divisions.

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ANNEX 7

DRAFT MSC CIRCULAR

UNIFIED INTERPRETATIONS OF CHAPTERS 5, 6 AND 9 OF THE FSS CODE

1 The Maritime Safety Committee, at its [ninety-sixth session ( )], with a view to providing more specific guidance on fixed gas fire-extinguishing systems and fixed fire detection and fire alarm systems; foam-generating capacity of fixed foam fire-extinguishing systems; and additional indicating unit in the cargo control rooms, approved unified interpretations on chapters 5, 6 and 9 of the FSS Code, prepared by the Sub-Committee on Ship Systems and Equipment at its second session (23 to 27 March 2015), as set out in the annex.

2 Member Governments are invited to use the annexed unified interpretations as guidance when applying paragraph 2.2.1.7 of chapter 5 of the FSS Code, paragraphs 3.2.1.2 and 3.3.1.2 of chapter 6 of the FSS Code, as amended by resolution MSC.327(90), and paragraph 2.5.1.3 of chapter 9, of the FSS Code, as amended by resolution MSC.339(91), to the systems and units to be installed on board ships constructed on or after [*date of approval of the circular*] and to bring the unified interpretations to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS OF CHAPTERS 5, 6 AND 9 OF THE FSS CODE

CHAPTER 5 – FIXED GAS FIRE-EXTINGUISHING SYSTEMS

Fixed gas fire-extinguishing systems (paragraph 2.2.1.7)

1 The "quantity of gas" means that quantity required for the largest cargo space in accordance with the provisions of paragraph 2.1.1.1 of chapter 5:

> "2.1.1.1 Where the quantity of the fire-extinguishing medium is required to protect more than one space, the quantity of medium available need not be more than the largest quantity required for any one space so protected. ... Adjacent spaces with independent ventilation systems not separated by at least A-0 class divisions should be considered as the same space."

2 In such cases, the system controls should be capable of allowing one third, two thirds or the entire quantity of gas as required by paragraph 2.1.1.1 of chapter 5 to be discharged to comply with the last sentence of paragraph 2.2.1.7 (i.e. the number of setting points of control is three).

CHAPTER 6 – FIXED FOAM FIRE-EXTINGUISHING SYSTEMS

Foam-generating capacity of fixed foam fire-extinguishing systems (paragraphs 3.2.1.2 and 3.3.1.2, as amended by resolution MSC.327(90))

1 This interpretation of the term "largest protected space" applies to a machinery space of category A protected by a fixed high-expansion foam fire-extinguishing system complying with the provisions of the FSS Code.

2 Where such a machinery space includes a casing (e.g. an engine casing in a machinery space of category A containing internal combustion machinery, and/or a boiler), the volume of such a casing, above the level up to which foam shall be filled to protect the highest position of the fire risk objects within the machinery space, need not be included in the volume of the protected space (see figure 1).

3 The level up to which foam should be filled to protect the highest positioned fire risk objects within the machinery space should not be less than:

- 1 m above the highest point of any such object; or
- the lowest part of the casing,

whichever is higher (see figure 1).

4 Where such a machinery space does not include a casing, the volume of the largest protected space should be that of the space in its entirety, irrespective of the location of any fire risk object therein (see figure 2).

5 Fire risk objects include, but may not be limited to, those listed in SOLAS regulation II-2/3.31 and those defined in regulation II-2/3.34. Although not referred to in those regulations, they may also include items having a similar fire risk such as exhaust gas boilers or oil fuel tanks.

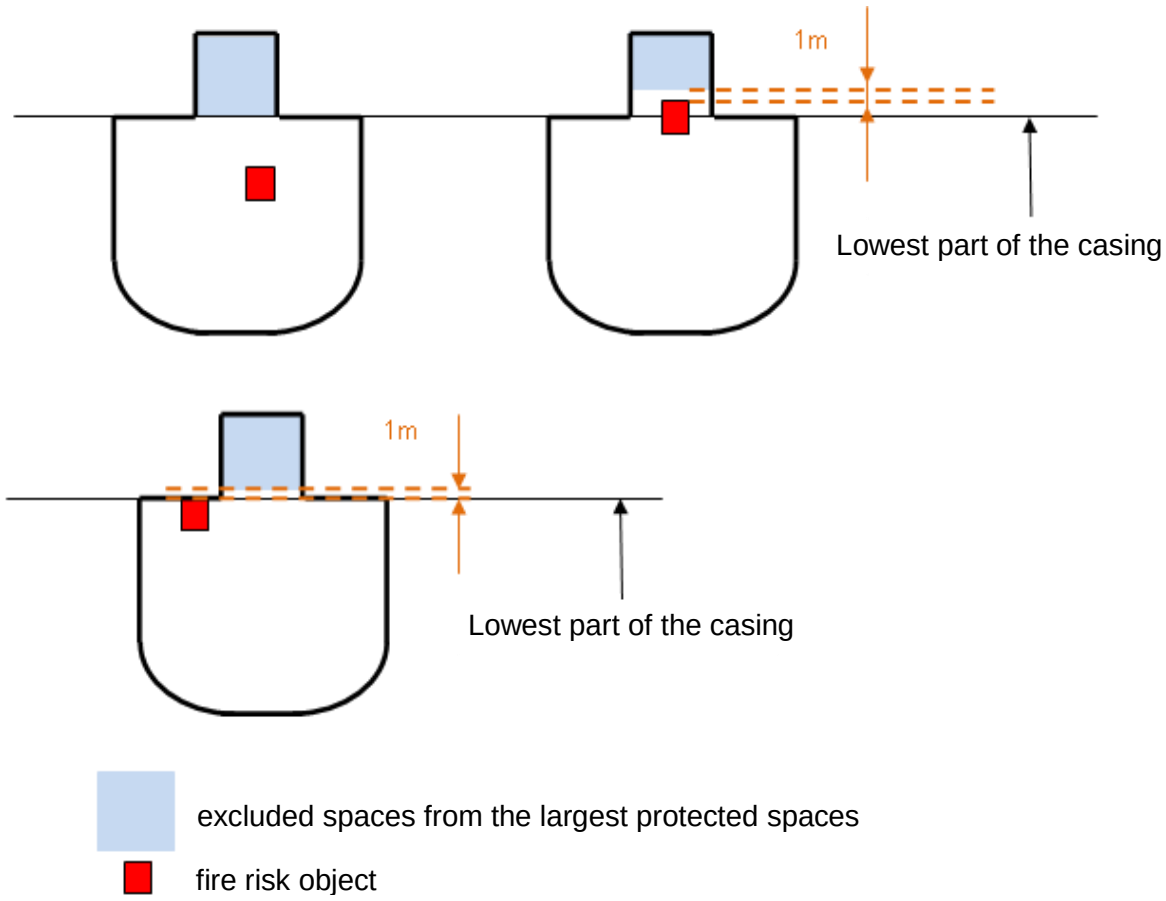

Figure 1: Machinery space including a casing

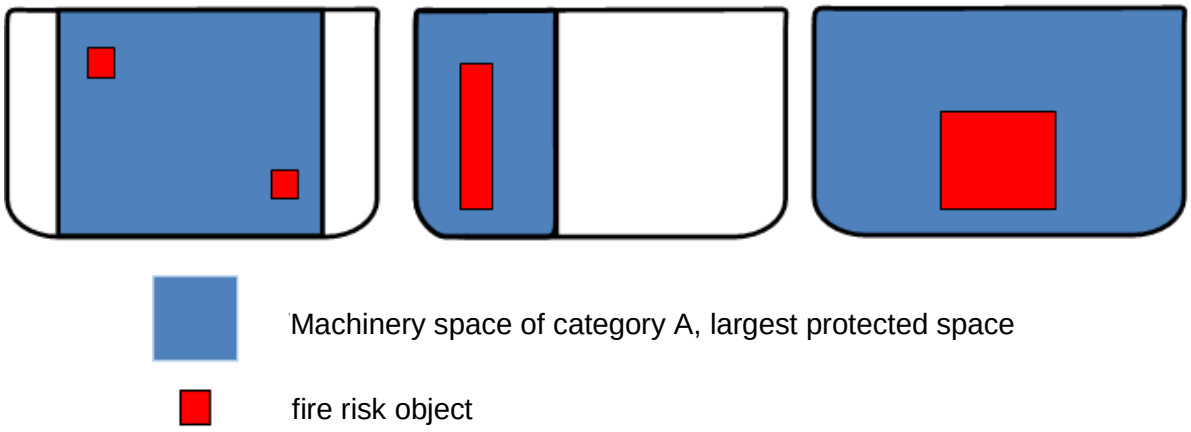

Figure 2: Machinery space not including a casing

CHAPTER 9 – FIXED FIRE DETECTION AND FIRE ALARM SYSTEM

Additional indicating unit in the cargo control room (paragraph 2.5.1.3, as amended by resolution MSC.339(91))

A space in which a cargo control console is installed, but does not serve as a dedicated cargo control room (e.g. ship's office, machinery control room), should be regarded as a cargo control room for the purposes of paragraph 2.5.1.3 of chapter 9 of the FSS Code, as amended by resolution MSC.339(91), and therefore be provided with an additional indicating unit.

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ANNEX 8

DRAFT MSC CIRCULAR

UNIFIED INTERPRETATIONS OF PARAGRAPH 4.4.7.6 OF THE LSA CODE, AS AMENDED BY RESOLUTION MSC.320(89)

1 The Maritime Safety Committee, at its [ninety-sixth session ( )], with a view to providing more specific guidance on lifeboat release and retrieval systems, approved unified interpretations on paragraph 4.4.7.6 of the LSA Code, as amended by resolution MSC.320(89), prepared by the Sub-Committee on Ship Systems and Equipment at its second session (23 to 27 March 2015), as set out in the annex.

2 Member Governments are invited to use the annexed unified interpretation as guidance when applying paragraphs 4.4.7.6.6, 4.4.7.6.7.2, 4.4.7.6.9 and 4.4.7.6.14 of the LSA Code, as amended by resolution MSC.320(89), to the systems to be installed on board ships constructed on or after [*date of approval of the circular*] and to bring the unified interpretations to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS OF PARAGRAPH 4.4.7.6 OF THE LSA CODE, AS AMENDED BY RESOLUTION MSC.320(89)

IMPLEMENTATION OF THE REQUIREMENTS RELATING TO LIFEBOAT RELEASE AND RETRIEVAL SYSTEMS

Paragraphs 4.4.7.6.6 and 4.4.7.6.7.2

1 The reset function as required by paragraph 4.4.7.6.6 is also to apply to the "other means" or "similar device" referred to in paragraph 4.4.7.6.7.2.

2 Where a safety pin is fitted to facilitate compliance with SOLAS regulation III/1.5 then, in line with paragraph 4 of the annex to MSC.1/Circ.1327, the safety pin arrangement must be acceptable to the hook manufacturer, as defined in paragraph 9.9 of the annex to MSC.1/Circ.1392.

Paragraph 4.4.7.6.9

1 All Interlocks ("mechanical protection" of on-load release), which include hydrostatic components in the operating mechanism, should also be of material corrosion resistant in the marine environment.

2 Where stainless steel having a Pitting Resistance Equivalent Number (PREN)[3] of 25 or more is chosen, such stainless steel do not need to be subjected to ISO 9227:2012 or other equivalent recognized national standard.

3 Where stainless steel having a PREN < 25, or another corrosion resistant material/alloy is chosen, the material is to be qualified by corrosion test according to ISO 9227:2012 or other equivalent recognized national standard. When the test is carried out in accordance with ISO 9227:2012, neutral salt spray (NSS) is to be used, with 1000 hours test duration for components outside the lifeboat, and 160 hours for those inside the lifeboat. The salt spray tests may be conducted by using round specimens (diameter is 14 mm) according to IACS UR W2.4.2.

4 After the salt spray test, the release mechanism should be subjected to load and release test as described in resolution MSC.81(70), as amended by resolution MSC.321(89), part 1, paragraph 6.9.4.1, to demonstrate satisfactory operation. The load and release should be repeated 10 times. Where specimens are used for the salt spray tests, tensile tests should be conducted in lieu of the load and release test. The results from the tests should be in order to verify that the reduction in the ultimate tensile strength and reduction in cross sectional area ratio is less than 5% between corrosion tested and non-corrosion tested specimens.

5 Where austenitic stainless steels (e.g. 316L or 316) are used for welded structures, the risk of sensitization to intergranular corrosion is to be addressed by the component manufacturer's quality control system.

6 Austenitic stainless steels 201, 304, 321, 347 are susceptible to pitting and crevice corrosion and, therefore, unsuitable for these applications.

[3] PREN = 1 • %Cr + 3.3 (%Mo + 0.5 • %W) + 16 • %N

Paragraph 4.4.7.6.14

The hanging-off arrangement, including the connections to the lifeboat release and retrieval system and davit, should be designed with a calculated factor of safety of 6 based on the ultimate strength of the materials used, and mass of the lifeboat when loaded with its full complement of fuel and equipment plus 1,000 kg equally distributed between the falls.

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ANNEX 9

DRAFT MSC CIRCULAR

UNIFIED INTERPRETATIONS OF SOLAS REGULATIONS III/6.4 AND III/6.5 AND SECTION 7.2 OF THE LSA CODE

1 The Maritime Safety Committee, at its [ninety-sixth session ( )], with a view to providing more specific guidance on general emergency alarms and public address systems in ro-ro spaces, approved unified interpretations on SOLAS regulations III/6.4 and III/6.5 and section 7.2 of the LSA Code, prepared by the Sub-Committee on Ship Systems and Equipment at its second session (23 to 27 March 2015), as set out in the annex.

2 Member Governments are invited to use the annexed unified interpretations as guidance when applying SOLAS regulations III/6.4 and III/6.5 and section 7.2 of the LSA Code and to bring the unified interpretations to the attention of all parties concerned.

ANNEX

UNIFIED INTERPRETATIONS OF SOLAS REGULATIONS III/6.4 AND III/6.5 AND SECTION 7.2 OF THE LSA CODE

General

1 The term "accommodation" defined in SOLAS regulation II-2/3.1 applies also to SOLAS regulation III/6.4.3.

2 The term "similar spaces" used in SOLAS regulation II-2/3.1, when applied to public address and general alarm systems required in SOLAS regulations II-2/12.3, III/6.4 and III/6.5, and when referred to in this circular, includes, but is not limited to, the following spaces: stairways, lifts, recreation rooms and pantries.

3 The word "audibility" or the term "audible" used in SOLAS regulations III/6.4.2, III/6.4.3 and III/6.5, and when referred to in this circular, means the sound pressure level requirements as defined in section 7.2 of the LSA Code.

General Emergency Alarm

4 Regarding the audibility (sound pressure) requirements in SOLAS regulations III/6.4.2 and III/6.4.3 and section 7.2 of the LSA Code, the audibility (sound pressure) requirements as defined in section 7.2 of the LSA Code, should include special category spaces, ro-ro spaces and vehicle spaces as defined in SOLAS regulations II-2/3.46, II-2/3.41 and II-2/3.49 on all types of ship that carry vehicles (for example PCC/PCTC/RO PAX vessel).

5 For cargo ships, it is not necessary to provide a public address system in cargo spaces used for the carriage of vehicles (i.e. only a general emergency alarm is required in spaces used for the carriage of vehicles on cargo ships).

6 Regarding SOLAS regulation III/6.4.3, the term "normal crew working spaces" includes spaces where routine maintenance tasks or local control of machinery operated at sea are undertaken.

Public Address System

7 Regarding the audibility (sound pressure) requirements in SOLAS regulation III/6.5.2 for passenger ships, the audibility (sound pressure) requirements should include special category spaces, ro-ro spaces and vehicle spaces as defined in defined in SOLAS regulations II-2/3.41, II-2/3.46 and II-2/3.49 onboard passenger ships, if accessible by the general public at sea.

8 For cargo ships, it is not necessary to provide a public address system in cargo spaces used for the carriage of vehicles (i.e. only a general emergency alarm is required in spaces used for the carriage of vehicles on cargo ships).

9 Regarding SOLAS regulation III/6.5.2 and the requirements of paragraph 7.2.2.1 of the LSA Code, the term "spaces where crew members or passengers or both are normally present" include all accommodation spaces. With respect to spaces where a public address system may not be required in accordance with paragraph 7.2.2.1 of the LSA Code, these may be spaces such as under deck passageways, including passageways in the car hold between an accommodation space and an engine-room, bosun's lockers and pump-rooms.

10 With respect to cabin/state rooms, the sound pressure levels as stated in paragraph 7.2.2.2.1 of the LSA Code should be attained as required inside the cabin/state room, during sea trials.

11 Where an individual loudspeaker has a device for local silencing, an override arrangement from the control station(s), including the navigating bridge, should be in place.

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ANNEX 10

DRAFT MSC CIRCULAR

AMENDMENTS TO THE REVISED GUIDELINES FOR THE MAINTENANCE AND INSPECTION OF FIRE PROTECTION SYSTEMS AND APPLIANCES (MSC.1/CIRC.1432)

1 The Maritime Safety Committee, at its [ninety-fifth session (3 to 12 June 2015), approved amendments to the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432), as set out in the annex, concerning testing of automatic sprinkler systems, prepared by the Sub-Committee on Ship Systems and Equipment, at its second session.

2 Member Governments are invited to use the amendments when applying MSC.1/Circ.1432 and to bring the amendments to the attention of ship designers, shipyards, shipowners, systems manufactures and all parties concerned.

ANNEX

AMENDMENTS TO THE REVISED GUIDELINES FOR THE MAINTENANCE AND INSPECTION OF FIRE PROTECTION SYSTEMS AND APPLIANCES (MSC.1/CIRC.1432)

1 Paragraph 3.4 is amended to read as follows:

"3.4 In addition to the onboard maintenance and inspections stated in these guidelines, manufacturer's maintenance and inspection guidelines should be followed. The quality of water in automatic sprinkler systems is of particular importance and should be maintained in accordance with manufacturer guidelines. Records of water quality should be maintained on board in accordance with the manufacture's guidelines."

2 A new paragraph 6.5 is added after the existing paragraph 6.4, as follows:

"6.5 Water mist, water spray and sprinkler systems

Assess system water quality in the header tank and pump unit against the manufacturer's water quality guidelines."

3 Paragraph 7.5 is amended to read as follows:

"7.5 Water mist, water spray and sprinkler systems

.1 verify proper operation of all water mist, water-spray and sprinkler systems using the test valves for each section;

.2 visually inspect all accessible components for proper condition;

.3 externally examine all high pressure cylinders for evidence of damage or corrosion;

.4 check the hydrostatic test date of all high pressure cylinders;

.5 functionally test all fixed system audible and visual alarms;

.6 flow test all pumps for proper pressure and capacity;

.7 test all antifreeze systems for adequate freeze protection;

.8 test all system cross connections to other sources of water supply for proper operation;

.9 verify all pump relief valves, if provided, are properly set;

.10 examine all filters/strainers to verify they are free of debris and contamination;

.11 verify all control/section valves are in the correct position;

.12 blow dry compressed air or nitrogen through the discharge piping of dry pipe systems, or otherwise confirm the pipework and nozzles are clear of any obstructions. This may require the removal of nozzles, if applicable;

.13 test emergency power supply switchover, where applicable;

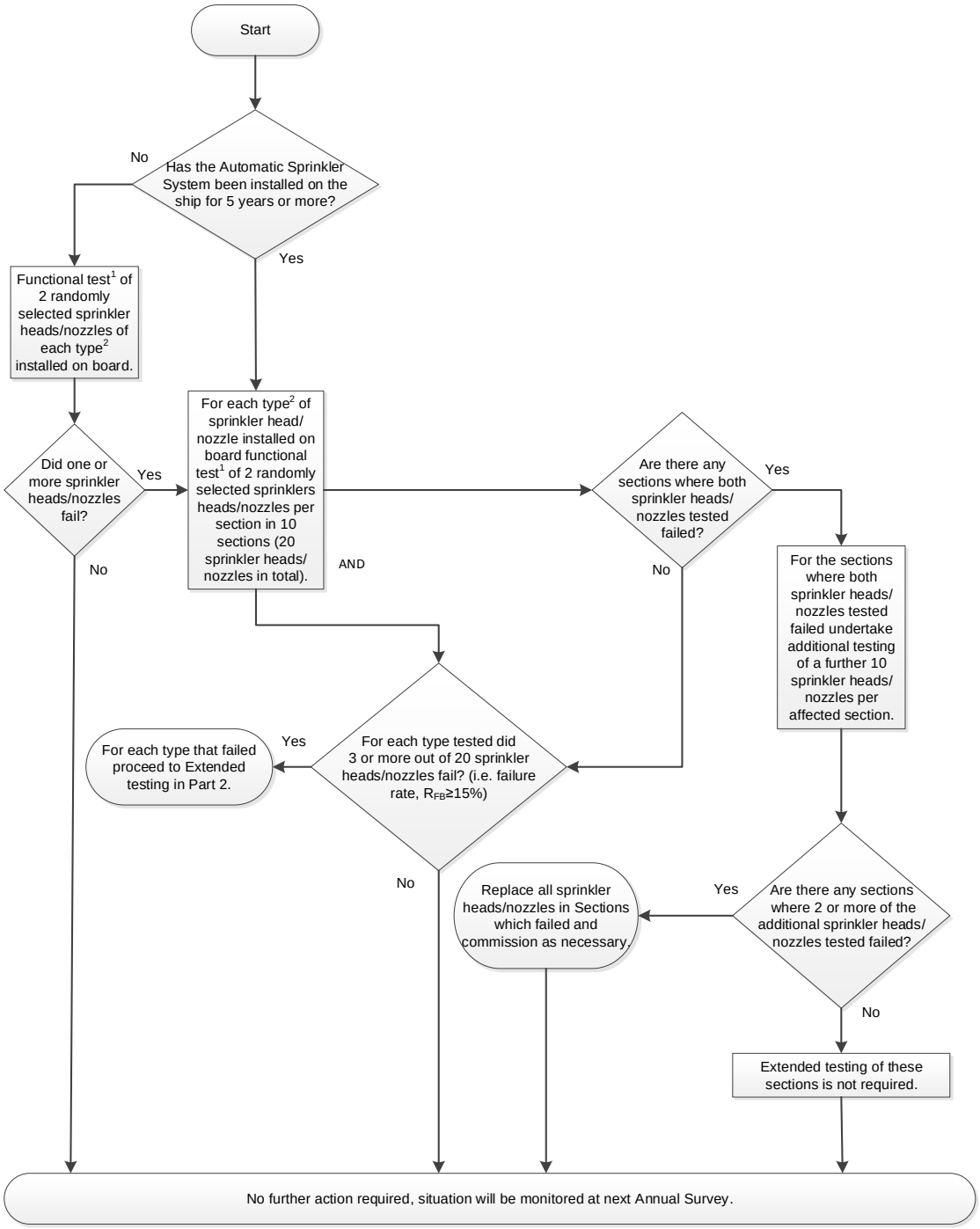
.14 visually inspect all sprinklers focusing in areas where sprinklers are subject to aggressive atmosphere (like saunas, spas, kitchen areas) and subject to physical damage (like luggage handling areas, gyms, play rooms, etc.) so that all sprinklers are inspected within one year. Sprinklers with obvious external damage, including paint, should be replaced and not included in the number of sprinklers tested in subparagraph .17.

.15 check for any changes that may affect the system such as obstructions by ventilation ducts, pipes, etc.;

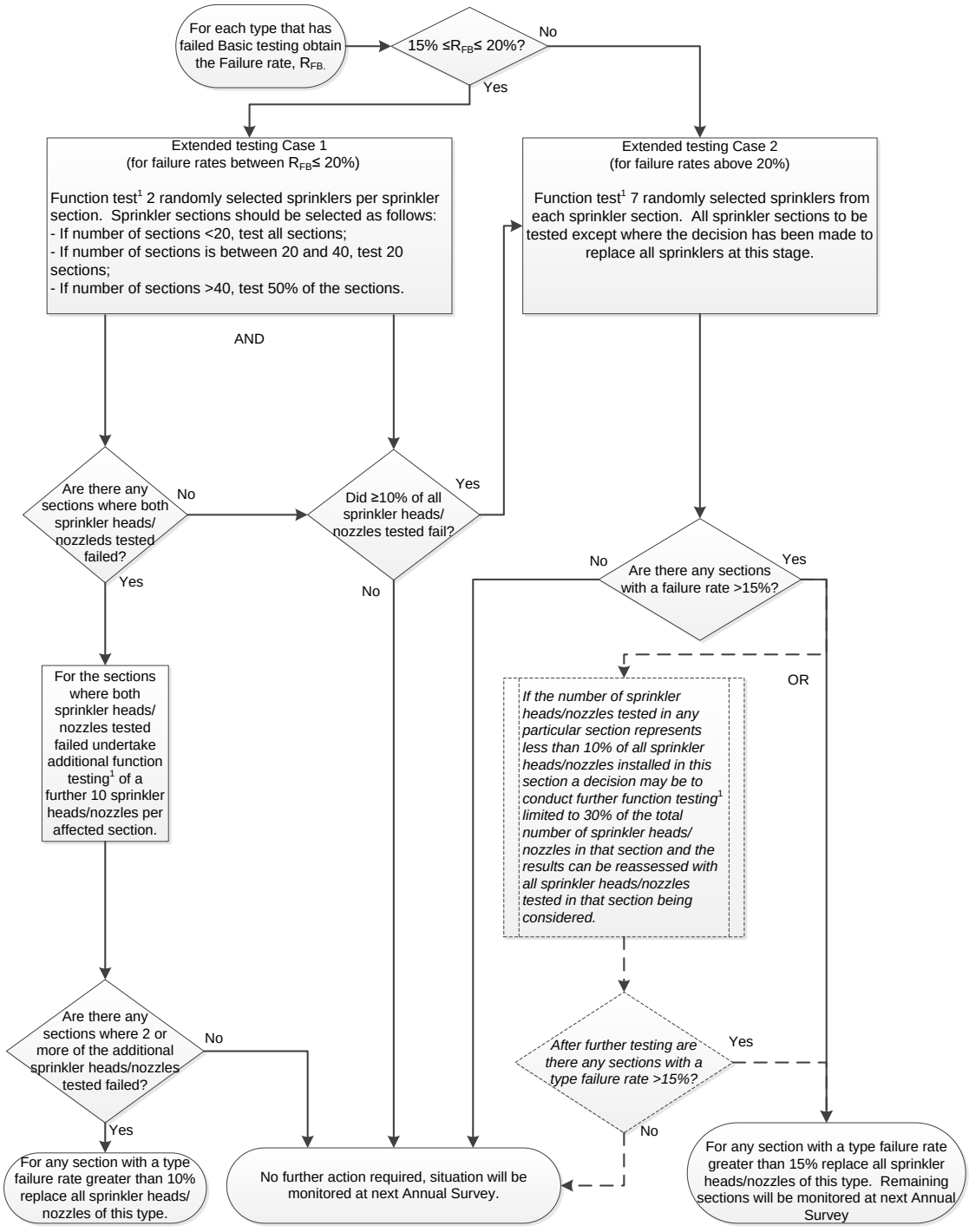
.16 test a minimum of one section in each open head water mist system by flowing water through the nozzles. The sections tested should be chosen so that all sections are tested within a five-year period; ~~and~~

.17 ~~test a minimum of two automatic sprinklers or automatic water mist nozzles for proper operation.~~test automatic sprinklers and automatic water mist nozzles in accordance with the following flow chart:

Part 1 - Basic Testing



Part 2 - Extended testing



Explanatory notes to the flow chart

1 *Functional test* is defined as a test that demonstrates the operation and flow of water from sprinkler head/nozzle.

2 *Type* is defined as each different manufacturer model of sprinkler head/nozzle.

3 *Static/standby pressure* is defined as the constant pressure maintained in the system at all times prior to activation.

4 All testing should be carried out at static/standby pressure.

5 *Failure rate* (R_{FB}) is the number of sprinkler heads/nozzles to fail testing divided by test sample size multiplied by 100; and

.18 during basic testing, and extended testing when applicable, of automatic sprinkler heads/nozzles as outlined in subparagraph .17, water quality testing should be conducted in each corresponding piping section. Note – should a tested sprinkler fail, assessing the corresponding water quality at that time would assist in determining the cause of failure."

4 Paragraph 9.3 is replaced by the following:

"9.3 Water mist, water spray and sprinkler systems

.1 flush all ro-ro deck deluge system piping with water, drain and purge with air;

.2 perform internal inspection of all control/section valves; water quality testing should be conducted in all corresponding piping sections, if not previously tested as outlined in paragraph 7.5.18 within the last five years;

.3 check condition of any batteries, or renew in accordance with manufacturer's recommendations; and

.4 for each section where the water is refilled after being drained or flushed, water quality should meet manufacturer's guidelines. Testing of the renewed water quality should be conducted and recorded as a new baseline reference to assist future water quality monitoring for each corresponding section."

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ANNEX 11

DRAFT AMENDMENTS TO THE FSS CODE

CHAPTER 8
AUTOMATIC SPRINKLER, FIRE DETECTION AND FIRE ALARM SYSTEMS

1 The text in the existing paragraph 2.4.1 is amended to read as follows:

"**2.4.1 General**

2.4.1.1 Any parts of the system which may be subjected to freezing temperatures in service shall be suitably protected against freezing.

2.4.1.2 Special attention shall be paid to the specification of water quality provided by the system manufacturer to prevent internal corrosion and clogging of sprinklers."

2 A new chapter 17 is added after existing chapter 16 as follows:

"CHAPTER 17
HELICOPTER FACILITY FOAM FIREFIGHTING APPLIANCES

1 Application

This chapter details the specifications for foam firefighting appliances for the protection of helicopter facilities as required by chapter II-2 of the Convention.

2 Definitions

2.1 *D-value* means the largest dimension of the helicopter used for assessment of the helideck when its rotors are turning. It establishes the required area of foam application.

2.2 *Deck integrated foam nozzles* are foam nozzles recessed into or edge mounted on the helideck.

2.3 *Foam-making branch pipes* are air-aspirating nozzles in tube shape for producing and discharging foam, usually in straight stream only.

2.4 *Helicopter landing area* is an area on a ship designated for occasional or emergency landing of helicopters, such as an area referred to in SOLAS regulation II-2/18.2.2, and not designed for routine helicopter operations.

2.5 *Helideck* is a purpose-built helicopter landing platform or other deck area including all structure, firefighting appliances and other equipment necessary for the safe operation of helicopters, as referred to in SOLAS regulations II-2/3.26 and II-2/18.5[*].

2.6 *Hose reel foam station* is a hose reel fitted with a foam-making branch pipe and non-collapsible hose, together with fixed foam proportioner and fixed foam concentrate tank, mounted on a common frame.

[*] See also paragraph 1.3.27 of chapter 1 of the 2009 MODU Code.

2.7 *Monitor foam station* is a foam monitor, either self-inducing or together with separate fixed foam proportioner, and fixed foam concentrate tank, mounted on a common frame.

2.8 *Obstacle free sector* is the take-off and approach sector which totally encompasses the safe landing area and extends over a sector of at least 210º, within which only specified obstacles are permitted.

2.9 *Limited obstacle sector* is a 150º sector outside the take-off and approach sector that extends outward from a helideck where objects of limited height are permitted.

2.10 *Winching area* is a pick-up area provided for the transfer by helicopter of personnel or stores to or from the ship, while the helicopter hovers above the deck, such as an area referred to in SOLAS regulation III/28.

3 Engineering specifications

3.1 The system shall be capable of manual release, and may be arranged for automatic release.

3.2 For helidecks the foam system shall contain at least two fixed foam monitors or deck integrated foam nozzles. In addition, at least two hose reels fitted with a foam-making branch pipe and non-collapsible hose sufficient to reach any part of the helideck shall be provided. The minimum foam system discharge rate shall be determined by multiplying the D-value area by 6 l/min/m^2. The minimum foam system discharge rate for deck integrated foam nozzle systems shall be determined by multiplying the overall helideck area by 6 l/min/m^2. Each monitor shall be capable of supplying at least 50% of the minimum foam system discharge rate, but not less than 500 l/min. The minimum discharge rate of each hose reel shall be at least 400 l/min. The quantity of foam concentrate shall be adequate to allow operation of all connected discharge devices for at least 5 min.

3.3 Where foam monitors are installed, the distance from the monitor to the farthest extremity of the protected area shall be not more than 75% of the monitor throw in still air conditions.

3.4 For helicopter landing areas, at least two portable foam applicators or two hose reel foam stations shall be provided, each capable of discharging a minimum foam solution discharge rate, in accordance with the following table.

Category	**Helicopter overall length (D- value)**	**Minimum foam solution discharge rate (l/min)**
H1	up to but not including 15 m	250
H2	from 15 m up to but not including 24 m	500
H3	from 24 m up to but not including 35 m	800

The quantity of foam concentrate shall be adequate to allow operation of all connected discharge devices for at least 10 min. For tankers fitted with a deck foam system, the Administration may consider an alternative arrangement, taking into account the type of foam concentrate to be used.

3.5 Winching areas shall comply with SOLAS regulation II-2/18.2.2.

3.6 Manual release stations capable of starting necessary pumps and opening required valves, including the fire main system, if used for water supply, shall be located at each monitor and hose reel. In addition, a central manual release station shall be provided at a protected location. The foam system shall be designed to discharge foam with nominal flow and at design pressure from any connected discharge devices within 30 s of activation.

3.7 Activation of any manual release station shall initiate the flow of foam solution to all connected hose reels, monitors, and deck integrated foam nozzles.

3.8 The system and its components shall be designed to withstand ambient temperature changes, vibration, humidity, shock impact and corrosion normally encountered on the open deck, and shall be manufactured and tested to the satisfaction of the Administration.

3.9 A minimum nozzle throw of at least 15 m shall be provided with all hose reels and monitors discharging foam simultaneously. The discharge pressure, flow rate and discharge pattern of deck integrated foam nozzles shall be to the satisfaction of the Administration, based on tests that demonstrate the nozzle's capability to extinguish fires involving the largest size helicopter for which the helideck is designed.

3.10 Monitors, foam-making branch pipes, deck integrated foam nozzles and couplings shall be constructed of brass, bronze or stainless steel. Piping, fittings and related components, except gaskets, shall be designed to withstand exposure to temperatures up to 925º C.

3.11 The foam concentrate shall be demonstrated effective for extinguishing aviation fuel spill fires and shall conform to performance standards not inferior to those acceptable to the Organization*. Where the foam storage tank is on the exposed deck, freeze protected foam concentrates shall be used, if appropriate, for the area of operation.

3.12 Any foam system equipment installed within the take-off and approach obstacle free sector shall not exceed a height of 0.25 m. Any foam system equipment installed in the limited obstacle sector shall not exceed the height permitted for objects in this area.

3.13 All manual release stations, monitor foam stations, hose reel foam stations, hose reels and monitors shall be provided with a means of access that does not require travel across the helideck or helicopter landing area.

3.14 Oscillating monitors, if used, shall be preset to discharge foam in a spray pattern and have a means of disengaging the oscillating mechanism to allow rapid conversion to manual operation.

3.15 If a foam monitor with flow rate up to 1,000 l/min is installed, it shall be equipped with an air-aspirating nozzle. If a deck integrated nozzle system is installed, then the additionally installed hose reel shall be equipped with an air-aspirating handline nozzle (foam branch pipes). Use of non-air-aspirating foam nozzles (on both: monitors and the additional hose reel) is permitted only where foam monitors with a flow rate above 1,000 l/min are installed. If only portable foam applicators or hose reel stations are provided, these shall be equipped with an air-aspirating handline nozzle (foam branch pipes).

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* Refer to the International Civil Aviation Organization Airport Services Manual, part 1, Rescue and Fire Fighting, chapter 8, Extinguishing Agent Characteristics, paragraph 8.1.5, Foam specifications Table 8-1, Performance Level B, or to the *Revised guidelines for the performance and testing criteria, and surveys of foam concentrates for fixed fire-extinguishing systems* (MSC.1/Circ.1312)."

APPENDIX 1

CHECK/MONITORING SHEET FOR THE PROCESSING OF AMENDMENTS TO CHAPTER 8 OF THE FSS CODE

Part III – Process monitoring to be completed during the work process at the sub-committee and checked as part of the final approval process by the Committee (Refer to section 3.2.1.3)**

1	The sub-committee, at an initial engagement, has allocated sufficient time for technical research and discussion before the target completion date, especially on issues needing to be addressed by more than one sub-committee and for which the timing of relevant sub-committees meetings and exchanges of the result of consideration needed to be carefully examined.	yes
2	The scope of application agreed at the proposal stage was not changed without the approval of the Committee.	yes[4]
3	The technical base document/draft amendment addresses the proposal's issue(s) through the suggested instrument(s); where it does not, the sub-committee offers the Committee an alternative method of addressing the problem raised by the proposal.	yes
4	Due attention has been paid to the *Interim guidelines for the systematic application of the grandfather clauses* (MSC/Circ.765-MEPC/Circ.315).	yes
5	All references have been examined against the text that will be valid if the proposed amendment enters into force.	yes
6	The location of the insertion or modified text is correct for the text that will be valid when the proposed text enters into force on a four-year cycle of entry into force, as other relevant amendments adopted might enter into force on the same date.	yes
7	There are no inconsistencies in respect of scope of application between the technical regulation and the application statement contained in regulation 1 or 2 of the relevant chapter, and application is specifically addressed for existing and/or new ships, as necessary.	yes
8	Where a new term has been introduced into a regulation and a clear definition is necessary, the definition is given in the article of the Convention or at the beginning of the chapter.	not applicable
9	Where any of the terms "fitted", "provided", "installed" or "installation" are used, consideration has been given to clarifying the intended meaning of the term.	yes

[4] Some delegations were concerned that consideration of matters related to water mist system was outside the scope of this output. However, the Sub-Committee, having noted that automatic water mist system had been installed and used on board passenger ships in many cases, agreed that there was no reason to consider separately automatic sprinkler system and automatic water mist system, which had been used on board as automatic sprinkler system. Additionally, it was recognized that the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) considers both automatic sprinkler system and water mist system.

Part III – Process monitoring to be completed during the work process at the sub-committee and checked as part of the final approval process by the Committee (Refer to section 3.2.1.3)**

10	All necessary related and consequential amendments to other existing instruments, including non-mandatory instruments, in particular to the forms of certificates and records of equipment required in the instrument being amended, have been examined and included as part of the proposed amendment(s).	yes
11	The forms of certificates and records of equipment have been harmonized, where appropriate, between the Convention and its Protocols.	not applicable
12	It is confirmed that the amendment is being made to a currently valid text and that no other bodies are concurrently proposing changes to the same text.	yes
13	All entry-into-force criteria (building contract, keel laying and delivery) have been considered and addressed.	yes
14	Other impacts of the implementation of the proposed/approved amendment have been fully analysed, including consequential amendments to the "application" and "definition" regulations of the chapter.	yes
15	The amendments presented for adoption clearly indicate changes made with respect to the original text, so as to facilitate their consideration.	yes
16	For amendments to mandatory instruments, the relationship between the Convention and the related instrument has been observed and addressed, as appropriate.	yes
17	The related record format has been completed or updated, as appropriate.	yes

* Parts I and II should be completed by the submitter of a proposed new amendment, to the fullest extent possible.

** Part III should be completed by the drafting/working group that prepared the draft text using "yes", "no" or "not applicable".

APPENDIX 2

RECORDS FOR REGULATORY DEVELOPMENT

The following records should be created and kept updated for each regulatory development.

The records can be completed by providing references to paragraphs of related documents containing the relevant information, proposals, discussions and decisions.

1	**Title (number and title of regulation(s))**
Chapter 8 of the FSS Code – Automatic sprinkler, fire detection and fire alarm systems Section 2.4 – Installation requirements Paragraph 2.4.1 – General	
2	**Origin of the requirement (original proposal document)**
MSC 94/20/2 (Bahamas)	
3	**Main reason for the development (extract from the proposal document)**
To address the findings from the testing programme on automatic sprinkler systems on passenger ships implemented by the Bahamas, taking into account the potential consequences should automatic sprinkler systems fail to operate completely on a large passenger vessel	
4	**Related output**
Revision of requirements for automatic sprinkler systems (5.2.1.36)	
5	**History of the discussion (approval of work programmes, sessions of sub-committees, including CG/DG/WG arrangements)**
At **MSC 92**, the Bahamas provided the information on findings from the testing automatic sprinkler systems on passenger ships (MSC 92/INF.10) and expressed the view that the scope of testing in the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) may not adequately assess the actual condition of automatic sprinkler systems. At **MSC 94**, the Bahamas updated the Committee on findings from the testing programme on automatic sprinkler systems on passenger ships and provided proposals on how to address these findings by revising MSC.1/Circ.1432 and preparing amendments to chapter 8 of the FSS Code (MSC 94/20/2). MSC 94, in response to concerns raised by the Bahamas, approved MSC.1/Circ.1493 on *Interim Guidance for in-service testing of automatic sprinkler systems*, to be used in addition to the provisions of MSC.1/Circ.1432, for dissemination with a view to raising the awareness of this important issue, and, taking into account the complex	

nature of this work, agreed to forward document MSC 94/20/2 to SSE 2 for consideration, with a view to revising MSC.1/Circ.1432 and preparing amendments to chapter 8 of the FSS Code, as appropriate.

SSE 2 instructed the Working Group on Fire Protection to prepare the draft amendments to MSC.1/Circ.1432 and chapter 8 of the FSS Code (SSE 2/20, paragraph 15.6). Having considered the part of the report of the working group related to this output, the Sub-Committee agreed to the proposed amendments chapter 8 of the FSS Code, with a view to finalization for approval at MSC 95 and subsequent adoption (SSE 2/20, paragraph 15.11 and annex 11).

6 Impact on other instruments (e.g. codes, performance standards, guidance circulars, certificates/records format, etc.)

Revised guidelines for the maintenance and inspection of fire protection systems and appliances (MSC.1/Circ.1432)

7 Technical background

7.1 Scope and objective (to cross check with items 4 and 5 in part II of the checklist)

Revision of the existing requirements for automatic sprinkler systems (i.e. MSC.1/Circ.1432) with a view to addressing the findings from the testing programme on automatic sprinkler systems on passenger ships implemented by the Bahamas and preparing amendments to chapter 8 of the FSS Code

7.2 Technical/operational background and rationale (summary of FSA study, etc., if available or, engineering challenge posed, etc.)

N/A

7.3 Source/derivation of requirement (non-mandatory instrument, industry standard, national/regional requirement)

Findings from the testing programme on automatic sprinkler systems on passenger ships implemented by the Bahamas

7.4 Short summary of requirement (what is the new requirement – in short and lay terms)

Special attention shall be paid to the specification of water quality provided by the system manufacturer to prevent internal corrosion and clogging of sprinklers

7.5 Points of discussions (controversial points and conclusion)

Having considered document MSC 94/20/2, the Working Group on Fire Protection agreed, in general, to the proposals in the document, except for the proposal F related to flushing and draining of sprinklers systems (MSC 94/20/2, paragraph 18).

The group noted that some members were concerned that consideration of matters related to water mist system was outside the scope of this output. However, the group also noted that the delegation of **Japan**, supported by the majority of the group, stated that automatic water mist system has been installed and used on board passenger ships in many cases, and there is no reason to consider separately automatic sprinkler system and automatic water mist system, which has been used on board as automatic sprinkler system. Additionally, it was recognized that the *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) considers both automatic sprinkler system and water mist system.

Having considered the proposal by the **Bahamas**, which included guidelines for both the testing of sprinkler heads and water mist nozzles and the need for assessment of water quality, the group agreed to use the flow chart for the testing and replacement of sprinkler heads and water mist nozzles. However, agreement on the timing and extent of water quality testing was more difficult. The group noted that some members were of the view that water quality were the key to the reliability of sprinkler and water mist systems. The group discussed the draft water quality monitoring provision of the amended guidelines, wherein 20% (in square brackets) of sprinkler branch lines of a ship would be tested annually, resulting in complete testing of water quality every five years. These members were also of the view that sampling water quality during sprinkler head and water mist nozzle testing could offer some advantages. The group further noted concerns that it is not clear that water quality is the only root cause of the sprinkler and water mist system reliability problems, identified by the Bahamas, and that further work may be needed, as prescriptively requiring water quality testing of 20% annually of the branch lines of sprinkler and water mist systems on operating ships, regardless of findings, may be unduly burdensome and unnecessary. Notwithstanding the above, the group agreed to a provision for water quality testing and prepared the draft amendments to *Revised guidelines for the maintenance and inspection of fire protection systems and appliances* (MSC.1/Circ.1432) and the associated MSC circular.

In connection to the above, the group also prepared the draft amendments to chapter 8 of the FSS Code.

The Sub-Committee agreed to the draft amendments prepared by the Working Group on Fire Protection.

The delegation of the **Bahamas**, supported by **CLIA**, expressed its appreciation for the work accomplished at this session and noted the importance of design, manufacture and commissioning of equipment and systems. Taking into account the safety issues raised, the delegation of the Bahamas requested Member Governments to act accordingly, while approving equipment and systems, to ensure that systems and equipment are robust, reliable and fit for their intended service.

APPENDIX 3

CHECK/MONITORING SHEET FOR THE PROCESSING OF AMENDMENTS TO SOLAS REGULATION II-2/18 AND NEW CHAPTER 17 OF THE FSS CODE

Part III – Process monitoring to be completed during the work process at the sub-committee and checked as part of the final approval process by the Committee (Refer to section 3.2.1.3)**

1	The sub-committee, at an initial engagement, has allocated sufficient time for technical research and discussion before the target completion date, especially on issues needing to be addressed by more than one sub-committee and for which the timing of relevant sub-committees meetings and exchanges of the result of consideration needed to be carefully examined.	yes
2	The scope of application agreed at the proposal stage was not changed without the approval of the Committee.	yes
3	The technical base document/draft amendment addresses the proposal's issue(s) through the suggested instrument(s); where it does not, the sub-committee offers the Committee an alternative method of addressing the problem raised by the proposal.	yes
4	Due attention has been paid to the *Interim guidelines for the systematic application of the grandfather clauses* (MSC/Circ.765-MEPC/Circ.315).	yes
5	All references have been examined against the text that will be valid if the proposed amendment enters into force.	yes
6	The location of the insertion or modified text is correct for the text that will be valid when the proposed text enters into force on a four-year cycle of entry into force, as other relevant amendments adopted might enter into force on the same date.	yes
7	There are no inconsistencies in respect of scope of application between the technical regulation and the application statement contained in regulation 1 or 2 of the relevant chapter, and application is specifically addressed for existing and/or new ships, as necessary.	yes
8	Where a new term has been introduced into a regulation and a clear definition is necessary, the definition is given in the article of the Convention or at the beginning of the chapter.	yes
9	Where any of the terms "fitted", "provided", "installed" or "installation" are used, consideration has been given to clarifying the intended meaning of the term.	yes
10	All necessary related and consequential amendments to other existing instruments, including non-mandatory instruments, in particular to the forms of certificates and records of equipment required in the instrument being amended, have been examined and included as part of the proposed amendment(s).	yes

Part III – Process monitoring to be completed during the work process at the sub-committee and checked as part of the final approval process by the Committee (Refer to section 3.2.1.3)**

11	The forms of certificates and records of equipment have been harmonized, where appropriate, between the Convention and its Protocols.	not applicable
12	It is confirmed that the amendment is being made to a currently valid text and that no other bodies are concurrently proposing changes to the same text.	yes
13	All entry-into-force criteria (building contract, keel laying and delivery) have been considered and addressed.	yes
14	Other impacts of the implementation of the proposed/approved amendment have been fully analysed, including consequential amendments to the "application" and "definition" regulations of the chapter.	yes
15	The amendments presented for adoption clearly indicate changes made with respect to the original text, so as to facilitate their consideration.	yes
16	For amendments to mandatory instruments, the relationship between the Convention and the related instrument has been observed and addressed, as appropriate.	yes
17	The related record format has been completed or updated, as appropriate.	yes

* Parts I and II should be completed by the submitter of a proposed new amendment, to the fullest extent possible.

** Part III should be completed by the drafting/working group that prepared the draft text using "yes", "no" or "not applicable".

APPENDIX 4

RECORDS FOR REGULATORY DEVELOPMENT

The following records should be created and kept updated for each regulatory development.

The records can be completed by providing references to paragraphs of related documents containing the relevant information, proposals, discussions and decisions.

1	**Title (number and title of regulation(s))**
SOLAS regulation II-2/18 – Helicopter facilities New chapter 17 of the FSS Code – Helicopter facility foam firefighting appliances	
2	**Origin of the requirement (original proposal document)**
SSE 2/19/2 (United States)	
3	**Main reason for the development (extract from the proposal document)**
Redrafting the guidelines, which are currently annexed to the *Guidelines for the approval of helicopter facility foam firefighting appliances* (MSC.1/Circ.1431) as a new chapter of the FSS Code and consequential amendments to SOLAS regulation II-2/18.5, the 2009 MODU Code and the *Recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895), for the purpose of harmonizing the requirements for helicopter facility foam firefighting appliances.	
4	**Related output**
N/A	
5	**History of the discussion (approval of work programmes, sessions of sub-committees, including CG/DG/WG arrangements)**
FP 55 agreed to the draft MSC circular on *Guidelines for the approval of helicopter facility foam firefighting appliances* for submission to MSC 90 for approval (FP 55/23, paragraph 3.22). The guidelines were subsequently approved as MSC.1/Circ.1431 (MSC 90/28, paragraph 11.6). The guidelines were intended to apply to the design and approval of foam firefighting appliances for the protection of new helicopter facilities in accordance with SOLAS regulation II-2/18.5, chapter 9 of the Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code), and the *Recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895). It was the intent of the ad hoc working group at FP 55 to request the approval of draft SOLAS amendments in order to implement the new guidelines (FP 54/3/1, annex 6). However, owing to an oversight, this was not carried through in the report of the working group for consideration by the Sub-Committee.	

To rectify this issue, the consequential amendments to SOLAS and related instruments were agreed by **FP 56** (FP 56/20/3) and subsequently approved by **MSC 92** (MSC 92/26, paragraph 8.30).

However, when the draft SOLAS amendments were considered for adoption at **MSC 93** (MSC 93/3), a concern was raised in plenary regarding paragraph 3.12 of the guidelines, which prohibits any "equipment" higher than 0.25 m in the take-off and approach obstacle-free sector. Some Administrations believed that this would eliminate the use of helicopter landing areas on ships with any deck equipment such as piping, windlasses, etc. in this area.

Another view was put forward that, if the Committee was to adopt the amendments to SOLAS regulation II-2/18, existing mandatory requirements would be replaced with a footnote reference to the non-mandatory guidelines. As an alternative, it was proposed that MSC.1/Circ.1431 should be re-issued as a mandatory resolution, and reference to it should be made within the text of the regulation (MSC 93/3/9 (Japan)).
Because of these two concerns, the Committee did not adopt the draft amendments to SOLAS regulation II-2/18, and instead referred them and document MSC 93/3/9 to SSE 2 for further consideration under "Any other business", with one session needed to finalize the draft amendments (MSC 93/22, paragraph 3.12).

SSE 2 agreed to the draft amendments to SOLAS regulation II-2/18 and the FSS Code, as prepared by the Working Group on Fire Protection, based on document SSE 2/19/2, with a view to finalization for approval at MSC 95 for and subsequent adoption.

6 Impact on other instruments (e.g. codes, performance standards, guidance circulars, certificates/records format, etc.)

2009 MODU Code; and

Recommendation on helicopter landing areas on ro-ro passenger ships (MSC/Circ.895)

7 Technical background

7.1 Scope and objective (to cross check with items 4 and 5 in part II of the checklist)

To propose a way forward to resolve the outstanding issues with the implementation of MSC.1/Circ.1431 on *Guidelines for the approval of helicopter facility foam firefighting appliances* (i.e. to harmonize the requirements for helicopter facility foam firefighting appliances).

7.2 Technical/operational background and rationale (summary of FSA study, etc., if available or, engineering challenge posed, etc.)

N/A

7.3 Source/derivation of requirement (non-mandatory instrument, industry standard, national/regional requirement)

Guidelines for the approval of helicopter facility foam firefighting appliances (MSC.1/Circ.1431)

7.4	Short summary of requirement (what is the new requirement – in short and lay terms)
Replacement of MSC.1/Circ.1431 with a suitable mandatory instrument.	

7.5	Points of discussions (controversial points and conclusion)

The United States propose redrafting the guidelines, which are currently annexed to the *Guidelines for the approval of helicopter facility foam firefighting appliances* (MSC.1/Circ.1431) as a new chapter of the FSS Code and consequential amendments to SOLAS regulation II-2/18.5, the 2009 MODU Code and the *Recommendation on helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895), for the purpose of harmonizing the requirements for helicopter facility foam firefighting appliances. The United States also proposed to revoke MSC.1/Circ.1431 upon adoption of the proposed new and amended mandatory instruments.

Japan and ICS consider that the SOLAS requirement should apply to helidecks, as defined by SOLAS regulation II-2/3.26, but not apply to helicopter landing area, which is defined in paragraph 2.4 of MSC.1/Circ.1431. In connection to the above, Japan and ICS prepared the revised draft performance standards. In the revised draft performance standards, it was clarified that the performance standards are applicable only to foam firefighting appliances for helideck, but not applicable to those for helicopter landing area, by deleting unnecessary paragraphs in the annex to MSC.1/Circ.1431.

SSE 2 agreed to proceed further according to the proposals by the United States.

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ANNEX 12

BIENNIAL STATUS REPORT AND OUTPUTS ON THE COMMITTEE'S POST-BIENNIAL AGENDA THAT FALL UNDER THE PURVIEW OF THE SUB-COMMITTEE

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
1.1.2.3	Unified interpretation of provisions of IMO safety, security and environment related Conventions	Continuous	MSC / MEPC		III / PPR / CCC / SDC / SSE / NCSR	Ongoing	Ongoing	MSC 78/26, paragraph 22.12; SSE 2/20, section 11
2.0.1.6	Amendments to SOLAS regulation II-1/40.2 concerning general requirements on electrical installations	2014	MSC	SSE		Completed		MSC 94/21, paragraph 8.1; SSE 1/21, paragraph 4.6
5.1.1.4	Development of life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002)	2014	MSC	SSE		In progress	In progress	MSC 90/28, paragraph 25.12; SSE 2/20, section 5
Notes: TCY extended to 2015 (MSC 93). TCY needs to be extended to 2016.								
5.1.2.1	New framework of requirements for life-saving appliances	2015	MSC	SSE		In progress	Completed	MSC 82/24, paragraph 21.49; SSE 2/20, section 6
5.1.2.3 (UO)	Revision of requirements for escape route signs and	2015	MSC	SSE	HTW		In progress	MSC 94/21, paragraph 18.24;

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
	equipment location markings in SOLAS and related instruments							
Note: Output scheduled to be finalized in the 2016-2017 biennium.								
5.2.1.5	Amendments to the provisions of SOLAS chapter II-2 relating to secondary means of venting cargo tanks	2015	MSC	SSE	CCC	Completed		MSC 94/21, paragraph 8.7; SSE 1/21, paragraph 15.5
5.2.1.6	Amendments to the 2009 MODU Code concerning lifeboat drills	2015	MSC	SSE		Completed		MSC 94/21, paragraphs 8.4 and 8.5; SSE 1/21, paragraph 11.7
5.2.1.7	Considerations related to the double sheathed low-pressure fuel pipes for fuel injection systems in engines on crude oil tankers	2015	MSC	SSE		In progress	Completed	MSC 91/22, paragraph 19.13; SSE 2/20, section 9
5.2.1.8	Smoke control and ventilation	2015	MSC	SSE		In progress	Completed	FP 46/16, section 4; SSE 2/20, section 3
5.2.1.9	Requirements for ships carrying hydrogen and compressed natural gas vehicles.	2014	MSC	SSE		Completed		MSC 93/22, paragraphs 3.77 and 3.92.2; SSE 1/21, paragraph 3.11

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
5.2.1.10	Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III	2015	MSC	SSE		In progress	In progress	MSC 84/24, paragraph 3.92; SSE 2/20, section 7
	Note: TCY needs to be extended to 2016.							
5.2.1.11	Amendments to the LSA Code for thermal performance of immersion suits	2014	MSC	SSE		Postponed		MSC 84/24, paragraph 22.48; SSE 1/21, paragraph 9.5
	Note: Moved to the Committee's post-biennial agenda.							
5.2.1.14	Amendments to SOLAS regulation II-2/20 and associated guidance on air quality management for ventilation of closed vehicle spaces, closed ro-ro and special category spaces	2014	MSC	SSE		In progress	Completed	MSC 88/26, paragraph 23.11; SSE 2/20, section 4
	Note: TCY changed to 2015 (MSC 93).							
5.2.1.22	Requirements for onboard lifting appliances and winches	2015	MSC	SSE		In progress	In progress	MSC 89/25, paragraph 22.26; SSE 2/20, section 8
	Note: TCY needs to be extended to 2017.							

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
5.2.1.25	Revised recommendation on conditions for the approval of servicing stations for inflatable liferafts (resolution A.761(18))	2014	MSC	SSE		Completed		MSC 94/21, paragraph 8.6; SSE 1/21, paragraph 12.7
5.2.1.28	Amendments to the requirements for foam-type fire extinguishers in SOLAS regulation II-2/10.5	2014	MSC	SSE		In progress	Completed	MSC 89/25, paragraph 22.9; SSE 2/20, section 10
	Note: TCY extended to 2015 (MSC 93).							
5.2.1.32 (UO)	Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1	2015	MSC	SSE	HTW		In progress	MSC 93/22, paragraph 20.17; SSE 2/20, section 12
	Note: Output scheduled to be finalized in the 2016-2017 biennium.							
5.2.1.33	Amendments to the Guidelines for vessels with dynamic positioning (DP) systems (MSC/Circ.645)	2015	MSC	SSE			In progress	MSC 90/28, paragraph 25.34; SSE 2/20, section 13
	Notes: Moved from post-biennial agenda – TCY is 2015. TCY needs to be extended to 2016.							
5.2.1.35 (UO)	Review of flashpoint requirements for oil fuel in SOLAS chapter II-2	2015	MSC	SSE			Completed	MSC 94/21, paragraph 18.23; SSE 2/20, section 14

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
5.2.1.36 (UO)	Revision of requirements for automatic sprinkler systems	2015	MSC	SSE			Completed	MSC 94/21, paragraphs 8.25 and 18.25; SSE 2/20, section 15

OUTPUTS ON THE COMMITTEE'S POST-BIENNIAL AGENDA THAT FALL UNDER THE PURVIEW OF THE SUB-COMMITTEE

MARITIME SAFETY COMMITTEE (MSC)								
ACCEPTED POST-BIENNIAL OUTPUTS								
Number	**Biennium***	**Reference to High-level Actions**	**Description**	**Parent organ(s)**	**Coordinating organs(s)**	**Associated organ(s)**	**Timescale (sessions)**	**References**
83	2014-2015	7.1.2	Code for the transport and handling of limited amounts of hazardous and noxious substances in bulk on offshore support vessels (2017)	MSC / MEPC	PPR	SDC / SSE	3	Output 7.1.2.13
90	2014-2015	5.2.1	Amendments to the LSA Code for thermal performance of immersion suits	MSC		SSE	2	Postponed (SSE 1/21, section 9)

Notes:

* Biennium when the output was placed on the post-biennial agenda

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ANNEX 13

PROPOSED BIENNIAL AGENDA FOR THE 2016-2017 BIENNIUM

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
1.1.2.3	Unified interpretation of provisions of IMO safety, security, and environment related Conventions	Continuous	MSC / MEPC		III / PPR / CCC / SDC / SSE / NCSR			MSC 78/26, paragraph 22.12; SSE 1/21, section 17
~~2.0.1.6~~	~~Amendments to SOLAS regulation II-1/40.2 concerning general requirements on electrical installations~~	~~2014~~	~~MSC~~	~~SSE~~				~~MSC 94/21, paragraph 8.1; SSE 1/21, paragraph 4.6~~
5.1.1.4	Development of life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002)	2016	MSC	SSE				MSC 90/28, paragraph 25.12; SSE 2/20, section 5
	~~**Note**: TCY changed from 2014 to 2015 (MSC 93).~~							
~~5.1.2.1~~	~~New framework of requirements for life-saving appliances~~	~~2015~~	~~MSC~~	~~SSE~~				~~MSC 82/24, paragraph 21.49; SSE 2/20, section 6~~
5.1.2.3 (UO)	Revision of requirements for escape route signs and	2016	MSC	SSE	HTW			MSC 94/21, paragraph 18.24;

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
	equipment location markings in SOLAS and related instruments							
	~~**Note**: Output scheduled to be finalized in the 2016-2017 biennium.~~							
~~5.2.1.5~~	~~Amendments to the provisions of SOLAS chapter II-2 relating to secondary means of venting cargo tanks~~	~~2015~~	~~MSC~~	~~SSE~~	~~CCC~~			~~MSC 94/21, paragraph 8.7; SSE 1/21, paragraph 15.5~~
~~5.2.1.6~~	~~Amendments to the 2009 MODU Code concerning lifeboat drills~~	~~2015~~	~~MSC~~	~~SSE~~				~~MSC 94/21, paragraphs 8.4 and 8.5; SSE 1/21, paragraph 11.7~~
~~5.2.1.7~~	~~Considerations related to the double sheathed low-pressure fuel pipes for fuel injection systems in engines on crude oil tankers~~	~~2015~~	~~MSC~~	~~SSE~~				~~MSC 91/22, paragraph 19.13; SSE 2/20, section 9~~
~~5.2.1.8~~	~~Smoke control and ventilation~~	~~2015~~	~~MSC~~	~~SSE~~				~~FP 46/16, section 4; SSE 2/20, section 3~~
~~5.2.1.9~~	~~Requirements for ships carrying hydrogen and compressed natural gas vehicles.~~	~~2014~~	~~MSC~~	~~SSE~~				~~MSC 93/22, paragraphs 3.77 and 3.92.2;~~

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
								~~SSE 1/21, paragraph 3.11~~
5.2.1.10	Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III	2016	MSC	SSE				MSC 84/24, paragraph 3.92; SSE 2/20, section 7
~~5.2.1.11~~	~~Amendments to the LSA Code for thermal performance of immersion suits~~	~~2014~~	~~MSC~~	~~SSE~~				~~MSC 84/24, paragraph 22.48; SSE 1/21, paragraph 9.5~~
	~~**Note**: Moved to the Committee's post-biennial agenda.~~							
~~5.2.1.14~~	~~Amendments to SOLAS regulation II-2/20 and associated guidance on air quality management for ventilation of closed vehicle spaces, closed ro-ro and special category spaces~~	~~2014~~	~~MSC~~	~~SSE~~				~~MSC 88/26, paragraph 23.11; SSE 2/20, section 4~~
	~~**Note**: TCY extended from 2014 to 2015 (MSC 93).~~							
5.2.1.22	Requirements for onboard lifting appliances and winches	2017	MSC	SSE				MSC 89/25, paragraph 22.26; SSE 2/20, section 8
~~5.2.1.25~~	~~Revised recommendation on conditions for the approval of~~	~~2014~~	~~MSC~~	~~SSE~~				~~MSC 94/21, paragraph 8.6;~~

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
	~~servicing stations for inflatable liferafts (resolution A.761(18))~~							~~SSE 1/21, paragraph 12.7~~
~~5.2.1.28~~	~~Amendments to the requirements for foam-type fire extinguishers in SOLAS regulation II-2/10.5~~	~~2014~~	~~MSC~~	~~SSE~~				~~MSC 89/25, paragraph 22.9; SSE 2/20, section 10~~
	~~**Note**: TCY extended from 2014 to 2015 (MSC 93).~~							
5.2.1.32 (UO)	Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1	2016	MSC	SSE	HTW			MSC 93/22, paragraph 20.17; SSE 2/20, section 12
	~~**Note**: Output scheduled to be finalized in the 2016-2017 biennium~~							
5.2.1.33	Amendments to the Guidelines for vessels with dynamic positioning (DP) systems (MSC/Circ.645)	2016	MSC	SSE				MSC 90/28, paragraph 25.34; SSE 2/20, section 13
	~~**Note**: Moved from post-biennial agenda – TCY is 2016.~~							
~~5.2.1.35 (UO)~~	~~Review of flashpoint requirements for oil fuel in SOLAS chapter II-2~~	~~2015~~	~~MSC~~	~~SSE~~				~~MSC 94/21, paragraph 18.23; SSE 2/20, section 14~~
	~~Note: Output scheduled to be finalized in the 2016-2017 biennium.~~							

SUB-COMMITTEE ON SHIP SYSTEMS AND EQUIPMENT (SSE)								
Planned output number	**Description**	**Target completion year**	**Parent organ(s)**	**Coordinating organ(s)**	**Associated organ(s)**	**Status of output for Year 1**	**Status of output for Year 2**	**References**
~~5.2.1.36 (UO)~~	~~Revision of requirements for automatic sprinkler systems~~	~~2015~~	~~MSC~~	~~SSE~~				~~MSC 94/21, paragraphs 8.25 and 18.25; SSE 2/20, section 15~~

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ANNEX 14

PROPOSED PROVISIONAL AGENDA FOR SSE 3

Opening of the session

1 Adoption of the agenda

2 Decisions of other IMO bodies

3 Development of life safety performance criteria for alternative design and arrangements for fire safety (MSC/Circ.1002) (5.1.1.4)

4 Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapters II-1 and III (5.2.1.10)

5 Measures for onboard lifting appliances and winches (5.2.1.22)

6 Review of the MODU Code, LSA Code and MSC.1/Circ.1206/Rev.1 (5.2.1.32)

7 Amendments to the Guidelines for vessels with dynamic positioning (DP) systems (MSC/Circ.645) (5.2.1.33)

8 Revision of requirements for escape route signs and equipment location markings in SOLAS and related instruments (5.1.2.3)

9 Unified interpretation of provisions of IMO safety, security and environment-related conventions (1.1.2.3)

10 Biennial agenda and provisional agenda for SSE 4

11 Election of Chairman and Vice-Chairman for 2017

12 Any other business

13 Report to the Maritime Safety Committee

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ANNEX 15

DRAFT AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED

CHAPTER III
LIFE-SAVING APPLIANCES AND ARRANGEMENTS

Part A
General

Regulation 3 – Definitions

19 The following new paragraph 25 is added after the existing paragraph 24:

"25 *Requirements for ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair* means the Requirements for ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, adopted by the Maritime Safety Committee of the Organization by resolution MSC.[…(…)], as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the annex other than chapter I."

Part B
Requirements for ships and life-saving appliances

Regulation 20 – Operational readiness, maintenance and inspections

20 In paragraph 3.1, the words "based on the guidelines developed by the Organization and" are deleted.

21 The heading of paragraph 11 is replaced by the following:

"11 Maintenance, thorough examination, operational testing, overhaul and repair~~Periodic servicing~~ of lifeboats, rescue boats and fast rescue boats, launching appliances and release gear"

22 Paragraph 11.2 is replaced by the following:

"11.2 Lifeboat or rescue boat release gear, including fast rescue boat release gear and free-fall lifeboat release systems, shall be:

.1 maintained in accordance with instructions for onboard maintenance as required by regulation 36;

.2 subject to a thorough examination and operational test during the annual surveys required by regulations I/7 and I/8 by properly trained personnel familiar with the system;

.3 in case of on-load release gear, operationally tested under a load of 1.1 times the total mass of the boat when loaded with its full complement of persons and equipment whenever the release gear is overhauled. Such overhauling and test shall be carried out at least once every five years[1]; and

.4 notwithstanding subparagraph .3 above, the operational testing of free-fall lifeboat release systems shall be performed either by free-fall launch with only the operating crew on board or by a simulated launching carried out based on guidelines developed by the Organization[2]."

23 The following new paragraphs 11.4 and 11.5 are added after existing paragraph 11.3:

"11.4 Lifeboats or rescue boats, including fast rescue boats, shall be:

.1 maintained in accordance with instructions for onboard maintenance as required by regulation 36; and

.2 subject to a thorough examination and operational test during the annual surveys required by regulations I/7 and I/8 by properly trained personnel familiar with the appliance.

11.5 The ~~periodic servicing and~~ maintenance, thorough examination, operational testing and overhaul required by paragraphs 11.1 to 11.4 and repair, ~~other than weekly and monthly inspection required by paragraphs 6 and 7 of this regulation,~~shall be carried out in accordance with the Requirements for ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair."

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[1] Refer to the *Recommendation on Testing of life-saving appliances*, adopted by the Organization by resolution A.689(17). For life-saving appliances installed on board on or after 1 July 1999, refer to the *Revised recommendation on testing of life-saving appliances*, adopted by the Organization by resolution MSC.81(70).

[2] Refer to the *Guidelines on safety during abandon ship drills using lifeboats* (MSC.1/Circ.…).

ANNEX 16

DRAFT MSC RESOLUTION

REQUIREMENTS FOR ~~PERIODIC SERVICING AND~~ MAINTENANCE, THOROUGH EXAMINATION, OPERATIONAL TESTING, OVERHAUL AND REPAIR OF LIFEBOATS AND RESCUE BOATS, LAUNCHING APPLIANCES AND RELEASE GEAR

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO the Measures to prevent accidents with lifeboats (MSC.1/Circ.1206/Rev.1) and the Interim recommendation on conditions for authorization of service providers for lifeboats, launching appliances and on-load release gear (MSC.1/Circ.1277) approved by it,

RECOGNIZING the need to establish a uniform, safe and documented standard for ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats (including free-fall lifeboats) and rescue boats (including fast rescue boats), launching appliances and release gear,

NOTING that, by resolution MSC.[…(…)], it adopted amendments to regulations III/3 and III/20 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (hereinafter referred to as "the Convention"), concerning ~~periodic servicing~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear,

NOTING ALSO that the aforementioned regulation III/20 of the Convention provides that the ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair shall be carried out in accordance with the Requirements for ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear (hereinafter referred to as "the Requirements"),

HAVING CONSIDERED, at its [ninety-third] session, the recommendation made by the Sub-Committee on Ship Design and Equipment, at its fifty-seventh session,

1 ADOPTS the Requirements for ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear, 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 Requirements will take effect on [date] upon entry into force of the associated amendments to regulations III/3 and III/20 of the Convention;

3 ALSO INVITES Contracting Governments to the Convention to take measures they consider appropriate to ensure that national manufacturers of equipment certified under chapter III of the Convention for installation and use on board ships undertake to ensure that equipment, instructions, specialized tools, spare parts, training and accessories, as required, are available to independent service providers in a timely and cost-effective manner;

4 REQUESTS the Secretary-General to transmit certified copies of this resolution and the text of the Requirements, contained in the annex, to all Contracting Governments to the Convention;

5 ALSO 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.

ANNEX

REQUIREMENTS FOR ~~PERIODIC SERVICING AND~~ MAINTENANCE, THOROUGH EXAMINATION, OPERATIONAL TESTING, OVERHAUL AND REPAIR OF LIFEBOATS AND RESCUE BOATS, LAUNCHING APPLIANCES AND RELEASE GEAR

1 GENERAL

1.1 The objective of these Requirements for ~~periodic servicing and~~maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear (the Requirements) is to establish a uniform, safe and documented standard for ~~periodic servicing and~~maintenance, thorough examination, operational testing, overhaul and repair of the equipment specified in paragraph 2.1.

1.2 The detailed procedures covered by these Requirements are provided in section 6.

1.3 These Requirements relate to the following regulations:

.1 SOLAS regulation III/20 – Operational readiness, maintenance and inspections; and

.2 SOLAS regulation III/36 – Instructions for onboard maintenance.

1.4 The Company[1] shall ensure that servicing and maintenance on board its ships is conducted in accordance with SOLAS regulation III/20 and shall establish and implement health, safety and environment (HSE) procedures covering all activities during servicing and maintenance.

1.5 The personnel carrying out servicing and maintenance as described in paragraph ~~4.2~~3.1 shall be certified in accordance with the requirements specified in section ~~78~~ and shall comply with health, safety and environment (HSE) instructions and procedures of the Company.

2 APPLICATION

2.1 These Requirements shall apply to the ~~periodic servicing and~~ maintenance, thorough examination, operational testing, overhaul and repair of:

.1 lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats; and

.2 launching appliances and on-load and off-load release gear for lifeboats (including primary and secondary means of launching appliances for free-fall lifeboats), rescue boats, fast rescue boats and davit launched liferafts.

2.2 For the purpose of these Requirements:

.1 *Equipment* means the aforementioned equipment to which the Requirements apply.

[1] For the purpose of these Requirements, Company is as defined in SOLAS regulation IX/1.2.

.2 *Off-load release mechanism* means a release mechanism which releases the life/rescue boat when it is waterborne or when there is no load on the hooks.

.3 *On-load release mechanism* means a release mechanism which releases the lifeboat with load on the hooks.

.4 *Repair* means any activities requiring disassembly of equipment, or any other activities outside the scope of the on-board maintenance and repair instructions prepared in accordance with Regulation III/36.2 and 35.18 regarding instructions for emergency repair of life-saving appliances.

3 AUTHORIZATION AND CERTIFICATION

3.1 Weekly and monthly inspections and routine maintenance as specified in the equipment maintenance manual(s), should be carried out by the crew and shall be conducted under the direction of a senior ship's officer in accordance with the maintenance manual(s).

3.2~~1~~ Administrations shall ensure that the thorough examination and operational testing~~, repair and overhaul~~ of equipment shall be carried out in accordance with SOLAS regulation III/20 by either:

.1 a service provider~~s~~ authorized by ~~them~~the Administration, in accordance with section 6, or

.2 Company personnel certified in accordance with section 7, ~~that are~~who are qualified in these operations. Certification shall be limited to~~for each make and type of~~ the specific equipment for which they may provide a service.

3.3 Administrations shall ensure that the overhaul and repair of equipment shall be carried out in accordance with SOLAS regulation III/20 by a service provider authorized by the Administration in accordance with section 6, qualified in these operations for the equipment for which they provide a service.

~~3.2 Service providers carrying out the thorough examination, operational testing, repair and overhaul of equipment shall be authorized for each make and type of equipment in accordance with section 7.~~

~~4 QUALIFICATION LEVELS AND CERTIFICATION~~

~~4.1 Weekly and monthly inspections and routine maintenance as specified in the equipment maintenance manual(s), may be carried out by the shipboard personnel and shall be conducted under the direct supervision of a senior ship's officer in accordance with the maintenance manual(s).~~

~~4.2 All other inspections, servicing and repair shall be conducted by personnel appropriately trained and certified for the work to be done in accordance with section 8.~~

~~4.3~~3.4 Where these Requirements call for certification of ~~servicing~~ personnel, such certification shall be issued by ~~the~~an authorized service provider in accordance with ~~an established system for training and certification in accordance with paragraph~~ section 7~~8~~.

~~5~~4 REPORTS AND RECORDS

~~5~~4.1 All reports and checklists shall be correctly filled out and signed by the person who carries out the inspection and maintenance work and shall also be signed by the company's representative or the ship's master.

4.2 Records of all activities carried out to these Requirements shall be maintained on board for the service life of the equipment.

~~5.2 Records of inspections, servicing, repairs and maintenance shall be updated and filed on board the ship.~~

~~5~~4.3 When repairs, thorough examinations and annual servicing are completed, a statement confirming that the lifeboat arrangements remain fit for purpose shall be promptly issued by the certified personnel or authorized service provider who performed the work.

~~6~~5 SPECIFIC PROCEDURES FOR MAINTENANCE AND SERVICING

~~6~~5.1 General

~~6~~5.1.1 Any inspection, servicing and repair shall be carried out according to the maintenance manuals and associated technical documentation developed by the manufacturer or an alternative body authorized in accordance with section ~~6~~7.

~~6~~5.1.2 A full set of maintenance manuals and associated technical documentation as specified in paragraph ~~6~~5.1.1 shall be available on board for use in all operations involved in the inspection, maintenance, adjustment and resetting of the lifeboat and associated equipment, such as davits and release gear.

~~6.1.3 The maintenance manuals and associated technical documentation as specified in paragraph 6.1.1 shall include the items listed in sections 6.2 to 6.4 as a minimum and shall be periodically reviewed and updated as necessary.~~

5.1.3 The maintenance manuals and associated technical documentation relating to the annual thorough examination, operational testing and overhaul shall include the information contained in paragraphs 5.2 to 5.4 and shall be periodically reviewed and updated by the Company taking into account relevant information provided by the manufacturer.

~~6~~5.2 Annual thorough examination

~~6~~5.2.1 All items listed in checklists for the weekly/monthly inspections also form the first part of the annual thorough examination~~; when carrying out this examination, the inspection of these items shall be performed by the ship's crew in the presence of the manufacturer's representative or other person appropriately trained and certified for the work to be done in accordance with section 8~~.

~~6~~5.2.2 ~~Inspection and maintenance r~~Records of inspections and routine maintenance carried out by the ship's crew and the applicable certificates for the launching appliances and equipment shall be available.

~~6~~5.2.3 For lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, the following items shall be examined and checked for satisfactory condition and operation:

.1 condition of the boat structure including fixed and loose equipment (including a visual examination of the external boundaries of the void spaces, as far as practicable);

.2 engine and propulsion system;

.3 sprinkler system, where fitted;

.4 air supply system, where fitted;

.5 manoeuvring system;

.6 power supply system;

.7 bailing system;

.8 fender/skate arrangements; and

.9 rescue boat righting system, where fitted.

~~6~~5.2.4 For release gear of lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts, the following shall be examined for satisfactory condition[2] and operation after the annual winch brake test with the empty boat or equivalent load, as required by paragraph ~~6~~5.3.1:

.1 operation of devices for activation of release gear;

.2 excessive free play (tolerances);

.3 hydrostatic interlock system, where fitted;

.4 cables for control and release; and

.5 hook fastening.

Notes: 1 The setting and maintenance of release gear are critical operations with regard to maintaining the safe operation of lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and davit launched liferafts. Utmost care shall be taken when carrying out all inspection and maintenance operations on the equipment.

2 No maintenance or adjustment of the release gear shall be undertaken while the hooks are under load.

[2] Hanging-off pennants may be used for this purpose but should not remain connected at other times, such as when the lifeboat is normally stowed and during training exercises. The release gear is to be examined prior to its operational test. The release gear is to be re-examined after its operational test and the dynamic winch brake test. Special consideration shall be given to ensure that no damage has occurred during the winch brake test, especially to the hook fastening.

~~6~~5.2.5 The operational test of davit-launched lifeboats' and rescue boats' on-load release function shall be carried out as follows:

.1 position the boat partially in the water such that the mass of the boat is substantially supported by the falls and the hydrostatic interlock system, where fitted, is not triggered;

.2 operate the on-load release gear;

.3 reset the on-load release gear; and

.4 examine the release gear and hook fastening to ensure that the hook is completely reset and no damage has occurred.

~~6~~5.2.6 The operational test of davit-launched lifeboats' and rescue boats' off-load release function shall be carried out as follows:

.1 position the boat so that it is fully waterborne;

.2 operate the off-load release gear;

.3 reset the off-load release gear; and

.4 recover the boat to the stowed position and prepare for operational readiness.

During the test, prior to hoisting, it shall be checked that the release gear is completely and properly reset. The final turning-in of the boat shall be done without any persons on board.

~~6~~5.2.7 The operational test of the free-fall lifeboat release function shall be carried out as follows:

.1 engage the arrangements for the test without launching the lifeboat, required by paragraph 4.7.6.4 of the LSA Code, as specified in the manufacturer's operating instructions;

.2 ensure that the operator is properly seated and secured in the seat location from which the release mechanism is to be operated;

.3 operate the release mechanism to release the lifeboat;

.4 reset the lifeboat in the stowed configuration;

.5 repeat the procedures referred to in .2 to .4 above, using the back-up release mechanism, if applicable;

.6 remove the arrangements for the test without launching the lifeboat, required by paragraph 4.7.6.4 of the LSA Code; and

.7 verify that the lifeboat is in the ready to launch stowed configuration.

~~6~~5.2.8 The operational test of the davit-launched liferaft automatic release function shall be carried out as follows:

.1 manually release the hook with a load of 150 kg on the hook;

.2 automatically release the hook with a dummy weight of 200 kg on the hook when it is lowered to the ground; and

.3 examine the release hook and hook fastening to ensure that the hook is completely reset and no damage has occurred.

If a raft is used for the test instead of a dummy weight, the automatic release function shall release the raft when waterborne.

~~6~~5.2.9 For davits for lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts, the following items shall be examined for satisfactory condition and operation:

.1 davit structure, in particular with regard to corrosion, misalignments, deformation and excessive free play;

.2 wires and sheaves, possible damages such as kinks and corrosion;

.3 lubrication of wires, sheaves and moving parts; and

.4 if applicable:

.1 functioning of limit switches;

.2 stored power systems; and

.3 hydraulic systems.

~~6~~5.2.10 For winches for lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts, the following items shall be examined for satisfactory condition and operation:

.1 inspecting brake system and opening the brake where possible;

.2 replacing brake pads, if necessary;

.3 winch foundation; and

.4 if applicable:

.1 remote control system; and

.2 power supply system.

~~6~~5.3 Dynamic brake test of winches for lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts

~~6~~5.3.1 Annual operational testing shall be done by lowering the empty craft or equivalent load. When the craft has reached its maximum lowering speed and before the craft enters the water, the brake shall be abruptly applied.

~~6~~5.3.2 The five-year operational test shall be done by lowering the craft loaded to a proof load equal to 1.1 times the weight of the craft and its full complement of persons and equipment, or equivalent load. When the craft has reached its maximum lowering speed and before the craft enters the water, the brake shall be abruptly applied.

~~6~~5.3.3 Following these tests, the stressed structural parts shall be reinspected[3] where possible.

~~6~~5.4 Overhaul of release gear for lifeboats (including free-fall lifeboats), rescue boats, fast rescue boats and liferafts

The overhaul of release gear shall be carried out by authorized service providers personnel qualified on the make and type of the equipment and shall include:

.1 dismantling of hook release units;

.2 examinations with regard to tolerances and design requirements;

.3 adjustment of release gear system after assembly;

.4 operational tests as per above and with a load according to SOLAS regulations III/20.11.2.3 and III/20.11.3.3; and

.5 examinations of vital parts with regard to defects and cracks[4].

~~7~~6 CONDITIONS FOR AUTHORIZATION OF SERVICE PROVIDERS FOR LIFEBOATS (INCLUDING FREE-FALL LIFEBOATS), RESCUE BOATS AND FAST RESCUE BOATS, LAUNCHING APPLIANCES AND RELEASE GEAR

~~7~~6.1 Authorization as required by paragraphs 3.2.1, 3.3 and 3.4 shall require~~include~~, as a minimum, demonstration of:

.1 employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification programme. In either case, the certification programme shall comply with section ~~8~~7 for each make and type of equipment for which a service is to be provided;

.2 availability of sufficient tools, and in particular any specialized tools specified in the equipment manufacturer's instructions, including portable tools as needed for work to be carried out on board ship;

.3 access to appropriate parts and accessories as specified for repairing lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, launching appliances and release gear, as applicable;

.4 for servicing and repair work involving disassembly or adjustment of on-load release mechanisms and davit's winch, availability of the equipment manufacturer's instructions; and

.5 a documented and duly certified quality system, which covers at least the following:

.1 code of conduct for personnel involved in the relevant activity;

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[3] In loading the craft for this test, precautions should be taken to ensure that the stability of the craft is not adversely affected by free surface effects or the raising of the centre of gravity.

[4] Non-destructive examination (NDE) techniques, such as dye penetrants (DPE), may be suitable.

.2 maintenance and calibration of equipment;

.3 training programmes for personnel;

.4 supervision and verification to ensure compliance with operational procedures;

.5 recording and reporting of information;

.6 quality management of subsidiaries and agents;

.7 job preparation; and

.8 periodic review of work process procedures, complaints, corrective actions and issuance, maintenance and control of documents.

Note: A documented quality system complying with the most current version of the ISO 9000 series and including the above items would be considered acceptable.

~~7.2 Administrations shall arrange for regular inspections of service providers to ensure that work continues to be carried out based on these Requirements, and shall withdraw the authorization of service providers who are not in compliance. For service providers situated in other countries, the Administration may accept or recognize service providers authorized, checked or inspected by surveyors nominated for the purpose or by recognized organizations or by other SOLAS Contracting Governments.~~

6.2~~7.3~~ Administrations shall ensure that information regarding authorized service providers for equipment is made available ~~to mariners~~.

6.3~~7.4~~ Administrations may authorize service providers other than equipment manufacturers on the basis of prior authorization for the equipment and/or demonstrated expertise as an authorized service provider.

6.4 Issuance and maintenance of authorization document:

.1 Upon successful initial inspection of a service provider, an authorization document shall be issued by the Administration defining the scope of services provided (e.g. makes and types of equipment). The expiry date shall be clearly written on the document.

.2 The Administration shall ensure that work continues to be carried out in accordance with these Requirements, and shall withdraw the authorization of service providers who are not in compliance.

.3 The Administration may accept or recognize service providers authorized by other Administrations or by their Recognized Organizations.

~~7~~6.5 The requirements in this section shall apply equally to manufacturers when they are acting as service providers.

~~8~~7 REQUIREMENTS FOR CERTIFICATION OF PERSONNEL FOR SERVICING AND MAINTENANCE OF LIFEBOATS (INCLUDING FREE-FALL LIFEBOATS), RESCUE BOATS, LAUNCHING APPLIANCES AND RELEASE GEAR

~~8~~7.1 Personnel for the work specified in paragraph ~~4.2~~3.2.2 shall be certified by a service provider for each make and type of the equipment to be worked on in accordance with ~~a certification programme in accordance with~~the ~~following~~ provisions in this section.

~~8~~7.2 Education and training

~~8~~7.2.1 Education and training for initial certification of personnel shall be issued only to personnel having a qualification or demonstrated expertise. The specific training shall address, as a minimum:

.1 relevant rules and regulations, including international conventions;

.2 design and construction of lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, including on-load release gear and launching appliances;

.3 causes of lifeboat and rescue boat accidents;

.4 education and practical training in the procedures specified in section 6 for which certification is sought;

.5 detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboat (including free-fall lifeboats), rescue boats and fast rescue boats, launching appliances and on-load release gear, as applicable;

.6 procedures for issuing a report of service and statement of fitness for purpose based on paragraph ~~5~~4.3; and

.7 work, health and safety issues while conducting activities on board.

~~8~~7.2.2 The education and training for the personnel shall include practical technical training on actual inspection and maintenance using the equipment for which the personnel are to be certified. The technical training shall include disassembly, reassembly, correct operation and adjustment of the equipment. Classroom training shall be supplemented by field experience in the operations for which certification is sought, under the supervision of an experienced senior certified person.

~~8~~7.2.3 Prior to issuance of certification, a competency assessment shall be satisfactorily completed, using the equipment for which the personnel are to be certified.

7~~8~~.3 Terms of validity of certificates and update training

~~8~~7.3.1 Upon completion of training and competency assessment, a certificate shall be issued defining the level of qualification and the scope of the certification (e.g. makes and types of equipment). The expiry date shall clearly be written on the certificate. The expiry date shall be within three years from the date of issuance of the certificate.

~~8~~7.3.2 A competency assessment, and refresher training as appropriate, on the basis of that assessment, shall be conducted to renew the certification.

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ANNEX 17

DRAFT MSC CIRCULAR

EARLY IMPLEMENTATION OF THE AMENDMENTS TO THE FSS CODE

1 The Maritime Safety Committee, at its [ninety-sixth session (……)], adopted, by resolution MSC.[…]([…]), the new chapter 17 of the FSS Code, concerning foam firefighting appliances for the protection of helicopter facilities.

2 In adopting the aforementioned new chapter, the Committee agreed to the recommendation by the Sub-Committee on Ship Systems and Equipment, at its second session (23 to 27 March 2015), that parties concerned should be encouraged to implement chapter 17 of the FSS Code at the earliest possible opportunity.

3 Member Governments are invited to take account of this circular and bring it to the attention of all parties concerned.

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ANNEX 18

DRAFT MSC RESOLUTION

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 2009 (2009 MODU 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 that the Assembly, when adopting resolution A.1023(26) on the *Code for the Construction and Equipment of Mobile Offshore Drilling Units, 2009 (2009 MODU Code)*, authorized the Committee to amend the Code as appropriate, taking into consideration development in the design and technologies, in consultation with appropriate organizations,

RECOGNIZING the need for harmonizing the requirements for helicopter facility foam firefighting appliances,

HAVING CONSIDERED, at its [ninety-sixth] session, the recommendations made by the Sub-Committee on Ship Systems and Equipment, at its second session,

1 ADOPTS amendments to the 2009 MODU Code, set out in the annex to the present resolution;

2 INVITES all Governments concerned to take appropriate steps to give effect to the annexed amendments to the 2009 MODU Code by [date of entry into force].

ANNEX

AMENDMENTS TO THE CODE FOR THE CONSTRUCTION AND EQUIPMENT OF MOBILE OFFSHORE DRILLING UNITS, 2009 (2009 MODU CODE)

CHAPTER 9
FIRE SAFETY

Paragraph 9.16 – Provisions for helicopter facilities

The following new paragraph 9.16.4.6 is added after existing paragraph 9.16.4.5, and the remaining paragraphs renumbered accordingly:

> ".6 in lieu of the provisions of paragraphs 9.16.4.3 to 9.16.4.5, on units constructed on or after [date of entry into force], a foam application system complying with the provisions of the Fire Safety Systems Code."

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ANNEX 19

DRAFT MSC CIRCULAR

AMENDMENTS TO THE RECOMMENDATION ON HELICOPTER LANDING AREAS ON RO-RO PASSENGER SHIPS (MSC.1/CIRC.895)

1 The Maritime Safety Committee, at its [ninety-sixth session (……..)], approved amendments to the *Recommendation on Helicopter landing areas on ro-ro passenger ships* (MSC/Circ.895), as set out in the annex, prepared by the Sub-Committee on Ship Systems and Equipment, at its second session.

2 Member Governments are invited to use the annexed amendments when applying MSC/Circ.895 and to bring the amendments to all parties concerned.

ANNEX

AMENDMENTS TO THE RECOMMENDATION ON HELICOPTER LANDING AREAS ON RO-RO PASSENGER SHIPS (MSC.1/CIRC.895)

Paragraph 4 – Firefighting appliances and rescue equipment

The following new paragraph 4.5 is added after existing paragraph 4.4, and the remaining paragraphs renumbered accordingly:

> ".5 in lieu of the provisions of paragraphs 4.3 and 4.4, on ships constructed on or after [date], a foam application system complying with the provisions of the Fire Safety Systems Code."

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ANNEX 20

STATEMENTS BY DELEGATIONS AND OBSERVERS*

AGENDA ITEM 1

STATEMENT BY THE DELEGATION OF VANUATU

"Merci Monsieur le Président et Bonjour à tous.

C'est avec beaucoup d'émotion que je souhaiterais tout d'abord remercier le Secrétaire Général pour l'expression de son soutien et de sa solidarité dans cette épreuve que traverse mon pays, épreuve qui je crains marquera à jamais la conscience du peuple Vanuatais ainsi que celle de nos pays voisins comme Kiribati, Tuvalu et les iles Salomon.

Le Cyclone PAM de catégorie 5 a dévasté le Sud de l'archipel du Vanuatu et les dommages sont conséquents.

La végétation et les habitations ont étaient en grande partie décimée et rasées, les ponts détruits, les moyens de communication coupés et la fourniture d'électricité limitée pour les prochaines semaines. Nous craignons de nombreuses victimes.

Nous avons un besoin urgent en eau potable, denrées alimentaires, aide médicale, matériels et matériaux de reconstruction.
Un couvre-feu a été décrété sur la commune de Port-Vila, Capitale du Vanuatu, afin de palier de possibles débordements.

Notre pays est un Petit Etat insulaire en Développement de 83 iles qui dispose de peu de richesses. L'Agriculture et l'élevage sont les seules ressources et ces dernières ont été anéanties. Le peuple Vanuatais a désespérément besoin d'une aide humanitaire pérenne sur plusieurs mois.

Au nom de mon Gouvernement, je souhaiterais exprimer toute notre gratitude envers les ONG et les pays qui comme l'Australie, la Chine, la France, l'Italie, le Japon, la Nouvelle Zélande, le Royaume Uni, les Nations Unies, l'Union Européenne ont déjà répondu à l'appel de notre Président de la République, Baldwin Lonsdale.

Je souhaiterais également remercier tous ceux qui m'ont adressé des messages de soutien, mais également les armateurs Vanuatais pour leur générosité et enfin Charlie Birkett de la société Y.co qui a eu la gentillesse de me mettre en contact avec le Capitaine Mike Gregory à bord du SuperYacht – Dragon Fly, qui a récemment rejoint des iles reculées du Sud de notre archipel avec eau, nourriture, outils, équipements médical et médecins.

Pour ma part, je n'ai a déploré aucune victime dans mon entourage si ce n'est la perte de notre maison familiale qui a été littéralement emportée par des vents établis à plus de 300kms/h balayant les souvenirs de toute une vie."

* Statements have been included in this annex in the order in which they were given, sorted by agenda items, and in the language of submission (including translation into any other language if such translation was provided). Statements are available in all the official languages on audio file: https://docs.imo.org/Meetings/Media.aspx

STATEMENT BY THE DELEGATION OF TUVALU

"Firstly, we would like to express our sincere condolences to the people of Vanuatu following the recent hammering they took from the full force cyclone Pam.

Nearly half the population of Tuvalu have been severely affected by the devastation wrought by cyclone Pam.

Tuvalu consists of a grouping of nine low lying coral atolls with a population of less than 11,000.

Before the full impact of cyclone Pam hit the Region several Islands were hit by Storm Surges, up to 4meter high waves rolled in causing extensive flooding.

Many houses and crops were washed away and many pig enclosures have also been destroyed. The loss to livestock is unknown but expected to be high and fishing is restricted due to a lack of fuel and/ or boats.

Many Communities are experiencing electricity and water shortages.

There are also worrying concerns following the aftermath in terms of hygiene and supplies of essential materials, like food, medicine and water.

However, as far as we know thankfully there are no fatalities and the Capital Funafuti has escaped major damage.

Tuvalu announced a State of Public Emergency Proclamation on the 7 March 2015 for 7 days and was later extended for another 7 days on Friday 13 March 2015 to end on the 27 March 2015.

The response from the International Community have been very positive with a total amount of about AUD 2.2 million, in-kind, cash and pledge donations to relief and recovery donations and this includes donations from the Government of Australia, Government of New Zealand, Papua New Guinea, International Federation of the Red Cross (IFRC), UNICEF and the United States of America. A New Zealand C130 flight on Sunday 22 March came to drop relief supplies which includes equipment, emergency food and medical supplies from New Zealand, IFRC and UNICEF.

The Government of Australia have said they will also support the long-term recovery and reconstruction, in consultation with the Tuvalu government.

I would like to thank the Government of Australia, New Zealand, Papua New Guinea, IFRC, UNICEF and the United States of America for their assistance during this difficult and demanding time.

Finally, affected communities have described this as the most traumatic natural disasters they have ever faced."

AGENDA ITEM 8

STATEMENT BY THE OBSERVER OF ILAMA

"We thank New Zealand and the correspondence group for the extensive work they have done on the gathering and analysis of the incident data.

As reflected in annex 4 of this document, a serious number of accidents were caused by wire rope failure.

For LSA equipment ILAMA members also noted an increase in accidents caused by wire rope failure. It is however very difficult for ILAMA to identify a root cause for this increase, but it may well be that the changes of SOLAS Chapter III regulation 20, paragraph 4, contribute to this unfortunate development.

We kindly ask this sub-committee to take note of the concerns raised by ILAMA and propose that this matter be brought to the attention of the MSC allowing future discussions in this Committee."

STATEMENT BY THE OBSERVER OF ITF

"International Transport Workers Federation representing Seafarers and Dockers, welcomes submissions from the correspondence group and Antigua and Barbuda, New Zealand and ICHCA International.

From the onset, the ITF, through its participation with ICHCA, has been concerned with two important anomalies regarding the testing, maintenance and inspection of onboard lifting appliances.

- First, there were reported incidents of rotary cranes detaching from their pedestal bases due to worn out slewing rings. It was discovered that these rings were often overlooked during the annual thorough examination.

- Secondly, there were reports of ship's store cranes that are normally located around the ship's super structure experiencing failure and/or outright separation from the base putting crew members and stevedores at enormous risk.

These reported incidences were discussed at the DSC 16 Sub-committee few years ago which actually brought us here at SSE 2.

The ITF also concur with New Zealand that there are too many lifting appliances failure occurring, due to lack of proper maintenance, inspection and misuse.

With that in mind we are in agreement in principle that introducing amendments to SOLAS chapter II-1 Structure of Ships to include lifting appliances and loose gear as proposed in SSE 2/8/2 submitted by Antigua and Barbuda, New Zealand and ICHCA International should be an effective way to establish a uniform, comprehensive and mandatory scheme regarding the testing, maintenance and inspection of all on-board lifting appliances and their accompanying loose gear.

However, ITF had concerns then and still does, that the procedural guidelines and standards that should be attached to these SOLAS amendments must not, in any way, be inferior to guidelines and standards set by ILO Convention 152 and the Code of Practice in Safety and Health in Ports.

In that regard, the Committee is invited to take into consideration that its decisions should be also guided by the IMO/ILO Agreement, and in particular article 65 of Volume 1 with regard to cooperation with specialized agencies of the United Nations.

In this instant case, with regard to lifting appliances, the ILO is the specialized agency.

As such, ITF would like to suggest that term of reference for Working Group on Onboard lifting appliances and winches, if established, reflect this fact. As for the accompanying guidelines, we would like to suggest to be amended by adopting the requirements of ILO C152 regarding lifting appliances and appendices A to H of the ILO Code of Practice in Safety & Health in Ports as minimum requirement for the testing, maintenance and inspection of all lifting appliances."

STATEMENT BY THE DELEGATION OF VANUATU

"Vanuatu would like to make a general statement concerning the report of the working group. We wish this statement to form a part of the record of this session and be made available to the Marine Safety Committee at their next session.

Vanuatu participated in the working group, however even after the difficult discussions in plenary, the majority of the group continued to frame the issue within the terms that have failed to progress the work program. The group did not have an opportunity to fully review the incident data as a method for refining "scope".

Notwithstanding the plenary decision to restrict the terms of reference to "*delivering recommendations related to scope and application…*", the group was unable to narrow the scope of application. The concept of keeping the scope broad was promoted on the basis that more data has been promised to either the parent Committee or the next session of the Sub-committee. We believe it is unsatisfactory to continue to delay the completion of the work again.

It is Vanuatu's opinion that the options presented in SSE 2/8/1 addressed the specific concerns of the parent Committee by presenting specific measures justified by the casualty data made available to the correspondence group. Presenting these options to MSC would effect a timely conclusion of the work program.

Vanuatu therefore, respectfully requests that SSE 2/8/1 be forwarded to the parent Committee to assist them in their deliberations on specific deliverables in this matter."

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