INTERNATIONAL MARITIME ORGANIZATION

E

MARITIME SAFETY COMMITTEE
110th session
Agenda item 18

MSC 110/18/12
18 March 2025
Original: ENGLISH
Pre-session public release: ☒

WORK PROGRAMME

Proposal for a new output to amend SOLAS regulation II-2/20.6.1 and chapters 6 and 7 of the FSS Code relating to fixed fire-extinguishing systems in vehicle and ro-ro spaces

Submitted by Bahamas, Cook Islands, Türkiye and IACS

SUMMARY

Executive summary:	This document proposes a new output to amend SOLAS regulations II-2/20.6.1.4 and 20.6.1.5, as well as chapters 6 and 7 of the International Code for Fire Safety Systems (FSS Code), as amended by resolution MSC.206(81), to align them with the requirements of SOLAS regulations II-2/20.6.1.1 to 20.6.1.3.
Strategic direction, if applicable:	7
Output:	Not applicable
Action to be taken:	Paragraph 28
Related documents:	FP 54/25, FP 54/WP.1, FP 54/3/1, FP 54/3/3; FP 53/WP.1 and FP 53/3/1

Introduction

1 This document is submitted in accordance with the relevant provisions of the draft revision of the *Organization and method of work of the Maritime Safety Committee and the Marine Environment Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.5) (MSC 109/22, paragraph 19.14 and annex 26) on the submission of proposals for new outputs, and proposes a new output to revise SOLAS regulations II-2/20.6.1.4 and 20.6.1.5, as well as chapters 6 and 7 of the FSS Code to align them with the requirements of SOLAS regulations II-2/20.6.1.1 to 20.6.1.3, with a view to ensuring consistent wording and implementation of IMO instruments.

2 The co-sponsors consider that clarity is needed regarding the types of vehicles and ro-ro spaces in which it is possible to fit a fixed foam fire-extinguishing system and to ensure that the same wording is used for fixed water-based fire-fighting systems in SOLAS and the FSS Code.

Background

3 SOLAS regulations II-2/20.6.1.1 to 20.6.1.3 state:

"6.1.1 Vehicle spaces and ro-ro spaces, which are **not special category spaces** and are capable of being sealed from a location outside of the cargo spaces, shall be fitted with one of the following fixed fire-extinguishing systems:

.1 a fixed gas fire-extinguishing system complying with the provisions of the Fire Safety Systems Code;

.2 a **fixed high-expansion foam** fire-extinguishing system complying with the provisions of the Fire Safety Systems Code; or

.3 a **fixed water-based fire-fighting** system for ro-ro spaces and special category spaces complying with the provisions of the Fire Safety Systems Code and paragraphs 6.1.2.1 to 6.1.2.4.

6.1.2 Vehicle spaces and ro-ro spaces not capable of being sealed and **special category spaces** shall be fitted with a **fixed water-based fire-fighting** system for ro-ro spaces and special category spaces complying with the provisions of the Fire Safety Systems Code, which shall protect all parts of any deck and vehicle platform in such spaces. […]

6.1.3 The Administration may permit the use of any other fixed fire-extinguishing system* that has been shown, by a full-scale test in conditions simulating a flowing petrol fire in a vehicle space or a ro-ro space, to be not less effective in controlling fires likely to occur in such a space.

* Refer to *Guidelines for the approval of **fixed water-based fire-fighting** systems for ro-ro spaces and special category spaces equivalent to that referred to in resolution A.123(V)* (MSC.1/Circ.1272) and *Revised guidelines for the design and approval of **fixed water-based fire-fighting** systems for ro-ro spaces and special category spaces* (MSC.1/Circ.1430/Rev.1 to 3)."

4 Concerning the **fixed high-expansion foam** fire-extinguishing systems, chapter 6 of the FSS Code (Fixed foam fire-extinguishing systems) states:

"**1 Application**:

This chapter details the specifications for fixed foam fire-extinguishing systems for the protection of machinery spaces in accordance with regulation II-2/10.4.1.1.2 of the Convention, cargo spaces in accordance with regulation II-2/10.7.1.1, cargo pump-rooms in accordance with regulation II-2/10.9.1.2 and vehicle, **special category** and ro-ro spaces in accordance with regulation II-2/20.6.1.3.";

"**3.2 Inside air foam systems**

[…]

3.2.2 Systems for the protection of vehicle, ro-ro, special category and cargo spaces";

"**3.3 Outside air foam systems**

[…]

3.3.2 Systems for the protection of vehicle, ro-ro, special category and cargo spaces."

5 This subject was initially considered by the Fire Protection Sub-Committee during the period between its fifty-second and fifty-fourth sessions, with SOLAS regulations II-2/20.6.1.1 and 20.6.1.2 and chapter 6 of the FSS Code being updated at the same time but under separate items. The different versions of the discussed text of SOLAS regulations II-2/20.6.1.2 and 20.6.1.3 do not mention a fixed high-expansion foam fire-extinguishing system as an acceptable fixed fire-fighting system for special category spaces.

6 However, from the first proposal of modifications of chapter 6 of the FSS Code (Fixed foam fire-extinguishing systems), special category spaces were included in the revised version of the chapter and no mention was made in the discussions of the possible presence of passengers in special category spaces. As an example, document FP 54/3/3 (Japan) about high-expansion fixed fire-extinguishing systems, discusses special category spaces; however, it indicates that high-expansion systems are only used in car carriers:

> "To confirm this, Japan tested outside air high expansion systems for ro-ro spaces, which have been used for car carriers."

The text of the new chapter 6 of the FSS Code mentioning special category spaces was finally adopted at MSC 90; however, the adoption of modifications to SOLAS regulations II-2/20.6.1.1 and 20.6.1.2 was postponed until further adoption at MSC 91.

7 Concerning the **fixed water-based fire-fighting** systems, SOLAS regulations II-2/20.6.1.4 and 20.6.1.5 state:

> "6.1.4 The requirement of this paragraph shall apply to ships constructed on or after 1 January 2010. Ships constructed on or after 1 July 2002 and before 1 January 2010 shall comply with the previously applicable requirements of paragraph 6.1.4, as amended by resolution MSC.99(73). When **fixed pressure water-spraying** systems are fitted, in view of the serious loss of stability which could arise owing to large quantities of water accumulating on the deck or decks during the operation of the fixed pressure water-spraying system, the following arrangements shall be provided:
>
> .1 in passenger ships:
>
> .1.1 in the spaces above the bulkhead deck, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard, taking into account the guidelines developed by the Organization†;
>
> .1.2.1 in ro-ro passenger ships, discharge valves for scuppers, fitted with positive means of closing operable from a position above the bulkhead deck in accordance with the requirements of the International Convention on Load Lines in force, shall be kept open while the ships are at sea;
>
> .1.2.2 any operation of valves referred to in paragraph 6.1.4.1.2.1 shall be recorded in the log-book;

.1.3 in the spaces below the bulkhead deck, the Administration may require pumping and drainage facilities to be provided additional to the requirements of regulation II-1/35-1. In such case, the drainage system shall be sized to remove no less than 125% of the combined capacity of both the **water-spraying system** pumps and the required number of fire hose nozzles, taking into account the guidelines developed by the Organization†. …

.2 in cargo ships, the drainage and pumping arrangements shall be such as to prevent the build-up of free surfaces. In such a case, the drainage system shall be sized to remove no less than 125% of the combined capacity of both the **water-spraying system** pumps and the required number of fire hose nozzles, taking into account the guidelines developed by the Organization. […]

6.1.5 On all ships, for closed vehicles and ro-ro spaces and special category spaces, where fixed pressure **water-spraying systems** are fitted, means shall be provided to prevent the blockage of drainage arrangements, taking into account the guidelines developed by the Organization. Ships constructed before 1 January 2010 shall comply with the requirements of this paragraph by the first survey after 1 January 2010."

8 In addition, chapter 7 of the FSS Code (Fixed pressure water-spraying and water mist fire-extinguishing systems) states:

"**1 Application**

This chapter details the specifications for fixed pressure **water-spraying** and water-mist fire-extinguishing systems as required by chapter II-2 of the Convention."

9 At MSC 91, all occurrences of "fixed pressure water-spraying systems" were replaced by "fixed water-based fire-fighting systems" in SOLAS regulations II-2/20.6.1.1 to 20.6.1.3 and paragraph 2.4 of chapter 7 of the FSS Code. This was related to the introduction of new MSC.1/Circ.1430 on *Revised guidelines for the design and approval of fixed water-based fire-fighting systems for ro-ro spaces and special category spaces* that had been approved at MSC 90 (MSC 91/WP.5, paragraph 6.1.3). However, the replacement was not done at that time in SOLAS regulations II-2/20.6.1.4 and 20.6.1.5 and paragraph 2.4 of chapter 7 of the FSS Code.

IMO's objectives

10 The main goal of the proposed output is to revise SOLAS regulations II-2/20.6.1.4 and 20.6.1.5, as well as chapters 6 and 7 of the FSS Code to align them with the requirements of SOLAS regulations II-2/20.6.1.1 to 20.6.1.3, with a view to ensuring consistent implementation in IMO instruments. The proposed new output will contribute to strategic direction (SD) 7 "Ensure the regulatory effectiveness of international shipping" as defined in the IMO Strategic Plan (resolution A.1173(33)). In the context of SD 7, it will contribute to providing consistency through the effective and uniform implementation of the IMO instruments.

Need

11 The co-sponsors consider that it is essential to keep SOLAS and the FSS Code requirements consistent with each other in order to ensure the smooth and straightforward application of IMO instruments.

Analysis of the issue

12 In the subsequent paragraphs, the issue is analysed in two parts: paragraphs 13 to 17 discuss the fixed high-expansion foam fire-extinguishing systems, while paragraph 18 discusses the fixed water-based fire-fighting systems.

Fixed high-expansion foam fire-extinguishing systems

13 SOLAS regulation II-2/20.6.1 quoted in paragraph 3 means that fixed high-expansion foam fire-extinguishing systems can be used only in vehicle spaces and ro-ro spaces, which are not special category spaces, and are capable of being sealed from a location outside of the cargo spaces. Indeed, only SOLAS regulation II-2/20.6.1.1 allows fixed high-expansion foam fire-extinguishing systems.

14 SOLAS regulation II-2/20.6.1.2, which is applicable to vehicle spaces and ro-ro spaces not capable of being sealed, and to special category spaces, clearly refers to fixed water-based fire-fighting systems only. SOLAS regulation II-2/20.6.1.3, which allows an equivalent system to SOLAS regulation II-2/20.6.1.2, clearly refers to equivalent water-based fire-fighting systems, not to fixed foam systems, since MSC.1/Circ. 1272 and MSC.1/Circ.1430 (as revised) are quoted in the note.

15 However, in chapter 6 of the FSS Code, which details the requirements for fixed foam fire-extinguishing systems, paragraph 1 mentions the application of this chapter to vehicle, special category and ro-ro spaces in accordance with SOLAS regulation II-2/20.6.1.3. This is inconsistent with the content of SOLAS regulation II-2/20.6.1.3, which clearly excludes foam systems. Later in the text, the titles of paragraphs 3.2.2 and 3.3.3 of the FSS Code give the impression that fixed foam fire-extinguishing systems may be installed in special category spaces.

16 The co-sponsors believe that high-expansion foam fire-extinguishing systems should not be used in spaces where passengers could be present, such as special category spaces. Furthermore, foam systems should not be used in ro-ro spaces that are not capable of being sealed.

17 This discrepancy between SOLAS and the FSS Code may lead to different understandings from system manufacturers, who will focus on the FSS Code requirements, and from integrators or shipyards, who will focus on SOLAS requirements. It is recognized that there is a need to clarify chapter 6 of the FSS Code in order to ensure straightforward uniform application of these requirements.

Fixed water-based fire-fighting systems

18 Concerning the fixed water-based fire-fighting systems, in reference to paragraph 8 above, IACS considers that the occurrences of "fixed pressure water-spraying systems" stipulated in SOLAS regulations II-2/20.6.1.4 and 20.6.1.5 have been overlooked at the time of modification by MSC 91, since MSC 91 was focusing on amendments directly related to the requirement of fire-extinguishing systems in SOLAS regulations II-2/20.6.1.1 to 20.6.1.3.

Analysis of implications

19 No costs to the maritime industry are anticipated. The administrative burden to the Organization and to Member States is anticipated to be minimal. A completed administrative checklist, as set out in annex 6 of the draft revision of MSC-MEPC.1/Circ.5/Rev.5, is set out in annex 3.

Identification of capacity-building implications

20 No capacity-building implications are identified. A checklist for the identification of capacity-building implications, as set out in appendix 1 of annex 2 of the draft revision of MSC-MEPC.1/Circ.5/Rev.5, is set out in annex 6.

Benefits

21 This clarification of SOLAS regulations II-2/20.6.1.4 and 20.6.1.5 and chapters 6 and 7 of the FSS Code will ensure uniform application of the requirements for fixed fire-extinguishing systems in ro-ro and vehicle spaces, avoiding misinterpretation of the types of spaces where high-expansion fixed fire-extinguishing systems may be installed and ensuring the same wording for fixed water-based fire-fighting systems in SOLAS and the FSS Code.

Industry standards

22 No industry standards which are directly relevant to the issue exist.

Output

23 The following new output is proposed for inclusion in the Committee's post-biennial agenda:

> "Revision of SOLAS regulations II-2/20.6.1.4 and 20.6.1.5 and chapters 6 and 7 of the FSS Code to introduce consistency for fixed fire-extinguishing systems".

24 It is anticipated that this task could be completed in one session of the SSE Sub-Committee. Parts I and II of the check/monitoring sheet, as set out in annex 2 to MSC.1/Circ.1500/Rev.3, have been completed and are provided in annex 4 to this document.

25 For illustrative purposes, draft amendments to SOLAS regulation II-2/20 are set out in annex 1 and draft amendments to chapters 6 and 7 of the FSS Code are set out in annex 2.

Human element

26 The completed checklist for considering human element issues contained in annex 5 of the draft revision of MSC-MEPC.1/Circ.5/Rev.5, is set out in annex 5. As the proposal consists of clarifying the types of spaces where high-expansion fixed fire-extinguishing systems can be installed in order to ensure uniform application, no impact on the human element is anticipated.

Urgency

27 It is proposed to include the output in the Committee's post-biennial agenda, with one session needed to complete the item, assigning the SSE Sub-Committee as the associated organ.

Action requested of the Committee

28 The Committee is invited to consider the information provided above, in particular paragraphs 12 to 18, and the proposals in paragraphs 23 and 27, and to take action, as appropriate.

***

ANNEX 1*

DRAFT AMENDMENTS TO SOLAS REGULATION II-2/20

"Regulation 20

Protection of vehicle, special category and ro-ro spaces

[…]

6.1 Fixed fire-extinguishing systems

[…]

6.1.4 The requirement of this paragraph shall apply to ships constructed on or after 1 January 2010. Ships constructed on or after 1 July 2002 and before 1 January 2010 shall comply with the previously applicable requirements of paragraph 6.1.4, as amended by resolution MSC.99(73). When fixed water-based fire-fighting ~~pressure water-spraying~~ systems are fitted, in view of the serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks during the operation of the fixed water-based fire-fighting ~~pressure water-spraying~~ system, the following arrangements shall be provided:

.1 in passenger ships:

.1.1 in the spaces above the bulkhead deck, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard, taking into account the guidelines developed by the Organization;

.1.2.1 in ro-ro passenger ships, discharge valves for scuppers, fitted with positive means of closing operable from a position above the bulkhead deck in accordance with the requirements of the International Convention on Load Lines in force, shall be kept open while the ships are at sea;

.1.2.2 any operation of valves referred to in paragraph 6.1.4.1.2.1 shall be recorded in the log-book;

.1.3 in the spaces below the bulkhead deck, the Administration may require pumping and drainage facilities to be provided additional to the requirements of regulation II-1/35-1. In such case, the drainage system shall be sized to remove no less than 125% of the combined capacity of both the water-based fire-fighting ~~water-spraying~~ system pumps and the required number of fire hose nozzles, taking into account the guidelines developed by the Organization†. […]

.2 in cargo ships, the drainage and pumping arrangements shall be such as to prevent the build-up of free surfaces. In such case, the drainage system shall be sized to remove no less than 125% of the combined capacity of both the water-based fire-fighting ~~water-spraying~~ system pumps and the required number of fire hose nozzles, taking into account the guidelines developed by the Organization. […]

* Changes presented as illustration for the benefit of the new output proposal. Modifications are shown in grey shading.

6.1.5 On all ships, for closed vehicles and ro-ro spaces and special category spaces, where fixed water-based fire-fighting ~~pressure water-spraying~~ systems are fitted, means shall be provided to prevent the blockage of drainage arrangements, taking into account the guidelines developed by the Organization. Ships constructed before 1 January 2010 shall comply with the requirements of this paragraph by the first survey after 1 January 2010."

***

ANNEX 2*

DRAFT AMENDMENTS TO CHAPTERS 6 AND 7 OF THE FSS CODE

"Chapter 6

Fixed foam fire-extinguishing systems

1 Application

This chapter details the specifications for fixed foam fire-extinguishing systems for the protection of machinery spaces in accordance with regulation II-2/10.4.1.1.2 of the Convention, cargo spaces in accordance with regulation II-2/10.7.1.1, cargo pump-rooms in accordance with regulation II- 2/10.9.1.2 and vehicle~~, special category~~ and ro-ro spaces in accordance with regulation II-2/20.6.1.1 ~~II-2/20.6.1.3~~. This chapter does not apply to cargo pump-rooms of chemical tankers carrying liquid cargoes referred to in regulation II-2/1.6.2 of the Convention, unless the Administration specifically accepts the use of these systems based on additional tests with alcohol-based fuel and alcohol resistant foam. Unless expressly provided otherwise, the requirements of this chapter shall apply to ships constructed on or after 1 January 2014.

[…]

3.1.20 Machinery spaces, cargo pump-rooms, vehicle spaces~~,~~ and ro-ro spaces ~~and special category spaces~~ shall be provided with audible and visual alarms within the protected space warning of the release of the system. The alarms shall operate for the length of time needed to evacuate the space, but in no case less than 20 s.

[…]

3.2.2 Systems for the protection of vehicle, ro-ro~~, special category~~ and cargo spaces

[…]

3.2.2.2 Sufficient foam-generating capacity shall be provided to ensure the minimum design filling rate for the system is met, and in addition, shall be adequate to completely fill the largest protected space within 10 min. However, for systems protecting vehicle and ro-ro spaces ~~and special category spaces~~, with decks that are reasonably gas-tight and that have a deck height of 3 m or less, the filling rate shall be not less than two thirds of the design filling rate and in addition sufficient to fill the largest protected space within 10 min.

[…]

3.3.2 Systems for the protection of vehicle~~, and~~ ro-ro ~~spaces and special category~~ and cargo spaces

[…]

3.3.2.2 Sufficient foam-generating capacity shall be provided to ensure the minimum design filling rate for the system is met, and in addition, shall be adequate to completely fill the largest protected space within 10 min. However, for systems protecting vehicle and ro-ro spaces ~~and special category spaces~~, with decks that are reasonably gas-tight and that have a deck height of 3 m or less, the filling rate shall be not less than two thirds of the design filling rate and in addition sufficient to fill the largest protected space within 10 min."

* Changes presented as illustration for the benefit of the new output proposal. Modifications are shown in grey shading.

"Chapter 7

Fixed pressure water-spraying and water mist fire-extinguishing systems

1 Application

This chapter details the specifications for fixed pressure water-spraying and water-mist fire-extinguishing systems and fixed water-based fire-fighting systems as required by chapter II-2 of the Convention."

***

ANNEX 3

CHECKLIST FOR IDENTIFYING ADMINISTRATIVE REQUIREMENTS

<table>
<tr><td colspan="3">This checklist should be used when preparing the analysis of implications required in submissions of proposals for inclusion of outputs. For the purpose of this analysis, the term "administrative requirement" is defined in accordance with resolution A.1043(27), as an obligation arising from a mandatory IMO instrument to provide or retain information or data.

Instructions:

(A) If the answer to any of the questions below is YES, the Member State proposing an output should provide supporting details on whether the requirements are likely to involve start-up and/or ongoing costs. The Member State should also give a brief description of the requirement and, if possible, provide recommendations for further work, e.g. would it be possible to combine the activity with an existing requirement.

(B) If the proposal for the output does not contain such an activity, answer NR (Not required).

(C) For any administrative requirement, full consideration should be given to electronic means of fulfilling the requirement in order to alleviate administrative burdens.</td></tr>
<tr><td>1. Notification and reporting?
Reporting certain events before or after the event has taken place, e.g. notification of voyage, statistical reporting for IMO Members</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)</td></tr>
<tr><td>2. Record keeping?
Keeping statutory documents up to date, e.g. records of accidents, records of cargo, records of inspections, records of education</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)</td></tr>
<tr><td>3. Publication and documentation?
Producing documents for third parties, e.g. warning signs, registration displays, publication of results of testing</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)</td></tr>
<tr><td>4. Permits or applications?
Applying for and maintaining permission to operate, e.g. certificates, classification society costs</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)</td></tr>
<tr><td>5. Other identified requirements?</td><td>NR</td><td>Yes
□ Start-up
□ Ongoing</td></tr>
<tr><td colspan="3">Description of administrative requirement(s) and method of fulfilling it: (if the answer is yes)</td></tr>
</table>

***

ANNEX 4

PARTS I AND II OF THE CHECK/MONITORING SHEET FOR THE PROCESS OF AMENDING THE CONVENTION AND RELATED MANDATORY INSTRUMENTS (PROPOSAL/DEVELOPMENT) (MSC.1/CIRC.1500/REV.3)

Part I – Submitter of proposal (refer to section 3.2.1.1)*

1	*Submitted by (Document Number and submitter)* **MSC 110/18/12 – Bahamas, Cook Islands, Türkiye and IACS**
2	*Meeting session* **MSC 110**
3	*Date (date of submission)* **18 March 2025**

Part II – Details of proposed amendment(s) or new mandatory instrument (refer to sections 3.2.1.1 and 3.2.1.2)*

1	*Strategic direction* ***7***
2	*Title of the output* ***Revision of SOLAS regulations II-2/20.6.1.4 and 6.1.5 and chapters 6 and 7 of the FSS Code to introduce consistency for fixed fire-extinguishing systems***
3	*Recommended type of amendments* (MSC.1/Circ.1481) (delete as appropriate)
	• **Four-year cycle of entry into force** • ~~exceptional circumstance~~
4	*Instruments intended for amendment (SOLAS, LSA Code, etc.) or developed (new code, new version of a code, etc.)* **SOLAS and the FSS Code**
5	*Intended application (scope, size, type, tonnage/length restriction, (International/non-international), activity, etc.)* **All ships to which SOLAS chapter II-2 applies**
6	*Application to new/existing ships* **New ships**
7	*Proposed coordinating sub-committee* **SSE Sub-Committee**
8	*Anticipated supporting sub-committees* **None**
9	*Time scale for completion* **2028**
10	*Expected date(s) for entry into force and implementation/application* **1 January 2032**
11	*Any relevant decision taken or instruction given by the Committee* **None**

***

ANNEX 5

CHECKLIST FOR CONSIDERING HUMAN ELEMENT ISSUES BY IMO BODIES

Draft revision of MSC-MEPC.1/Circ.5/Rev.5, annex 5

	1 **Question**	**2** **Yes/No**	**3** **IMO references**	**4** **Considerations**	**5** **Instructions**
Workload			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
1	**Does the "output" affect workload?**	No			
1.1	**On board, especially in the already intensive phases of the voyage and port operations to:**	**No**	*Revised guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies* (MSC-MEPC.7/Circ.8) *Guidelines on fatigue* (MSC.1/Circ.1598) *Principles of minimum safe manning* (Resolution A.1047(27)) *Guidelines for the investigation of accidents where fatigue may have been an issue* (MSC/Circ.621)		

	1 Question	2 Yes/No	3 IMO references	4 Considerations	5 Instructions
1.1.1	Operations including navigation, cargo and engineering	No			
1.1.2	Maintenance of the ships structure and its equipment	No			
1.1.3	Onboard administration in support of the ships' management systems	No			
1.1.4	Onboard administration related to regulation involving flag States, classification societies, port State and other bodies such as charterers and port authorities	No			
1.1.5	Increased workload or time pressure on personnel if involved in implementation of changes prior to the implementation date	No			
1.2	**Ashore, in a manner that would affect the ships operation to:**	No			
1.2.1	Companies' administration	No			
1.2.2	Flag State, port State and classification societies administration such that certification and other processes are compromised or delayed	No			

	1 Question	2 Yes/No	3 IMO references	4 Considerations	5 Instructions
Decision-making			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
2	**Does the "output" impact decision-making on board the ship?**	No			
2.1	By confusion with existing requirements and regulations	No			
2.2	By changing responsibilities as laid out in the ISM Code	No			
2.3	By creating complexity in its implementation and/or in the safety management systems	No			
2.4	By requiring increased mental effort, such as the need to find, transform and analyse data or result in the need to make judgements based on incomplete information	No			
2.5	By limiting the time available to establish situational awareness, decide, communicate (possibly across time zones) or check	No			
2.6	By increasing reliance on judgement and administrative controls to manage major risks such as oil spills and collisions	No			

	1 Question	2 Yes/No	3 IMO references	4 Considerations	5 Instructions
Living and working environment			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
3	**Does the "output" affect the living and working environment?**	No	*Guidelines on the basic elements of a shipboard occupational health and safety programme* (MSC-MEPC.2/Circ.3) *Guidelines on fatigue* (MSC.1/Circ.1598)		
3.1	By interfering with existing arrangements for abandonment, fire-fighting and other emergency plans or procedures	No			
3.2	By introducing new materials that could create an explosion, fire, environmental or occupational health risk	No			
3.3	By introducing new high energy sources such as high-voltage, high pressure fluids	No			
3.4	By affecting access or egress and causing lack of ventilation in working spaces	No			
3.5	By affecting the habitability of accommodation spaces due to noise, vibration, temperatures, dust and other contaminants	No			

	1 Question	2 Yes/No	3 IMO references	4 Considerations	5 Instructions
Operation and maintenance			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
4.	**Does the "output" affect the operation and maintenance of the ship, its structure or systems and equipment?**	No	*Revised guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies* (MSC-MEPC.7/Circ.8)		
			Guidelines for bridge equipment and systems, their arrangement and integration (BES) (SN.1/Circ.288)		
			Principles of minimum safe manning (Resolution A.1047(27))		
			Issues to be considered when introducing new technology on board ships (MSC/Circ.1091)		
			Guideline on software quality assurance and human-centred design for e-navigation (MSC.1/Circ.1512)		

	1 Question	2 Yes/No	3 IMO references	4 Considerations	5 Instructions
			Guidelines for the standardization of user interface design for navigation equipment (MSC.1/Circ.1609)		
4.1	By introducing equipment that the user may find difficult to operate or maintain, or may be unreliable	No			
4.2	By introducing new and/or novel technology, or technology that changes the role of the person	No			
4.3	By introducing requirements for new competencies and roles	No			
4.4	By overloading existing infrastructure, such as power generation and ventilation systems	No			
4.5	By poor integration with existing systems and controls	No			
4.6	By introducing new and unfamiliar operations/procedures	No			
4.7	By introducing new and unfamiliar operating interfaces?	No			
4.8	By introducing risks to the ship during any modifications required prior to the implementation date of the output	No			

	1 Question	2 Yes/No	3 IMO references	4 Considerations	5 Instructions
Measures to address the human element			*Other relevant references may be added* *Strike out references that are not relevant*	*If answer to question is "yes" identify considerations. If answer is "no" make proper justification*	*Identify how human element considerations should be addressed in the output*
5.	**Does the "output" require changes to:**	No	*Shipboard technical operating and maintenance manuals* (MSC.1/Circ.1253) *Revised guidelines for the operational implementation of the International Safety Management (ISM) Code by Companies* (MSC-MEPC.7/Circ.8)		
5.1	Training	No			
5.2	Practical skill development and competences	No			
5.3	Operating, management and/or maintenance procedures	No			
5.4	Information/manuals for operation and maintenance	No			
5.5	Spares outfit	No			
5.6	Occupational safety requirements including guarding and PPE	No			
5.7	Shore support	No			

***

ANNEX 6

CHECKLIST FOR THE IDENTIFICATION OF CAPACITY-BUILDING IMPLICATIONS
(Appendix 1 of annex 2 to draft revision of MSC-MEPC.1/Circ.5/Rev.5)

1 For Administrations

- □ Is new legislation required? *No*
- □Is there a requirement for new equipment and/or systems? No
  - o Does equipment manufacturing capacity exist internationally? N/A
  - o Do equipment repair/servicing facilities exist internationally? N/A
  - o Is there capacity to develop new systems? N/A
- □ Will the implementation require additional financial resources? No
- □ Is there a need for additional human resources or new skills? No
- □ Will there be a need to upgrade current infrastructure? No
- □ Is there enough lead time towards implementation? Yes
- □ Will a rapid implementation procedure be adopted? No
- □ Is there a substantial modification of existing standards? No
- □ Will a guide to implementation be needed? No

2 For the industry

- □ Would the industry require new and/or enhancements of existing systems? No
  - o Does capacity exist internationally to develop new systems? N/A
- □ Is there a need for additional training of seafarers? No
  - o Do related and validated training courses exist? N/A
  - o Are sufficient simulation training courses available internationally? N/A
- □ Will there be a requirement for new equipment? No
  - o Does manufacturing capacity exist internationally? N/A
- □ Is there repair/servicing and/or retrofitting, and does maintenance capacity exist internationally? N/A