# Correspondence Group on Safe Mooring Operations

**\*Consolidated comments following Round 3\***

**Revised 23rd August 2017**

**TOR 2, Draft new Guidelines for safe mooring operations**

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**ANNEX 2**

**DRAFT GUIDELINES ON [DESIGN, ARRANGEMENT AND SELECTION OF APPROPRIATE EQUIPMENT/THE DESIGN OF THE MOORING ARRANGEMENT AND THE SELECTION OF APPROPRIATE MOORING EQUIPMENT]** [**ARRANGEMENT AND EQUIPMENT**] **FOR SAFE MOORING**

UK: The term “as far as reasonable and practicable appears in different forms in the guidelines (“as far as possible”, “as far as practicable”, “as far as reasonably practicable”). There should be consistent usage. The term in UK legislation is “so far as is reasonably practicable”, but “as far as reasonable and practicable” would also be clear.

Germany: Supports the first proposal (design, arrangement and selection of appropriate equipment)

Marshall Islands: For simplicity, our preference for the title is “Draft Guidelines on the Design of Mooring Arrangements and the Selection of Appropriate Mooring Equipment for Safe Mooring.” We can also support the alternate title suggested by ICS that includes human centered design.

ICS: Considers that the title which best reflects the purpose and content of the guidelines is:

“**DRAFT GUIDELINES ON THE DESIGN OF MOORING ARRANGEMENTS AND THE SELECTION OF APPROPRIATE MOORING EQUIPMENT AND FITTINGS** **FOR SAFE MOORING”**

Alternatively, should the CG appreciate the need to address the reference to occupational health included in paragraph 5 of the regulation text, then the title could be consequentially amended to:

“**DRAFT GUIDELINES ON THE DESIGN OF MOORING ARRANGEMENTS AND THE SELECTION OF APPROPRIATE MOORING EQUIPMENT AND FITTINGS** **TO PROMOTE** **HUMAN CENTRED DESIGN OF MOORING ARRANGEMENTS”**

INTERTANKO: Support ICS proposal on title:

“**DRAFT GUIDELINES ON THE DESIGN OF MOORING ARRANGEMENTS AND THE SELECTION OF APPROPRIATE MOORING EQUIPMENT AND FITTINGS** **FOR SAFE MOORING”**

ICHCA: Believes the current title options are confusing and should be considered as;

“ DRAFT GUIDELINES ON DESIGN, ARRANGEMENT AND SELECTION OF APPROPRIATE EQUIPMENT AND FITTINGS FOR SAFE MOORING OPERATIONS” this is similar to ICS proposal but adds the word “operations”

Australia: Rewrite as per ICS proposal:

DRAFT GUIDELINES ON THE DESIGN OF MOORING ARRANGEMENTS AND THE SELECTION OF MOORING EQUIPMENT FOR SAFE MOORING OPERATIONS

US: The United States concurs that several important issues would be more-quickly resolved in direct discussions by a working group at SDC 5.

Coordinators remarks: As a new option the proposed text by ICS seems to be supported. Accordingly this has been incorporated. As to the comment by UK and others to be consistent in the use of the terms “as far as possible”, “as far as practicable” or “as far as reasonably practicable”, the coordinator has taken advantage of the advice of UK and modified these parts with the wording “so far as is reasonably practicable”.

**1 Introduction**

Denmark:Remove the square brackets.

1.1 Historical evolution in ship designs, especially the design of large ships have resulted in optimized performance and a greater degree of complexity; this has not been extended to the design of ships mooring arrangements. In order to improve occupational health and **[enable]** safety during **[towing and]** mooring operations on new ships, new design methods for mooring operations should be introduced also taking into account likely mooring configurations.

Norway: As defined in 2.5, *Mooring operations* means mooring and unmooring of the ship and in-harbor towing operations related to mooring and unmooring of the ship.

Is it then necessary to add ‘towing’ here?

UK: Delete both sets of text in square brackets.

Comment: The definition of mooring operations includes in harbour towing operations related to mooring. It is therefore not needed here. However, this would be clearer if the definitions were moved to the start of the Guidelines.

OCIMF: All square brackets can be removed

Germany: The word “enable” should be deleted. It is not necessary to insert “towing and”, towing operations are included in the definition of mooring operations (Paragraph 2.5).

China: The newly inserted “towing” seems unnecessary.

SIGTTO: Remove square brackets and retain text, agree with strike-outs.

Marshall Islands: We feel the entire paragraph could be deleted. If retained, we agree with removing the square brackets and deleting the text as indicted.

ICS: Paragraph 1.1 – not relevant and should be deleted.

Italy: Supports the text in the square brackets.

INTERTANKO: The text in the square brackets in **[enable]** safety during **[towing and]** mooring operations are acceptable. 1.1 The strikeouts are acceptable

However, is the text relevant and add to these guidelines?

ICHCA: Remove square brackets.

Australia: the paragraph is unnecessarily too long, suggest rewrite:

*To improve occupational health and ensure safe towing and mooring operations, design methods taking into account size of the ships and likely mooring configurations should be introduced.*

IACS: Disagree to include [enable] in the second sentence, agree to include [towing and] and agree to delete text in brackets. Propose to delete “also” in the second sentence.

Coordinators remarks: It seems that the majority prefer to remove the square brackets and retain the text.

1.2 The International Convention for the Safety of Life at Sea (SOLAS), as amended, requires in chapter [II-1, part A, regulation 3-8] that the mooring arrangement in ships of 3,000 gross tonnage or above constructed on or after [1 January 2024] shall be designed and arranged to **[enable the safe conduct of all towing and mooring operations associated with the normal operation of the ship**.**]** Ships less than 3,000 gross tonnage constructed on or after [1 January 2024] shall comply with the above requirement, as far as reasonable and practicable, or with applicable national standards of the Administration which provide an equivalent level of safety.

OCIMF: Bold text within square brackets is supported by OCIMF and delete what is ~~struck out~~. OCIMF would prefer to see the date of 1 Jan 2024 moved forward to 1 Jan 2020.

SIGTTO: Remove square brackets retain text (although no view on date), agree with strike-out.

Marshall Islands: We agree with deleting all of the square brackets, deleting the text as indicated and the new proposed text.

ICS: Paragraph 1.2 – support the text below:

“1.2 The International Convention for the Safety of Life at Sea (SOLAS), as amended, requires in chapter [II-1, part A, regulation 3-8] that the mooring arrangement in ships of 3,000 gross tonnage or above constructed on or after [1 January 2024] shall be designed and arranged to **enable the safe conduct of all towing and mooring operations associated with the normal operation of the ship**. Ships less than 3,000 gross tonnage constructed on or after [1 January 2024] shall comply with the above requirement, as far as reasonable and practicable, or with applicable national standards of the Administration which provide an equivalent level of safety.

Or alternatively:

“1.2 The International Convention for the Safety of Life at Sea (SOLAS), as amended, requires in chapter [II-1, part A, regulation 3-8] that the mooring arrangement in ships of 3,000 gross tonnage or above constructed on or after [1 January 2024] shall be designed and arranged to **in order to promote human centered design of mooring arrangements**. Ships less than 3,000 gross tonnage constructed on or after [1 January 2024] shall comply with the above requirement, as far as reasonable and practicable, or with applicable national standards of the Administration which provide an equivalent level of safety.

Italy: Supports the date 1 Jan 2024.

INTERTANKO: Instead of occupational health, consider using wordings like Human Centered Design.

ICHCA: Bold text is supported by ICHCA. Date in square brackets should be 2020.

Japan: Proposes to replace “Ships less than 3,000 gross tonnage constructed on or after [1 January 2024] shall comply … as far as reasonable and practicable …” with “Ships less than 3,000 gross tonnage constructed on or after [1 January 2024] **should** comply… as far as reasonable and practicable …”.

Australia: Text in the square brackets is again unnecessarily long, suggest following text replaces the proposed text inside square brackets:

[enable carrying out of all towing and mooring operations safely]

IACS: Agree to changes in brackets. In the last sentence “shall” is proposed to be replaced by “should” as is also proposed for the text of the Regulation.

Coordinators remarks: In general the text seems to be supported. As to removing the square brackets it seems appropriate to maintain them regarding the parts on the SOLAS reference and the entering into force dates. As to the use of “should” or “shall” this should follow the corresponding SOLAS text. Accordingly, these options have been put in square brackets.

1.3 These guidelines provide recommendations on how to interpret and apply the provisions of the SOLAS requirements.

OCIMF: Suggest adding the underlined text at the end of the sentence ‘*These guidelines provide recommendations on how to interpret and apply the provisions of the SOLAS requirements for towing and mooring.*’

1.3bis – OCIMF would like to see this text remain. It’s very important for the CG to look to benefit the safety of vessels that are operating today rather than just in the future with new builds.

1.4 – OCIMF would like to see this text remain.

Marshall Islands: – support removing the square brackets and deleting the text as indicated. To ensure clarity regarding which SOLAS requirements are the focus of this circular, we support either the text proposed by OCIMF or adding “referenced above” immediately after “requirements.”

Paragraph 1.3bis – we agree with the scope of those addressed by the paragraph. We support retaining it so that it can be discussed during the WG at SDC 5.

Paragraph 1.3ter - we would prefer to see this paragraph retained since it provides some recognition that this circular addresses ships currently in service as well as new builds. We support retaining it so that it can be discussed during the WG at SDC 5.

ICS: Do guidelines have any other purpose? Not convinced this paragraph is necessary.

Italy: Supports the OCIMF suggestion to adding the underlined text at the end of the sentence ‘*These guidelines provide recommendations on how to interpret and apply the provisions of the SOLAS requirements for towing and mooring.*’

1.3bis - Italy is of the view to keep this text as indicated by OCIMF.

1.4 – Italy would like to keep this text.

ICHCA: Text as proposed is okay. Deletions approved. 1.3 bis/ter delete. 1.4 remain.

Australia: Support proposed deletion and keep text inside square brackets.

1.3bis to 1.4 – support proposed deletion

Coordinators remarks: It seems that current 1.3 is acceptable. As to maintaining 1.4, the proposed amendment by OCIMF seems to make it obsolete. The corresponding text by OCIMF has been put in squarebrackets.

**2 Definitions**

Denmark:Remove the square brackets.

OCIMF: Has no concerns with the defintions as proposed.

Marshall Islands: Although we have no objection to removing the square brackets and making the proposed changes to the text (additions and deletions), as previously suggested by the US in Round 2 and echoed by ICS in this round, it would be appropriate to hold off further discussion of this section until the rest of the Guidelines have been agreed.

ICS: Definitions. Further consideration of any definition text should be deferred until the Guidelines are approaching finalization, as proposed by the US and others in Round 2.

Italy: Supports the proposed modification.

INTERTANKO: Below are some suggestions, however, the definitions section should be the last to be completed to reflect the final text in the guidelines as proposed by US and others.

ICHCA:Definitions are all okay with ICHCA.

ICHCA supports the text in square brackets with the addition of the word “maintenance” i.e.

“The equipment selection and mooring arrangement design safety objectives should be to facilitate safe mooring operations and reduce the risk to mooring personnel caused by inappropriate selection, arrangement and maintenance of equipment and fittings”

For the purposes of these guidelines:

2.2 Mooring [area] refers to the [dedicated] area where mooring equipment is installed and line-handling takes place. It also includes areas where there is a risk of personnel injury in event of snap-back or other failure of mooring equipment. There may be multiple mooring areas on a vessel.

UK: Mooring area: Retain the words in square brackets.

BIMCO: We support the coordinator’s proposal to use ‘area’.

Germany: retain the words in square brackets.

INTERTANKO: The text in the square brackets are acceptable as well as the proposed deletion.

Japan: As Japan pointed out in the first round and second round, the definition of “mooring area” in the paragraph 2.2 should be reviewed, for the reason that the mooring area will be too wide according to the second sentence. It should be noted that non-slip coating on mooring decks is adopted to comply with the requirement in the paragraph 4.18 on minimizing tripping and slipping hazards and that non-slip coating may lead to rapid wear and tear of mooring lines. Japan therefore proposes to delete the second sentence of the paragraph 2.2.

Even if this proposal is not accepted, it should be considered that non-slip coating should not be required for too wide area for the mentioned reason.

Japan proposes to delete “dedicated” as the words “dedicated area” are not clear.

Australia: Support to keep texts inside both square brackets

IACS: It is preferred to keep “[area]”.

Coordinators remarks: In general it seems supported to delete the square brackets.

Italy: 2.2quinquies – Italy supports the proposed text made by ICHCA.

Coordinators remark: 2.2quinquies was deleted following round 2.

2.**3** “Mooring arrangements means the configuration of the mooring equipment and fittings and other design features of the ships related to the mooring operation i.e. lighting and communication equipment.”

UK: Mooring arrangements: Mooring arrangements means **the dimensions of the mooring area,** the configuration of the mooring equipment and fittings and other design features of the ships related to the mooring operation i.e. lighting and communications equipment.

Comment: Sub-paragraph 4.11 covers sufficient working space, so this should be part of mooring arrangements.

Australia: Support to retain.

IACS: We consider that communication equipment is part of the mooring operation and should not be considered by these guidelines. Propose to delete “and communication equipment”.

Coordinators remarks: No square brackets to consider and no clear preferences. Text remains at this stage.

2.**4** Mooring equipment and fittings means items such as mooring winches, capstans, bollards, bitts, fairleads, rollers, chocks etc. and also includes mooring lines.

Australia: Support to retain.

Coordinators remarks: Text remains.

[2.**5** Mooring operations means mooring and unmooring of the ship and in-harbour towing operations related to mooring and unmooring of the ship.]

Germany: To be consistent between paragraph 1.2 and 2.5 insert “according to the normal operation of the ship” at the end of the paragraph and delete paragraph 2.7 .

Australia: Support to retain. However, harbor is a generic term whereas port has defined geographical area. So suggest replace “harbour’ with “port”

Coordinators remarks: Removing the square brackets seems to be supported. Text by Germany has been put in square brackets. Further the clarification by Australia has been included

[2.**6** *“* **Mooring personnel includes all personnel engaged in mooring activities and line-handling including ships crew, shore based personnel and personnel in mooring boats”.**]

BIMCO: *Mooring personnel means the personnel tasked to assist in the activity of mooring and unmooring ships, either ashore or from mooring boats, carried out within the framework of port marine services”*

BIMCO supports the proposal by ICHCA.

We agree to delete the definition of mooring boat.

Germany: Supports to retain the entire paragraph.

INTERTANKO: Seeing the definition in 2.5, propose to replace “mooring activities and line-handling” with Mooring operations. Consider amending 2.5 if needed.

Japan: Proposes to replace “ships crew” with “crew” in accordance with the expression used in SOLAS.

Australia: Support new text in bold. Just a small query. What about personnel on the tug boats? Do we need to cover them as well? If so, suggest adding the words “and tug boats” after the words “mooring boats”. 2.2sexies – should be retained as the term “mooring boat” is used in 2.6

IACS: Careful consideration is required on how SOLAS and relevant guideline address safety of shore-personnel who may not actually come onboard. The scope requirement may be limited to ship crew’s mooring activity that has interaction with shore parties.

Coordinators remarks: In general it seems supported to retain the text in square brackets. As to the clarifications proposed by INTERTANKO and Japan they seem to help on the definition and context in general and have been included.

[**2.7 Normal mooring operations means situations within the framework of these guidelines.**]

OCIMF: Unsure of the value/significance of the square brackets in 2.7. Suggest deletion or more clarity. The terms *Normal, Typical*, and *Usual* are used interchangeably. We will need consistency.

China: The definition for “normal mooring” seems unnecessary.

Italy: Supports the comment made by OCIMF.

INTERTANKO: Consider amending 2.5 instead of a separate bullet point. For consistency, ensure that we only use one term; *Normal, Typical*, and *Usual* are currently used in the document.

Japan: Supports to define the expressions “normal mooring operation.” The definition should be reviewed after the discussion on the requirements of these Guidelines.

Australia: Oppose, should be deleted. Australia consistently opposed use of the words “Normal mooring operation” and continues to do so. Whether normal or emergency, these guidelines always apply. These requirements are for safe mooring regardless of normal or emergency. The whole purpose of these guidelines is to make people think about preparing the ship for the unexpected. The use of the word ‘normal’ anywhere in the document can take the ordinary dictionary meaning. Also the guidelines says “as far as practicable/reasonable in many places, using “normal mooring operation” is confusing.

IACS: This definition is not clear and seems unnecessary.

Coordinators remarks: In general there seems to be little support to this definition, which has been deleted.

**3 Goals**

Denmark:Remove the square brackets.

UK: Delete words in square brackets.

OCIMF: Would like to see the first paragraph retain ‘*The equipment selection and mooring arrangement design safety objectives should be to facilitate safe mooring operations and reduce the risk to mooring personnel caused by inappropriate selection and arrangement of equipment and fittings.*’ and the balance within section 3 deleted.

SIGTTO: As a simple statement of the ’Goals’ the first paragraph in square brackets commencing ”The equipment selection...” is the most appropiate.

Marshall Islands: We support deleting the text in the first set of square brackets as proposed, retaining the text that this in the second set of square brackets, and deleting the text that is in the third set of square brackets.

ICS: Supports the use of the following text currently in square brackets. All other text can be deleted.

**“3 Goals**

“The equipment selection and mooring arrangement design safety objectives should be to facilitate safe mooring operations and reduce the risk to mooring personnel caused by inappropriate selection and arrangement of equipment and fittings.”

In the context of these Guidelines, what the statement “The outcome of the design shall be the creation of a corresponding mooring arrangement, enabling the crew to maintain the ship/shore interface throughout the port call” actually means in practice is not clear. Its value and purpose should therefore be carefully considered.

Italy: As already indicated by OCIMF would like to keep the first paragraph ‘*The equipment selection and mooring arrangement design safety objectives should be to facilitate safe mooring operations and reduce the risk to mooring personnel caused by inappropriate selection and arrangement of equipment and fittings.*’ and the balance within section 3 deleted.

The equipment selection and mooring arrangement design safety objectives should be to facilitate safe mooring operations and reduce the risk to mooring personnel caused by inappropriate selection and arrangement of equipment and fittings.

Australia: Suggest modified text for the first paragraph to make it simple as follows:

*The safety objectives for the design of the mooring arrangements and the equipment selection are to reduce the risk of injury to personnel during mooring operatio*

IACS: Propose to modify sentence and delete “and fittings” as fittings are considered to be part of the equipment: “The goal of these guidelines is to facilitate safe mooring operations and reduce the risk to mooring personnel caused by inappropriate selection and arrangement of mooring equipment.”

Coordinators remarks: In general the current text seems to be supported. As to the comments By IACS to delete fittings, this would be consistent with other comments. This part has been put in square brackets.

[The outcome of the design shall be the creation of a corresponding mooring arrangement, enabling the crew to maintain the ship/shore interface throughout the port call.]

Germany: Supports to delete the entire sentence in square brackets.

The Nautical Institute: Remove square brackets from the second paragraph.

Australia: Do not support the second paragraph and suggest deletion.

IACS: This paragraph is proposed to be deleted.

Coordinators remarks: There seems to be little support for this part. Text has been deleted.

**4 Functional objectives**

IACS: For functional objectives 4.1, 4.9bis, 4.13, 4.14, 4.16, 4.18, and 4.20 no related provisions could be identified in Section 5. At least for items 4.1, 4.13, 4.14, and 4.20 either related provisions should be added in Section 5 or these items should be deleted.

For item 5.2.3 no related functional objectives could be identified above. This should be rectified e.g. by adding a functional objective “it ensures flexibility for exceptional conditions”.

Coordinators remarks: Point noted. Will be reflected in the report.

To achieve the goals as set out above, the mooring **arrangement** should be designed and arranged to ensure that:

OCIMF: has no strong view on whether the term mooring *arrangement* or mooring *equipment* is utilized.

Marshall Islands: We support “mooring arrangement.”

ICS: The following comments regarding Section 4 – Functional requirements are made without prejudice to the view expressed in Round 2. The text below could be accepted as a basis for further consideration at SDC 5:

INTERTANKO: Agree with arrangement.

ICHCA: “Arrangement” is okay.

IACS: The wording is unsatisfying and is proposed to be improved as follows: “To achieve the goals as set out above, the mooring equipment should be selected and arranged to ensure that:”

Coordinators remarks: In general “arrangement” seems to be supported.

.1 **it** provides unobstructed access to and operation of the mooring equipment;

Marshall Islands: We support the proposed changes. (Prior 4.3)We support the proposed changes.

ICS: **it** provides unobstructed access to and operation of the mooring equipment;

Coordinators remarks: It seems that “it” is supported.

.2 **it** minimizes the need for complex mooring line configurations during the normal operation of the ship;

UK: 2 and 4 are duplicated. Remove 4.

ICS: **it** minimizes the need for complex mooring line configurations during the normal operation of the ship;

Australia: Normal or emergency, the idea is to keep the configurations simple as much as possible. So suggest modified text:

*it minimizes the need for complex mooring line configurations and simplifies line handling during mooring operations.*

Coordinators remarks: It seems that “it” is supported. As to the deletion of the next paragraph, as proposed by several; the proposal seems appropriate and has been included in square brackets.

.**3**~~4~~ [line handling is simplified; */***Use of complex mooring line configurations** **is avoided**]

Denmark: We prefer the highlighted text which seems clearer.

UK: 2 and 4 are duplicated. Remove 4.

Germany: Supports to delete subparagraph .4 and .7, this is duplicating subparagraph .2 and .10.

Marshall Islands: we prefer “use of complex mooring line configurations is minimized.”

ICS: **Use of complex mooring line configurations** **is ~~avoided~~** minimized

ICHCA: propose Use of complex mooring line configurations is avoided where practicable.

Republic of Korea: Prefer to use following sentence. [Use of complex mooring line configurations is avoided].

Japan: Proposes to delete the paragraph 4.4 as it means the same as the paragraph 4.2.

Australia: Delete as covered by 4.2.

IACS: The second option is contained already in 4.2.

Coordinator remarks: In general it seems that this paragraph is already covered by 4.2. Accordingly it has been deleted.

.**4**~~6~~ it is appropriate for the specific ship type and its usual mooring configuration;

ICS: it is appropriate for the specific ship type and its usual mooring configuration;

.**5**~~7~~ there is **[as far as practicable]** an unobstructed view of the mooring area for those taking part in the mooring operation.

Denmark: We would prefer to delete the text in square brackets. At the design stage it should be possible to plan the mooring arrangement to ensure an unobstructed view of the mooring area.

UK: 7 and 10 are duplicated. Remove 7.

OCIMF: 4.7 & 4.10 – These two sections are intended to cover the same sections. We support a clear view of the mooring areas either visually through a line of site and/or CCTV operations. OCIMF suggests the following to replace 4.7: ‘*there is, as far as practicable, an unobstructed view (eg: CCTV and/or visual line of sight) of the mooring area for those taking part in the mooring operation, and to provide supervisors a clear view of the mooring area at all times. Adequate illumination should be provided for mooring operations during hours of darkness*.’

Germany: Supports to delete subparagraph .4 and .7, this is duplicating subparagraph .2 and .10.

Marshall Islands: .7 and .10 address the same issue and can be combined. We support the text proposed by OCIMF.

ICS: there is **as far as practicable** an unobstructed view of the mooring area for those taking part in the mooring operation.

Italy: 4.7 & 4.10 – for these two sections Italy aligns with the view expressed by OCIMF and also suggests to keep the text proposed for 4.7: ‘*there is, as far as practicable, an unobstructed view (eg: CCTV and/or visual line of sight) of the mooring area for those taking part in the mooring operation, and to provide supervisors a clear view of the mooring area at all times. Adequate illumination should be provided for mooring operations during hours of darkness*.’

INTERTANKO: See 4.10 below, and there should be an unobstructed view of the mooring area, if it’s not achievable direct, then aids like CCTV should be used. Support OCIMF proposal for round 3 for this purpose.

The Nautical Institute: As others we would merge 4.7 and 4.10 and include reference to adequate illumination.

ICHCA: remove square brackets (4.10 as written is redundant as it says the same thing- I think it was originally intended to cover “lighting” this could be re-instated)

Republic of Korea: Prefer to use sentence of square bracket.

Australia: Do not support text inside square brackets.

Coordinators remarks: There seems to be no consensus on the text in square brackets. Accordingly they remain. As to the comment by OCIMF, this part may not be a functional objective but rather “the” solution to it. This proposal may be discussed at a later stage.

.**6**~~8~~ it minimizes the exposure of mooring personnel, including personnel monitoring lines and supervising the mooring area, to the hazards associated with mooring lines under tension or dynamic load;

ICS: it minimizes the exposure of mooring personnel, including personnel monitoring lines and supervising the mooring area, to the hazards associated with mooring lines under tension or dynamic load;

.7~~9~~ ***[mooring lines are appropriate for the mooring equipment and fittings installed on board.***]

Denmark: Remove square brackets.

UK: Mooring lines are **compatible with** the mooring equipment and fittings installed on board.

Marshall Islands: We support removing the square brackets and changing the text as indicated (retaining the text in bold).

ICS: ***mooring lines are appropriate for the mooring equipment and fittings installed on board***

The Nautical Institute: Remove square brackets.

ICHCA: Remove square brackets.

Australia: Support bold text inside square brackets.

IACS: Agree to change.

Coordinators remarks: In general the text seems to be supported. The clarification by UK has been included.

[.**8**~~9bis~~ **unnecessary stresses on the mooring lines are avoided.**]

Denmark: Remove square brackets. To be persistent, perhaps the term “stresses” should be included i paragraph 5.2.5, e.g. “5.2.5 To avoid overload and stressing of mooring winches …….”.

UK: 9bis and 14 are duplicated. Remove 9bis.

OCIMF: This bullet is unclear. Unnecessary stresses are not clear. Mooring lines utilized should be as what the vessel was designed to be used with and a condition monitoring system will support their retirement before failure. We suggest this bullet is deleted.

SIGTTO: Not clear as a functional requirement, suggest deletion.

Marshall Islands: It is not clear that this paragraph is necessary; this same point is addressed more clearly in paragraph 4.14.

Italy: Supports the proposal made by OCIMF for this paragraph.

INTERTANKO: We need to define unnecessary stresses if this bullet point should remain. If not, we do not agree with text in square brackets.

ICHCA: Delete.

Republic of Korea: We support the Japan proposal of Round 2, it should be deleted.

Japan: As IACS pointed out in the Round 2, this seems to be covered already by .19. Japan proposes to delete this paragraph

Australia: Support the bold text.

Coordinators remarks: In general comments indicate that the paragraph is unclear, covered elsewhere and should be deleted. Paragraph is deleted.

.**9**~~10~~ **to provide a clear view of the mooring area at all times.**

Denmark: While comparing with .7 it may be a bit confusing to comprehend the difference. Taking into account that .5 deals with an unobstructed view, and .10 with illumination to maintain this view, perhaps the text should be further clarified e.g.: “to provide appropriate illumination a clear view of the mooring area at all times.”

UK: 7 and 10 are duplicated. Remove 7.

OCIMF: 4.7 & 4.10 – These two sections are intended to cover the same sections. We support a clear view of the mooring areas either visually through a line of site and/or CCTV operations. OCIMF suggests the following to replace 4.7: ‘*there is, as far as practicable, an unobstructed view (eg: CCTV and/or visual line of sight) of the mooring area for those taking part in the mooring operation, and to provide supervisors a clear view of the mooring area at all times. Adequate illumination should be provided for mooring operations during hours of darkness*.’

Marshall Islands: .7 and .10 address the same issue and can be combined. We support the text proposed by OCIMF. if this paragraph is not combined with paragraph 4.7, we support changing the text as indicated.

ICS: **to provide a clear view of the mooring area at all times;**

Italy: 4.7 & 4.10 – for these two sections Italy aligns with the view expressed by OCIMF and also suggests to keep the text proposed for 4.7: ‘*there is, as far as practicable, an unobstructed view (eg: CCTV and/or visual line of sight) of the mooring area for those taking part in the mooring operation, and to provide supervisors a clear view of the mooring area at all times. Adequate illumination should be provided for mooring operations during hours of darkness*.’

INTERTANKO: First part seem to be the same as 4.7 and can be deleted, the second part we do not agree with the strikeout, but consider rewording for better English.

The Nautical Institute: As others we would merge 4.7 and 4.10 and include reference to adequate illumination.

ICHCA: (See comment in 4.7) should say “The mooring area is adequately lit at all times”

Japan: Proposes to delete the paragraph 4.10 as it means the same as the paragraph 4.7

Australia: unobstructed view is covered in 4.7, so this must be relating to lighting. Suggest: “*It provides adequate lighting for clear visibility of the mooring areas at all times”.*

IACS: Agree to change. However, 4.10 is then very similar to 4.7 and may be merged.

Coordinators comments: To accommodate the differing comments and to clarify the difference between 4.7 and 4.10 i.e. “appropriate illumination”, the proposal by Australia has been included in square brackets.

.**10**~~11~~ the mooring area offer**s** sufficient working space;

ICS: The mooring area offer**s** sufficient working space;

Australia: Suggest a small editorial replacing “offers” with “provides”; *the mooring area* ***provides*** *sufficient working space.*

IACS: 4.1 and 4.11 may be merged.

Coordinators remarks: The clarification by Australia seems appropriate and has been included.

[.**11**~~13~~ those involved in mooring operations are not at risk of tripping over, or being trapped or impacted by free lying mooring lines;]

Denmark: Remove square brackets.

UK: Delete. This is an operational issue not design.

OCIMF: Although we agree tripping over, trapped, or impacted is important, we suggest the text to read ‘*Those involved in mooring operations are not at risk of being struck or harmed by mooring lines in or around the mooring area, and while the mooring line is in service*.’

Germany: Retain subparagraph .13.

SIGTTO: We agree with the OCIMF proposed text ‘Those involved in mooring operations are not at risk of being struck or harmed by mooring lines in or around the mooring area, and while the mooring line is in service.’

Marshall Islands: we agree with the intent of the proposed paragraph but feel it should also include reducing the potential that those involved in mooring operations are not struck by struck by a mooring line that parts. We support the alternate text proposed by OCIMF.

Italy: Supports the text proposed by OCIMF .

INTERTANKO: In general agree. However, the mooring area is a dangerous area, it’s not possible to have NO risk (refer back to early discussions on risk). Suggest using a wording like minimized or similar. However, 4.18 seem to partially be the same thing. Consider rewriting 4.18 to include the issues raised here in 4.13

ICHCA: text is clumsy, would suggest “ Mooring personnel are not at risk from slips trip and falls and being impacted by mooring lines”.

Japan: As INTERTANKO pointed out in the first round, paragraph 4.13 is not clear what should be achieved. Japan proposes to delete paragraph 4.13.

Coordinators remarks: In general the clarification by OCIMF seems to be supported, and has now been included.

**.12~~14~~ The risk of mooring line failure is minimized.**

Norway: Is ‘Mooring line failure’ a recognized term?

UK: 9bis and 14 are duplicated. Remove 9bis.

Marshall Islands: we agree with removing the square brackets and changing the text as indicated.

ICS: **The risk of mooring line failure is minimized**

INTERTANKO: Agree with Square brackets. But do we not need to expand what we mean or is this to be done in chapter 5

ICHCA: Rest okay.

Australia: Vague - how can it be minimized? Possibly by regular inspection and good maintenance which is not a design issue. We have already covered “complex configurations” and “unnecessary stresses”. So delete.

Coordinators remarks: There seems to be a (slight) preference to retain the text.

.**13**~~15~~ noise in way of mooring **areas** does not impair effective communication between the mooring personnel;

UK: .15 and .16: Combine to read – “**Any hindrance to effective communication between those involved in the mooring operation is minimized**.”

Germany: The subparagraphs .15 and .16 relating to communication should be combined in one subparagraph.

Marshall Islands: we agree with removing the square brackets and changing the text as indicated.

ICS: noise in way of mooring **areas** ~~decks~~ does not impair effective communication between the mooring personnel;

ICHCA: Rest okay.

Japan: Is of the view that the paragraph 4.16 includes the requirement of the paragraph 4.15. Japan proposes to delete the paragraph 4.15.

Coordinators remarks: There seems to be a preference for combining this and the following paragraph. The text by the UK has been included in square brackets to accommodate this wish.

[.**14**~~16~~ effective means of communication **are** available for supervision at mooring areas;]

Denmark: Remove square brackets

UK: .15 and .16: Combine to read – “**Any hindrance to effective communication between those involved in the mooring operation is minimized**.”

Germany: The subparagraphs .15 and .16 relating to communication should be combined in one subparagraph.

Marshall Islands: we agree with removing the square brackets and changing the text as indicated.

ICS: effective means of communication **are** ~~is~~ available for supervision at mooring areas;

INTERTANKO: Agree with Square brackets.

ICHCA: Rest okay.

Australia: Agree.

IACS: The provision for effective means of communication is not related to design and arrangement of mooring equipment addressed by 4.2. This should be addressed by the separate Guidelines on safe mooring operations. Furthermore, verification of the presence of such communication equipment is required under SAFCON survey.

Coordinators remarks: There seems to be a preference for combining this and the previous paragraph. The text by the UK has been included in square brackets to accommodate this wish.

.**15**~~18~~ a mooring **area** surface, which minimizes tripping and slipping hazards, in all anticipated weather conditions, is provided;

Marshall Islands: we agree with removing the square brackets and changing the text as indicated.

ICS: a mooring **area** surface, which minimizes tripping and slipping hazards, in all anticipated weather conditions, is provided;

INTERTANKO: See 4.13 above.

ICHCA: Rest okay.

Coordinators remarks: In general the text seems to be supported.

.**16**~~19~~ wear and **tear** on mooring lines are minimized; and

Marshall Islands: we agree with removing the square brackets and changing the text as indicated.

ICS: wear and **tear** on mooring lines are minimized; and

INTERTANKO: With the new wording this is no longer a design issue. In that case we do not agree with the strikeout text. However, France and IACS have a point in their comments. Consider rewording this where it is clearly a design issue and not an operational issue.

ICHCA: Rest okay.

IACS: Agree to proposed deletions.

Coordinators remarks: In general the text seems to be supported. As to the comment by INTERTANKO; a bad design may have severe impacts on the wear and tear on mooring lines

.**17**~~20~~ **It** can be properly maintained in good condition for its intended purpose.

Marshall Islands: we agree with removing the square brackets and changing the text as indicated.

ICHCA: Rest okay.

Coordinators remarks: Text is supported.

**5 [Achievement of the objectives/Design and equipment][Mooring Arrangement and equipment][Design of arrangements]**

Denmark: We prefer “Design and equipment”

UK: Achievement of the **functional** objectives.

Australia: Heading – Propose “Design and equipment selection”

ICS: Section 5 title should be **Achievement of the objectives**

Section 5 - ICS prefers the text proposed by ICS in Round 1 as further developed by OCIMF in Round 2 as presented in Appendix 1 to the Coordinator’s comments. We look forward to further discussion at SDC 5.

Without prejudice to this view, the following comments on the square bracketed text in Section 5 are offered:

INTERTANKO: Have supported the proposed new chapter 5 by OCIMF and ICS as laid out by the coordinators in the compiled comments.

Therefor; delete the current section 5 and replace with the alternative.

As a consequence, INTERTANKO have NOT commented on the coordinators version of chapter 5.

ICHCA: Section 5: Fully support the comments by OCIMF to include the valuable work being undertaken by them and their industry partners in reviewing the MEG in a new section.

Republic of Korea: Prefer to use [Design and equipment].

Coordinators remarks: Preferences seems to differ, the UK proposal however seems to ensure the relation with section 4 and the following text. Accordingly this text has been maintained in square brackets.

As to the alternative text proposed by ICS and modified by OCIMF, it will be noted in the report and appendixed to this annex of the report.

To meet the functional objectives **[in section 4]**, the following design and equipment features should be considered **[**at an early stage**]** in the design process.

UK: To meet the functional objectives in section 4, the following design and equipment features should be considered **from the earliest stage** in the design process.

Selection of equipment, fittings and mooring lines should not be undertaken independently. In order to facilitate safe mooring operations it is necessary for mooring equipment, fittings and mooring lines to be considered as a complete system within which all components are compatible.

Germany: Supports retaining the text in both sets of square brackets.

Australia: First paragraph – delete texts inside both square brackets. Section 4 is obvious when we say functional objectives and saying “at an early stage is unnecessary”. When is the early stage? can be confusing. Early or late, it is important that functional objectives are achieved

Coordinators remarks: With the current (in square brackets) reference, it seems correct that we do not need to include a reference to section 4. Accordingly this part has been deleted. As to the second part “[at an early stage]” the clarification by UK seems to accommodate the concern expressed by Australia. This text has been incorporated.

As to the new text proposed by the UK; it includes core information on what we are trying to achieve, information that may not be that obvious when reading the individual paragraphs. Accordingly the coordinator has included this text in square brackets for consideration during SDC 5.

The guidance in this section on design of equipment and fittings arrangements should be read in conjunctions with the [Revised] guidance on shipboard towing and mooring equipment (MSC/Circ.[1175/[Rev.1]]), with particular reference to the distribution of load **[**and the symmetrical arrangement of mooring lines.**]**

Denmark: Remove square brackets.

UK: Delete: “and the symmetrical arrangement of the mooring lines”.

ICS: All text in square brackets should be retained.

Australia: Third paragraph – text inside square brackets are vague and unnecessary, so delete

IACS: The last part of the sentence, i.e. “with particular reference to the distribution of load [and the symmetrical arrangement of mooring lines.]” is still unclear and is proposed to be deleted.

Coordinators remarks: It seems that there is no support for the last part of the paragraph. The rest of the square brackets can be lifted.

**5.1 Design [of the mooring arrangement]**

Denmark: Remove square brackets.

Australia: Delete text inside square brackets.

Coordinators remarks: It seems that the text within square brackets can be deleted.

5.1.1 The need for complex mooring line configurations during the normal operation of the ship should be minimized [**as far as reasonable possible**]. This should include the use of direct leads from the mooring winch to the fairlead, i.e. mooring arrangements involving a complex mooring line lead across **the mooring area** by means of guide rollers, pedestal rollers, guide pulleys, bollards, and fairleads should be avoided as far as reasonabl**y** possible. Furthermore, the mooring arrangement should be so designed that [there is one dedicated fairlead for each mooring line on each side of the ship]**[****only one mooring line is led to one fairlead from mooring drum as far as practicable/if applicable/if considered necessary.]**.

Norway: Suggest to delete ‘[as far as reasonable possible]’.

Support the first [ ], with ‘ideally’ deleted.

Denmark: Remove square brackets. As to the alternatives in the last sentence, we prefer the first; “there is one dedicated fairlead……….”.

UK: final sentence: Prefer “only one mooring line is led to one fairlead from the mooring drum as far as **reasonable and** practicable”.

Germany: The wording should be consistent in the guidelines and there are different versions of “as far as reasonably practicable / possible / …”. It is suggested to use only one version in the entire text.

The text in the first set of square brackets in 5.1.1 should be deleted. In the second set of square brackets, Germany supports “only one mooring line is led to one fairlead from mooring drum as far as practicable”.

ICS: “The need for complex mooring line configurations during the normal operation of the ship should be minimized……”

“….Furthermore, the mooring arrangement should be so designed that **only one mooring line is led to one fairlead from mooring drum as far as practicable.**

However it should be noted that the last sentence of paragraph 5.1.1 repeats paragraph 5.1.6.7.

Republic of Korea: Prefer to use following sentence. [only one mooring line is led to one fairlead from mooring drum as far as practicable].

Japan: Proposes to replace “as far as reasonable possible” with “as far as reasonably practicable.”

Australia: Delete text inside first square brackets as the word “minimized” has “as far as reasonably possible” embedded in it. Also delete the texts inside second and third square brackets to keep it simple but still saying what is intended to say. See below:

Furthermore, the mooring arrangement should be so designed that **~~[there is ideally one dedicated fairlead for each mooring line on each side of the ship][ only one mooring line is led to one fairlead from mooring drum as far as practicable/if applicable/if considered necessary.]~~ ~~the mooring arrangement~~ it provides a dedicated fairlead for each mooring line**.

IACS: Disagree to include text in brackets in first sentence to avoid the repeated use of this formulation and as the word “minimized” is already a weak formulation. In the last sentence, the first option in brackets is preferred.

China:The requirement in the last sentence “Furthermore, the mooring arrangement should be so designed…” seems contradicting with “as far as reasonable possible” in the first sentence.

Coordinators remarks: It seems that the text in the first square bracket should be deleted as is contained in the phrase “minimized”. As to the two options in the last part of the paragraph there seems to be a slight preference for the last version ”only one mooring line ………..”. To further clarify the text, the Australian proposal has been taken into account. The new text has been maintained in square brackets.

5.1.2 The position of the mooring **area** and of the fairleads should be planned with respect to the typical mooring pattern corresponding to the type of ship and to berth configurations typically encountered by the type of ship. In this respect it should be possible to obtain a sufficient length of hawser line from the fairlead to the quayside bollard. Furthermore, the mooring **area** should as far as foreseeable be arranged in respect to the vertical distance to the quayside in order to ensure an **[**efficient pull**]** towards the quayside.

Norway: Suggest to keep ‘[efficient pull]’

Denmark: Remove square brackets.

ICS: Keep “efficient pull” but this term may need to be further explained.

IACS: Propose to amend last sentence to say: “Furthermore, the mooring area should as far as foreseeable be arranged with respect to the vertical distance to the quayside in order to provide for an efficient pull of the mooring lines towards the quayside”.

Coordinators remarks: The text in square brackets seems to be supported. As for clarity the proposal by IACS seems appropriate and has been incorporated.

5.1.3 Communication (verbal, hand signals, radio, etc.) for **mooring personnel** should not be impaired by machinery noise or obstructed lines-of-sight.

Denmark: Remove square brackets.

Coordinators remarks: No text in square brackets.

5.1.4 The mooring **area** should be arranged to give the crew the best possible view of the mooring area. This should involve that:

BIMCO: We suggest replacing ‘involve’ with ‘ensure’

Coordinators remarks: No text in square brackets. As the term “ensure” seems stronger than “involve” this is matter of substance that could be further considered at SDC 5.

.1 the officer in charge has the ability to safely obtain an unobstructed view of the mooring **area** as well as the berth arrangements planned to be used;

.2 the mooring winch-operator has an unobstructed view of the mooring area [and personnel] involved;

UK: Words in square brackets are not needed.

Coordinators remarks: Text in square brackets have been deleted.

.3 mooring personnel, have an unobstructed view of the mooring area in which they are planned to operate; and

.4 illumination is provided which allows a clear view of the mooring **area** and the equipment and lines being worked during hours of darkness or in conditions of limited **[or poor]** visibility.

Denmark: Remove square brackets.

UK: “limited or poor visibility”: the wording should be consistent with other Conventions

– e.g. **restricted** visibility in STCW A-VIII/2 Part 4 paragraphs 40 and 45.

Germany: the text in square brackets in subparagraph .4 should be deleted.

ICS: Include “poor”.

Australia: Retain text inside square brackets.

IACS: Guidance should be implemented or referred to, e.g. for minimum luminous flux (lumen) of light sources in a certain area of mooring decks (e.g. one light source with x lumen in y m2). Guidance for overall light strength, in lux, in the mooring area should be avoided as not easy to measure in reality.

Coordinators remarks: A slight majority for retaining poor. The wording proposed by UK however seems to cover poor just as it is consistent with other Conventions. This text has been included in square brackets.

5.1.5 To provide adequate space for the **mooring personnel** to safely and effectively operate the equipment involved, mooring operations should not be impeded by e.g. restricted space for the mooring operation due to ships' structural elements, accommodation, ventilation exhausts, cargo equipment or similar obstacles. [This should involve that:

ICS: Has some concerns about applying the provisions of requirements applicable to the ships of one member State to the ships of all member States. This should be given further, careful consideration.

Japan: Would like to invite the CG to clarify the words “behind” and “in front”.

Australia: Apologies for suggesting a complete rewrite to address vague issues. Also do not support “as far as reasonably practicable” anywhere: New suggested text:

*Adequate space for the mooring personnel to safely and effectively operate the equipment involved should be provided. Throughout all operations this should ensure sufficient space at each mooring area for a minimum of two people. And a clear space of at least:*

*.1 0.4m next to and behind bollards;*

*.2 1.2m in front of a bollard or wherever a person works on securing and releasing mooring lines;*

*.4 1m alongside and 2m behind a winch;*

*.5 0.6m next to a wire drum winch;*

*.6 1.8m between fairlead and winch*

IACS: Propose to include “[as far as reasonably practicable]” not in every list item but at the end of the leading paragraph of 5.1.5. However, it is questionable whether “[as far as reasonably practicable]” is necessary here as it waters down the guidance significantly.

Coordinators comments: Comments are quite divergent it however seems that the lead in to the subparagraphs (in square brackets) are supported. As to the proposal from Australia; as reflected in the invitation to (final) round 3, only text in square brackets and clarifications can be taken into account.

.1 Throughout the operation, at each mooring station there should be sufficient space for a minimum of two people.

.2 Next to, or behind, bollards the clear space should **[as far as reasonably practicable]** be at least 0.4 metres.

ICS: Include of “as far as reasonably practical”.

Coordinators remarks: It seems that there is no clear preference for the text in square brackets. Accordingly it remains as is.

.3 In front of the bollard or the place where **[wherever]** a person works on securing or releasing **[mooring lines]**, there should be a clear breadth of **[as far as reasonably practicable]**at least 1.2 metres.

Germany: Subparagraph .3, “wherever” should be deleted and “mooring lines” should be changed to “lines”.

ICS: Keep all text in square brackets.

IACS: In front of the bollard” may not be clear and could be deleted.

Coordinators remarks: As above there is no clear indication whether to keep “as far as reasonably practicable”. Accordingly it is kept in square brackets. As to the remaining comments and proposed clarifications they have been included.

.4 Space behind the mooring winch head, i.e. the place where a person stands when casting, **is** **[as far as reasonably practicable]** at least 2 metres. Alongside the mooring **[**winch head**/warping end**] there **is** **[as far as reasonably practicable]** a **[clear]** space of at least 1 metre.

ICS: Keep keeping all text in square brackets.

Japan: It is not clear that the requirement of the space behind the mooring winch head of at least 2 metres in longitudinal direction or transverse direction.

In addition, this requirement is too strict for small vessels which have small mooring decks. Japan proposes to replace “2 metres” with “1 metres.”

Vessel Requirements of Canal de Panama require width of working space adjacent to winches of at least 3 feet (0.915 m).

Regarding paragraph 5.1.5.4, Japan proposes to replace the phrase “winch head” with “warping end”, which is used in paragraph 5.2.1 in the draft separate guidelines on safe mooring operations.

Coordinators remarks: It seems that the only square bracket solved would be the one on warping end. As to the question by Japan on longitudinal direction or transverse direction, it is the perception that “space” means both. As to the specific recommendation of 2 metres, the concerns by Japan should be at this stage be covered by the current square bracketed “as far as reasonably practicable”.

.5 Next to the wire drum, there is a clear space with a breadth **[as far as reasonably practicable]** of at least 0.6 metres.]

ICS: Keep keeping all text in square brackets.

Coordinators remarks: Text in square brackets are maintained.

.6 The distance between shipside fairleads and mooring winches **is** **[as far as reasonably practicable]** at least [1.8m].

Denmark: Remove square brackets.

UK: This needs further discussion by the working group.

ICS: Keep keeping all text in square brackets.

Japan: From the viewpoint of snapback protection, the distance between fairleads and winches should be close as required in paragraph 5.1.7.3. On the other hand, from the viewpoint of fleet angle, it should be far as required in paragraph 5.1.5.6. There is inconsistency between these two requirements. Japan proposes to replace paragraph 5.1.5.6 with “The distance between shipside fairleads and winches should be determined considering not only fleet angle but also snapback protection.” and delete paragraph 5.1.7.3.

Coordinators remarks: In general the preference seems to keep current square brackets. As to the quite valid point by Japan, this issue may be considered when dealing with the last square bracket at (preferably) SDC 5.

5.1.6 To design the mooring arrangement so that the **mooring personnel** is at no stage exposed to lines under tension through snap back or by sudden movements of mooring lines, the following **[**issues**/measures]** should be considered:

Norway: Suggest to use ‘measures’

Denmark: Prefer “measures” in the heading. Remove square brackets.

UK: There is some duplication between these sections [5.1.6 and 5.1.7], which should be considered by the working group.

Germany: Prefers “measures” and supports the insertion of subparagraphs .7 and .8.

ICS: Keep “measures”. Retain of all text in square brackets.

Australia: Delete texts inside square brackets as it is superfluous to mention “issues/measures”.

Coordinators remarks: It seems that “measures” is the preferred wording.

.1 to establish short distances from mooring winch to fairlead,

**[**.2 placing - as far as possible - the mooring winch directly before the fairlead,]

Norway: ‘before the fairlead’ sounds odd. ‘Before’ sounds like a ‘time-term’, and not a location ?

Denmark: Remove square brackets.

Australia: Agree to keep.

IACS: May be covered by .1.

Coordinators remarks: It seems that text has some support. As to comment by Norway “in front of” has been included instead of “before”.

.3 enclosing the mooring line(s) behind barrier(s),

.**4**~~5~~ alternative design(s) where crew members do not need to work close to or have to pass mooring lines under tension or potentially under tension., or

.**5**~~6~~ use of appropriate, alternative means to moor the ship, including but not limited to automated mooring systems.

**[.6~~7~~ mooring lines as far as reasonable practicable are permanently fixed to a mooring winch;]**

Denmark: Remove square brackets.

BIMCO: We support France to add“…as far as reasonably practicable.

Germany: Supports the insertion of subparagraphs .7 and .8.

Japan: Proposes to replace “Moring winches are permanently fixed with mooring lines as far as reasonably practicable.”

Australia: Agree to keep.

IACS: Agree to add this here.

Coordinators remarks: It seems that the current text in square brackets are supported.

**[.7~~8~~ the indication of snapback zone]**

Denmark: Delete text in square brackets. (Resent research and experiences within industry clearly underlines that marking of snap back zones provides a false sense of safety as the movements and the impacts of broken mooring lines are very hard to predict.)

Germany: Supports the insertion of subparagraphs .7 and .8.

ICS: However, careful consideration may be needed regarding 5.1.6.8 as, following the ZARGA incident there have been some changes to the thinking behind snap-back zones and the false sense of safety they provide.

Republic of Korea: Range of snapback zone cannot be clearly defined. Therefore, it should be deleted.

Australia: Agree to keep.

Coordinators comments: Positions seems divided, accordingly text is remained in square brackets.

5.1.7 To minimize manual handling of towing and mooring lines, the following should be considered:

UK: There is some duplication between these sections [5.1.6 and 5.1.7], which should be considered by the working group.

.1 use of dedicated mooring lines on mooring winches,

**[**.2 use of spooling equipment,**]**

ICS: Keep all text in square brackets.

Japan: Supports to delete the paragraph 5.1.7.2.

Australia: Agree to keep.

IACS: Propose to delete item 5.1.7.2 here and place in 5.2.2.

Coordinators remarks: Positions seems divided, accordingly text is maintained in square brackets. This would also accommodate the point raised by IACS.

.3 placing mooring winches close to the fairleads of ship side served, or

Japan: From the viewpoint of snapback protection, the distance between fairleads and winches should be close as required in paragraph 5.1.7.3. On the other hand, from the viewpoint of fleet angle, it should be far as required in paragraph 5.1.5.6. There is inconsistency between these two requirements. Japan proposes to replace paragraph 5.1.5.6 with “The distance between shipside fairleads and winches should be determined considering not only fleet angle but also snapback protection.” and delete paragraph 5.1.7.3.

Coordinators remarks: Text not in square brackets, and commented above.

**[**.4 a sufficient number of mooring winches, fairleads, bollards and other fittings.**]**

Denmark: Remove square brackets.

ICS: Keep all text in square brackets.

Australia: Agree to keep.

IACS: As it is not clear how it serves the functional requirement to minimize manual handling of towing and mooring lines, item 5.1.7.4 should be deleted or described in more detail.

Coordinators remarks: Positions seems divided, accordingly text is maintained in square brackets.

**5.2 [Selection of appropriate] Equipment [and fittings]**

Denmark: Prefer “Equipment and fittings”

Germany: Prefers “Equipment”.

Republic of Korea: Prefer to use [Equipment and fittings]

Australia: Propose “Appropriate equipment”.

Coordinators remarks: It seems that “Equipment” is acceptable by all while the preference of additional clarification varies. To be consistent with 5.1 it therefore seems appropriate to delete text in square brackets.

5.2.1 A sufficient number of mooring winches should be installed ~~[~~so that, during normal mooring operations, manual use of mooring [winch drum ends**/warping ends**], stoppers, capstans and bitts are minimized as far as possible.

**[5.2.1 A sufficient number of mooring winches should be installed to ensure vessel can be adequately secured through the use of sufficient winch mounted lines with direct leads.]**

Denmark: Prefer “warping ends”. Remove square brackets.

BIMCO: Does not support by Australia [in square brackets], here the details are needed making the Australian proposal too simple.

Germany: Proposes to delete the word “mooring” and to retain “warping ends”. Perhaps a combination of both proposed versions of this paragraph might be helpful. Proposed text: *“A sufficient number of mooring winches should be installed so that, during normal mooring operations, manual use of warping ends, stoppers, capstans and bitts are minimized as far as possible and the ship can be adequately secured.”*

China: The requirement in bracket should be deleted, the first option is preferred.

ICS: Keep in square brackets for further consideration at SDC 5.

Republic of Korea: Prefer to use first sentence. 2nd square bracket should be deleted.

Japan: Proposes to add “for normal mooring operation” at the end of the sentence proposed by Australia.

Australia: Agree to texts in bold inside square brackets

IACS: Propose to delete this as first option is preferred.

Coordinators remarks: It seems that there is a slight preference for the original text. Further warping ends seems to be the appropriate term. As to the German compromise the last part (secured) may not be acceptable to all.

5.2.2 **[**As far as reasonably practical**]**, mooring winches that are designed to prevent unsafe and unhealthy work situations through manual handling of mooring lines **should be selected**. If e.g. split-drum type mooring winches are fitted, the layout should be designed to prevent manual intervention in transfer of the mooring line from storage drum to mooring winch drum and vice versa.

Norway: Suggest to delete [As far as reas. ...]

Denmark: Prefer to delete text in square brackets.

Germany: The text in square brackets should be deleted.

ICS: The situation is much more complex than this. Such simplified advice may be misleading. Keep in square brackets.

Japan: Proposes to delete the second sentence of the paragraph 5.2.2 as the requirement may be impractical. Japan does not know whether there are any appropriate winches for transferring a mooring line from storage drum to winch drum, and vice versa, without manual intervention.

Japan supports to remain “As far as reasonably practicable” In the first sentence.

Australia: Delete text in square brackets.

IACS: Except for split-drum type mooring winches, the feature is too unspecific. But also for split-drum type mooring winches it should be carefully checked whether there is winch technology available that allows for the recommended features. For non-split-drum winches, the use of spooling equipment may be added here taken from 5.1.7.2 and deleted there.

Coordinators remarks: It seems that the majority prefers to delete the text in square brackets.

**[5.2.2 bis Mooring lines with reduced recoil risk or snapback protection should be used.]**

Denmark: Remove square brackets.

Germany: Is supported.

Australia: Agree to keep, but suggest reposition to 5.2.1bis.

Coordinators remarks: It seems that the text is supported. As to the proposal by Australia to place elsewhere, perhaps this may be considered at SDC 5.

5.2.3 The mooring arrangement should be designed to ensure flexibility during **[**exceptional**/ emergency]** mooring operations, e.g.

Norway: Not sure if ‘emergency mooring operation’ is what we mean here.

* Suggest deleting both exceptional and emergency: ‘The mooring arrangement should be designed to ensure flexibility during mooring operations, e.g.:’
* The mooring arrangement should be flexible even in ‘normal operation’ (different quays, jettys, tide, current.. ++)

Denmark: Prefer “exceptional”.

Germany: Prefers “exceptional”.

ICS: Keep “emergency”. Keep all text in square brackets.

Republic of Korea: Prefer to use [exceptional].

Australia: Rewrite text inside square brackets as **[unusual and emergency].**

IACS: Propose to amend sentence to say “The mooring arrangement should be designed to ensure flexibility for exceptional mooring conditions, e.g.”

For item 5.2.3 no related functional objectives could be identified in Section 4. This should be rectified e.g. by adding a functional objective “it ensures flexibility for exceptional conditions”.

Coordinators remarks: There seems to be a slight preference for exceptional yet the comment by Norway seems valid that the text in square brackets may be superfluous. At this stage the text remains in square brackets.

.1 a sufficient number of mooring winch drum ends/capstans, bollards and fittings related to mooring should be available at ~~on~~ each mooring **area**; and

Denmark: Remove strike through text.

IACS: “Sufficient number” is quite unspecific and guidance on what is sufficient should be provided, e.g. equipment for additional mooring lines in percent of the minimum recommended number of mooring lines acc. to MSC.1/Circ.1175

Coordinators remarks: At this stage striked out text is removed.

[.2 additional (loose) mooring lines should be stored close to and easily accessible to the mooring winch drum/bollard where they are expected to be used**/ additional (loose) mooring lines should be stored in positions which are easily accessible to the winch drum/bollard where they are expected to be used**.]

Denmark: Prefer highlighted alternative. Remove square brackets.

BIMCO: The Japanese text is supported.

Germany: For subparagraph 2, Germany prefers the second version.

Republic of Korea: Prefer to use second sentence.

Australia: Support the first option not the bold text

Coordinators remarks: It seems that the bold text is preferred.

[.3 Storage provided [**for additional (loose) mooring lines]** should minimize the exposure to harmful environments (e.g.: water, chemical, cargo, extreme temperature).]

Denmark: Remove square brackets.

Germany: Subparagraph 3 should be retained including the text in square brackets.

Australia: suggest modified text: “*storage must be provided for additional (loose) mooring lines which protects them from exposure to harmful environments such as chemicals, cargo, extreme temperature etc.”*

Coordinators remarks: It seems that the square brackets can be removed. As to the proposed clarification the wording “must” may be questioned by others. Perhaps this clarification can be discussed at SDC 5.

5.2.**4**~~5~~ To avoid overload on mooring winches, fittings (such as chocks, fairleads and stand rollers) and mooring lines, considerations should be given to:

**.1** fit/adjust mooring winches with brake capacity of less than the **[**Line Design Break Force**/minimum breaking load]** of the mooring line,

Republic of Korea: Prefer to use [minimum breaking load].

IACS: Prefer to retain the common term “minimum breaking load”. If a term like “Line Design Break Force” is used, it needs to be properly defined.

Coordinators remarks: Minimum breaking load seems to be the preferred term.

**.2** mooring lines with integrated high stress indicators, or

Japan: Does not know whether there are mooring lines with integrated high stress indicator. The requirement may be impractical. Japan proposes to delete the phrase “mooring lines with integrated high stress indicator”

Coordinators remarks: .2 contains no square brackets. Perhaps this issue may be further discussed at SDC 5.

**.3** mooring winches which monitor the stress load on the mooring lines.

Norway: Use MBL as this is a more common term.

Denmark: Keep text in square brackets. (We need to define the term(s) “Line Design Break Force/minimum breaking load” and we have to make sure that we are using terms recognized within the industry.) To be persistent with Paragraph 4.9 bis, perhaps the term “stresses” should be included i paragraph 5.2.5, e.g. “5.2.5 To avoid overload **and stressing** of mooring winches …….”.

ICS: keep MBLSD

Republic of Korea: Prefer to use [minimum breaking load].

Australia: Suggest rewrite: *Mooring system components should be designed to avoid overload by specifying winches that can react automatically to over load; and ensuring that mooring lines have a breaking load less than the capacity of any of the mooring system components*

Coordinators remarks: .3 does not contain text in square brackets. It is noted that we need to be persistent in our references taking also account of the outcome of TOR 5. At this stage the comments are noted and will be reflected in our report.

5.2.**5**~~6~~ The mooring equipment and arrangement should be designed such that chafing of the mooring line at fairleads and chocks is prevented. This may be achieved by:

.1 suitable line leads,

.2 sufficient large **[**rad**iu**s**/radii]** of bearing surfaces **[**at chocks**]**, **or**

Denmark: Remove square brackets; No firm position whether to use the term “radius” or “radii”.

ICS: Keep “radius”. Keep text in square brackets.

Coordinators remarks: It seems that the term “radius” and “at chocks” are supported.

.3 **[appropriate/smooth]** contact surfaces.

Denmark: Prefer the term “smooth”.

Australia: Suggest rewrite: *The mooring equipment and arrangement should be designed, specified and installed so that chafing of the mooring line at fairleads and chocks is prevented. This may be achieved by ensuring that mooring lines have appropriate leads; and contact surfaces are appropriately smooth and have a radius appropriate to the type and dimensions of mooring lines*.

IACS: Prefer second option in brackets

Coordinators remarks: It seems that “smooth” is the preferred option. As to the proposal by Australia this may be further explored during SDC 5.

5.2.**6**~~7~~ **[**The mooring equipment and the **[**dedicated**]** mooring lines should at all times be compatible in e.g. design, diameter, strength and suitability, and maintained in line with the original purpose and concept of the mooring arrangement.**]** **[Next to information given by the mooring and towing arrangement plan as required by MSC.1/Circ.1175.Rev.1 this should be enabled through the following additional information given by the mooring manual (which may be part of the SMS) as described in the guidelines for safe mooring operations MSC[…]:***/* This should be established through [the mooring and towing arrangement plan as required by [MSC.1/Circ.1175.Rev.1]/ the mooring manual (which may be part of the SMS)] which informs upon:

Denmark: In heading: Remove square brackets in first sentence. Prefer highlighted alternative “Next to information given ……..”. Remove square brackets accordingly.

UK: This paragraph should refer also to information from the manufacturer to ensure that equipment is compatible and maintained appropriately.

Germany: Supports the second (highlighted) version.

ICS: Keep in square brackets for further consideration at SDC 5.

Australia: Suggest rewrite: *The mooring equipment and the mooring lines should at all times be compatible in e.g. design, diameter, strength and suitability, and maintained in line with the original purpose and concept of the mooring arrangement. This should be established through the mooring and towing arrangement plan (MSC.1/Circ.1175.Rev.1 and the mooring manual (which may be part of the SMS), which provide details as follows:*

IACS: Prefer to keep first sentence in brackets but delete “[dedicated]”. For the second sentence the first option, printed bold is preferred.

Coordinators remarks: First of all, there seems to be no support for the term “dedicated” in the first line. Secondly there seems to be a slight preference for deleting the square brackets in the first sentence. As for the second part, the highlighted part seems to be the preferred option. As to the proposed rewording proposed by Australia perhaps this clarification can be discussed during SDC 5.

.1 **[**a mooring arrangement plan or other means of information about the mooring equipment (i.e. numbers and location of mooring winches, pedestal leads, fair leads and rollers);**]**

Denmark: Remain text in square brackets (as it seems to be superfluous should the alternative text be agreed.)

Australia: suggest modified text: “*location and numbers of mooring system components, for example winches, pedestal leads, fair leads and rollers”*

IACS: Should be deleted as MSC.1/Circ.1175 is referred to above which requires such

Coordinators remarks: It seems that this part may be superfluous and may be deleted. Perhaps this may be further reflected in our report. Considering the limited comments provided it however seems appropriate to keep the text in square brackets at this stage. The alternative text by Australia may be discussed at SDC 5.

.2 the mooring winches installed, design limitations and safe working loads;

.3 the appropriate mooring lines, including tails, and connecting apparatus to be used and the planned operating parameters/**[**maximum permissible loads**/minimum breaking load]**;

Denmark: Keep text in square brackets. (We need to define the term(s) “Line Design Break Force/minimum breaking load” and we have to make sure that we are using terms recognized within the industry.)

UK: “maximum permissible loads/minimum breaking load”: Is this the same as “working load limit” in draft SOLAS II-1/3-8.2.

Republic of Korea: Prefer to use [minimum breaking load].

Australia: Suggest modified text inside square brackets: “*such as maximum permissible load or minimum breaking load”.*

IACS: If the term “maximum permissible loads” is used, this may need to be specified or references should be given, e.g. OCIMF MEG.

Coordinators remarks: It seems that minimum breaking load has been used elsewhere. Accordingly we should be persistent in this respect. Also this seems to be there preferred solution.

.4 the planned mooring arrangement, including the most appropriate lead of mooring lines during common mooring operations;

IACS: The mooring arrangement will already be detailed by the mooring arrangement plan as required by MSC.1/Circ.1175. It would be worthwhile to give additional information on the most appropriate lead of mooring lines during common mooring operations, however, this would better be placed in the separate guidelines on mooring operations etc.

Coordinators remarks: No square brackets in this part. Point by IASC noted for our report.

[5.2.**7**~~8~~ Mooring ropes, wires, tails and associated attachments should be **[**controlled and**]** certified. Manufacturer's certificates for mooring lines, joining shackles and synthetic tails should be kept in a file or with the mooring manual, clearly showing to which mooring winch each particular component has been fitted.]

Denmark: Remove square brackets.

Germany: It is not clear who is responsible for the control of ropes and other equipment. The manufacturer has to certify the equipment what means that there must be any kind of quality assurance. This is in our view sufficient. Germany proposes to delete “controlled and”.

Australia: Agree.

IACS: Propose to delete 5.2.8 here and move to the separate guidelines on mooring operations etc. The term “controlled” would need to be further detailed or deleted.

Coordinators remarks: There seems to be a preference for retaining the text however maintain the square brackets on [controlled and].

5.2.**8**~~9~~ As far as possible, [but at least for lines in the same service, (e.g. headlines, breastlines or springs), mooring lines of the same diameter and type (i.e. material) should be used.

Denmark: Remove square brackets.

BIMCO: We see that there is an operational aspect here; but there is certainly also a design issue. If the design does not support this it is not possible to carry out operations in accordance with this. It is therefore suggested to keep this here. We have no problems adding a text to the operational part.

ICS: Keep all text in square brackets.

Japan: Proposes to replace “alt least” with “at least”.

Coordinators remarks: It seems to be supported to delete the square brackets.

**[APPENDIX 1: Proposal for a new section 5 by OCIMF Based on proposal by ICS**

Denmark: Text is noted with appreciation. Relevant (uncovered) parts could be merged into existing section 5. At this stage however this seems difficult to address.

OCIMF: Recommends Section 5 is replaced in its **entirety by the section proposed by OCIMF**, titled: '***APPENDIX 1: Proposal for a new section 5 by OCIMF Based on proposal by ICS***’ The output of this section includes valuable information that is being implemented by OCIMF and the organizations that have been included in the drafting of a the revised MEG document.

Germany: Welcomes the proposal by OCIMF. Some issues mentioned in this proposal are not covered by our draft guidelines. It seems that further discussion is necessary.

SIGTTO: As we did in the last round, SIGTTO supports the “shadow alternative” section 5, as proposed by ICS and modified by OCIMF.

Marshall Islands: As indicated in our remarks in Round 2, we prefer the alternate text (Coordinator’s remarks – Round 3 – Annex 2, Appendix 1) proposed by ICS in Round 1 and amended by OCIMF in Round 2. Noting the Coordinator’s comments regarding the limitations of a CG, it is requested that this alternate text be retained so that we can discuss it during the WG at SDC 5.

ICS: Prefers the text proposed by ICS in Round 1 as further developed by OCIMF in Round 2 as presented in Appendix 1 to the Coordinator’s comments. We look forward to further discussion at SDC 5.

Italy: Agrees with OCIMF to replace the Section 5 withsection proposed by OCIMF having the title: '***APPENDIX 1: Proposal for a new section 5 by OCIMF Based on proposal by ICS***’.

INTERTANKO: Have supported the proposed new chapter 5 by OCIMF and ICS as laid out by the coordinators in the compiled comments.

The Nautical Institute: Support the proposed new chapter 5 by OCIMF and ICS and others comments, and look forward to further discussion at SDC 5.

ICHCA: Section 5: Fully support the comments by OCIMF to include the valuable work being undertaken by them and their industry partners in reviewing the MEG in a new section.

Japan: Noted the proposal for a new section 5 by OCIMF based on proposal by ICS. If the discussion is required, Japan would like to make comments.

IACS: It is proposed to consider the proposal by OCIMF/ICS where it provides a clearer structure. Also, any specific guidance provided by this alternative text, not considered by the current draft text, should be picked up and discussed in order to increase the relevance of the provided guidance.

Coordinators remarks: It is noted that the alternative text proposed by ICS and modified by OCIMF is supported by a number of members of the CG. Being an alternative that falls outside TORs 3, which specifically instructs the CG to base its work on annex 2 to document SDC 4/11, and its presentation – not as an amendment of existing text but a new text – it has not been possible to consider this proposal in substance.

It is recognized that any specific guidance provided by this alternative text, not considered by the current draft text, should be picked up and discussed in order to increase the relevance of the provided guidance. It will be noted in the report and this alternative text will be included as an appendix to this annex of the report.

**5.1 Design of equipment and fittings arrangements**

The guidance in this section on design of equipment and fittings arrangements should be read in conjunctions with the [Revised] guidance on shipboard towing and mooring equipment (MSC/Circ.[1175/[Rev.1]]), with particular reference to the distribution of load and the symmetrical arrangement of mooring lines.

5.1.2 The design of equipment and fittings arrangements on mooring decks should be addressed at an early stage in the design process taking into account the following constraints

.1 mooring deck space, given the size and purpose of the ship;

.2 variations in shore-based mooring arrangements and the need to preserve flexibility in mooring line configurations to achieve an appropriate restraining capacity;

.3 ships' structural elements, including accommodation, ventilation exhausts, cargo equipment or similar obstacles, on access; and

.4 […]

5.1.3 When developing an appropriate design for the arrangement of equipment and fittings on mooring decks, the following considerations should be amongst those taken into account

.1 Within the constraints imposed by the size and purpose of the ship, equipment and fittings on mooring decks should be positioned in order to provide mooring personnel with unobstructed access to the following during mooring operations

.1 mooring winches and winch controls;

.2 fittings necessary to achieve an appropriate mooring line configuration;

.3 [emergency equipment];

.4 mooring lines and mooring line stowage; and

.5 [line of sight to to ensure all operations can be undertaken safely with adequate supervision and oversight]

.6 […]

.2 Mooring winch controls should be positioned so that the winch operator has a direct view of the line being worked without stepping away from the winch controls. So far as possible, winch controls should be positioned clear of hazards, […].

.3 To minimize the need for complex mooring line configurations during the normal operation of the ship, mooring winches and fairleads should be positioned in order to permit the use of direct, unobstructed leads from the mooring winch to the fairlead for each of the mooring lines described in the Mooring arrangement plan. Where a straight lead is not possible:

.3.1 the deviation from a straight lead, should be by means of pedestal fairleads or rolling fairleads only; and

.3.2 the leads should, so far as practicable, minimise the distance the line traverses the mooring deck space from winch to the fairlead; and

.3.3 the need for frequent changes of direction of mooring line is minimized to prevent unintended reductions in mooring line strength due to bend loss and introduction of complex snap-back areas.

.4 To provide for the oversight and supervision of the mooring operations, including the operation of mooring equipment and the handling of mooring lines, the mooring deck should be arranged to give supervising personnel an unobstructed view of the mooring equipment and fittings installed on the mooring deck. This should include the provision of

.1 a platform, or other appropriate means, by which supervising personnel can obtain an unobstructed view of the mooring deck from a position clear of hazards;

.2 deck illumination which allows a clear view of the mooring deck and the equipment and lines being worked during hours of darkness or in conditions of limited visibility; and

.3 […]

.5 In order to reduce the exposure of shipboard personnel to the dynamic forces of mooring lines under tension or in the event of mooring line failure (snap-back), the design of equipment and fitting arrangements should

.1 locate, so far as possible, winches close to shipside fairleads. The positioning of winches should be such that the distance between shipside fairleads and winches is at least [1.8m] to permit mooring personnel to safely apply stoppers to mooring lines when necessary. However, the position of winches should not result in inappropriate mooring line orientations, or block or otherwise interfere with the use of shipside fairleads for additional mooring lines, connecting up of tugs for towage during mooring operations or the ability to safely moor the ship in exceptional conditions; or

.2 consider the use of enclosures from mooring lines to protect mooring personnel, provided that such enclosures do not adversely affect the performance of the mooring system and do not prevent effective inspection and maintenance of equipment, fittings and mooring lines; or

.3 consider the use of appropriate, alternative means to moor the ship, including but not limited to automated mooring systems; or

.4 […]

.6 In order to minimize the need for manual handling of towing and mooring lines, equipment and fitting arrangements should minimize the distance over which any mooring line may need to be handled and, where compatible with the operation of the ship, have equipment or fittings arranged to enable the use of fixed or dedicated mooring lines. The use of fixed or dedicated mooring lines should be carefully considered, taking into account the need to avoid inappropriate mooring line orientations, or block or otherwise interfere with the use of shipside fairleads for additional mooring lines, connecting up of tugs for towage during mooring operations or the ability to safely moor the ship in exceptional conditions;

.7 In order to allow for the need to connect up tugs during mooring operations and ensure flexibility to moor the ship securely during exceptional mooring operations

.1 a sufficient number of mooring winches, fairleads, bollards and other fittings should be available on each mooring deck to allow for flexibility in mooring line configurations; and

.2 additional mooring lines should be stored in the immediate vicinity of mooring winches, provided that such stowage does not interfere with the safe operation of the winch.

.8 Fittings, particularly shipside fairleads, should be positioned so as to minimize the potential for chaffing of mooring lines during the normal operation of the ship.

5.1.3 The design of arrangement of equipment and fittings on mooring decks should take into account the principles for effective mooring arrangements included in appropriate industry guidance on mooring equipment and fittings[[1]](#footnote-1).

**5.2 Selection of equipment and, fittings and mooring lines**

5.2.1 The design of arrangement of equipment and fittings on mooring decks should take into account the principles for effective mooring arrangements included in appropriate industry guidance on mooring equipment and fittings[[2]](#footnote-2).

MBLSD – (Ship Design Minimum Break Load). The minimum breaking load of new, dry, mooring lines for which a ship’s mooring system is designed, in order to meet mooring restraint requirements. The MBLSD determines the selection of all components of a ship’s mooring system, within defined tolerances.

WLL – (Working Load Limit). The maximum load that a mooring line should be subjected to in operational service, calculated from the relevant environmental mooring restraint requirement referred to in section 5.2.4.1. The WLL of mooring lines should be used as user operating limiting values, not to be exceeded. The WLL is expressed as a % of MBLSD and should be used as a limiting value in operational mooring analyses. Steel wires have a WLL of 55% of MBLSD and all other cordage (synthetic) have a WLL of 50% of the MBLSD.

LDBF – (Line Design Break Force). The minimum force that a new, dry, spliced, mooring line will break at. This is for all synthetic cordage materials except Nylon which is tested wet and spliced. When selecting lines, the LDBF of a line should be 100%-105% of the MBLSD.

5.2.2 Selection of equipment, fittings and mooring lines should not be undertaken independently. In order to facilitate safe mooring operations it is necessary for mooring equipment, fittings and mooring lines to be considered as a complete system within which all components are compatible.

5.2.3 The guidance in this section on selection of equipment [and][,] fittings [and mooring lines] should be read in conjunctions with the [Revised] guidance on shipboard towing and mooring equipment (MSC/Circ.[1175/[Rev.1]]).

5.2.4 The selection of mooring lines should take into account

.1 the mooring restraint requirements as per IACS UR A2 or Industry Guidance;

.1 the diameter of mooring fittings with respect to the mooring line diameters (D/d ratio) in order to reduce the potential for bend loss of strength;

.2 the compatibility of the MBLSD of mooring lines and the brake capacity of the mooring winches installed on board;

.3 the characteristics and limitations of mooring lines including material properties and environmental operating conditions anticipated during normal operation of the ship;

.4 the anticipated behavior of the mooring line in the event of failure;

.5 the influence on stored energy and the potential for snap-back of low elasticity mooring lines caused by the use of tails;

.6 […]

5.2.5 The selection of fittings should take into account

.1 the type of mooring line with which the fitting is designed to be used. The SWL of the fitting should be equal to or greater than the MBLSD of the mooring line and supporting structure to be in accordance with recognized standards[[3]](#footnote-3);

.2 the diameter of mooring fittings with respect to the mooring line diameters to reduce or mitigate bend loss strength issues (D/d);

.3 the need for the load bearing surfaces of fittings to minimize damage from chaffing and abrasion;

.4 […]

5.2.6 The selection of winches should take into account

.1 the availability of winches with alternative drum arrangements, including split drum arrangements, which can reduce the need for manual handling of mooring lines during mooring operations;

.2 the positioning of winch controls, including the availability of remote controls for winches to improve the line of sight and reduce operator exposure to snap-back;

.3 the availability of constant tension winches, and the appropriateness of these winches should be carefully considered for the normal operation of the ship (eg: not used on spring lines); and

.4 […]

**5.3 Maintenance and inspection of equipment and fittings**

5.3.1 Equipment and fittings should be properly inspected and maintained, based on the manufacturer's recommendations. Mooring equipment and fittings should be included in the on board maintenance plan or equivalent maintenance management system. The maintenance plan may be computer based.

5.3.2 Maintenance should include the preservation, by appropriate means, of the clear marking of information on equipment and fittings, including SWL and winch control instructions.

5.3.3 Records of maintenance and inspection, of equipment and fittings should be available on board.

5.3.4 Records of the original design philosophy, equipment, layout and requirements should be retained with the ship through lifecycle

**5.4 Inspection and replacement of mooring lines and mooring line tails**

5.4.1 In order to prevent the deterioration of mooring lines to a condition which may result in the failure of the line during mooring operations, the periodic inspection of mooring lines, mooring line tails and associated attachments should be included in the on board maintenance plan or equivalent maintenance management system. The maintenance plan may be computer based.

5.4.2 The requirements for inspection of individual mooring lines will be specific to the type of mooring line used on board. In general, on board inspection of mooring lines will be based on manufacturer recommendations and by visual inspection of the outside of the mooring line to identify excessive wear or damage. Such visual inspections should be based on:

5.4.2.1 The recommendations of the mooring line and/or tail manufacturer, particularly the criteria provided for the assessment of mooring line condition;

5.4.2.2 Operational experience regarding the performance of the mooring line and/or mooring line tail during previous mooring operations;

5.4.2.3 The environmental conditions to which the mooring lines and/or mooring line tails are routinely exposed;

5.4.2.4 Additional advice provided in industry guidance on mooring line and mooring line tail inspections; and

5.4.2.5 […].

5.4.3 In the case of jacketed synthetic fibre mooring lines, detailed visual inspection of the condition of the synthetic fibre line may not be possible. The condition of the external jacket is not an accurate indicator of the condition of the load bearing synthetic fibre material within the mooring line.

5.4.4 The replacement of in service mooring lines which have been assessed as no longer suitable for use should be based on the removal prior to failure and in accordance with criteria provided by the manufacturer, taking into account additional advice provided in industry guidance on removal of mooring lines from service.

5.4.5 Records of inspection of mooring lines and mooring line tails should be available on board. Consideration should be given to control and certification of mooring lines, wires, tails and associated attachments. Manufacturer's test certificates for mooring lines, joining shackles and synthetic tails should be kept onboard and properly linked back to the equipment.]

1. OCIMF Mooring Equipment Guidelines - Written principally for tankers; however, mooring philosophy, guidance and recommendations are equally applicable to other vessel types. [↑](#footnote-ref-1)
2. OCIMF Mooring Equipment Guidelines latest edition- Written principally for tankers; however, mooring philosophy, guidance and recommendations are equally applicable to other vessel types. [↑](#footnote-ref-2)
3. Eg: ISO, IACS [↑](#footnote-ref-3)