INTERNATIONAL MARITIME ORGANIZATION

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MARITIME SAFETY COMMITTEE
104th session
Agenda item 15

MSC 104/15/8
30 June 2021
Original: ENGLISH
Pre-session public release: ☒

WORK PROGRAMME

Proposal for a new output to review SOLAS chapters II-1 (Part C) and V regarding steering and propulsion requirements

Submitted by Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United States, EC and IACS

SUMMARY

Executive summary:	This document proposes a new output to review SOLAS chapters II-1 (Part C) and V to address both traditional and non-traditional propulsion and steering systems
Strategic direction, if applicable:	2 and 6
Output:	Not applicable
Action to be taken:	Paragraph 21
Related documents:	DE 55/3; SSE 6/12 and SSE 6/18

Introduction

1 This document is submitted in accordance with the provisions 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.2) on the submission of proposals for new outputs and proposes to revise SOLAS chapters II-1 (Part C) and V to address both traditional and non-traditional propulsion and steering systems.

Background

2 SOLAS requirements for steering and propulsion were developed some time ago, mainly based on the system of a single propeller and rudder, the standard system design of that time. Since then, steering systems have undergone a development process and today's modern propulsion/steering systems are completely different to the traditional type, such as azimuth thrusters, podded propulsors, waterjets, cycloidal propellers, etc. Therefore, current safety standards of SOLAS for steering and propulsion are not directly applicable to these non-traditional types.

3 IACS already addressed this issue in document DE 55/3, which contains its Unified Interpretation SC 242 on the arrangements for steering capabilities and function on ships fitted with propulsion and steering systems other than traditional arrangements for a ship's directional control, by providing interpretation of SOLAS regulations II-1/28 and II-1/29. This unified interpretation was agreed at DE 55 and subsequently approved by MSC 90 as *Unified interpretation of SOLAS regulations II-1/28 and II-1/29* (MSC.1/Circ.1416).

4 Based on the experience of the application of MSC.1/Circ.1416 (UI SC 242 respectively) and feedback from the industry, IACS submitted a revised version of UI SC 242 to SSE 6 (SSE 6/12). However, the Sub-Committee, while accepting this latest version as an interim measure (it was further approved as MSC.1/Circ.1416/Rev.1 at MSC 99), decided that a new output proposal encompassing all types of modern steering systems would be necessary (SSE 6/18, paragraph 12.42).

Current safety standards

5 Present safety requirements regarding steering and propulsion of ships are established by SOLAS regulation II-1/28 on Means of going astern, regulation II-1/29 on Steering gear, regulation II-1/30 on Additional requirements for electric and electrohydraulic steering gear, regulation V/25 on Operation of steering gear and regulation V/26 on Steering gear: testing and drills. These requirements are prescriptive and reflect the technology that was in use at the time of their adoption.

Motivation

6 Steering systems have evolved radically since current SOLAS regulations were adopted; many modern systems are a combination of propulsion and steering. Current SOLAS requirements do not adequately consider these non-traditional propulsion/steering systems. So far, this issue was addressed by means of unified interpretations, however a review is considered necessary in order to reflect modern propulsion/steering systems in the IMO's regulatory framework.

IMO's objectives

7 The main goal of this proposal is to provide the requirements for steering systems of all ship types, correlating to IMO's mission and vision to promote safe, secure, environmentally sound, efficient and sustainable shipping through cooperation, by adopting the highest practicable standards of maritime safety and security, efficiency of navigation and prevention and control of pollution from ships.

8 The proposed output aims to achieve the integration of new technologies in the regulatory framework by accommodating non-traditional propulsion/steering systems appropriately, as well as to ensure regulatory effectiveness by improving the application of the framework to new propulsion/steering systems.

9 Noting that the output to develop "Safety objectives and functional requirements of the Guidelines on alternative design and arrangements for SOLAS chapter II-1" is already ongoing under the coordination of the Sub-Committee on Ship Design and Construction (SDC), the co-sponsors are of the view that the scope of this proposed new output is far beyond the scope of the existing output. In addition, the co-sponsors are confident that the rule development under this new output will contribute to the development of goals and functional requirements under the existing output.

10 In addition, the co-sponsors are confident that the rule development under this new output, only affecting SOLAS regulations II-1/28, 29, 30 and possibly V/25 and 26, will contribute to the development of goals and functional requirements under the existing output. Therefore, it is proposed that the amended regulations are goal based.

Need

11 The steering systems are essential for ship safety, e.g. mitigating the risk of collision, contact and grounding. IMO's regulatory framework needs to be adequate for current technologies and therefore, as decided by SSE 6, a new approach encompassing all types of steering systems is necessary.

Analysis of the issue

12 Existing SOLAS regulations mentioned in paragraph 5 above are mainly based on the traditional steering system consisting of a single propeller and a single rudder. Today, various non-traditional propulsion/steering systems exists that are inadequately addressed by these requirements. So far, the discrepancy between regulations and current technology have been addressed by unified interpretations.

13 The technological possibilities of providing steering need to be holistically considered by the regulatory framework. The proposed new output will enable to amend SOLAS provisions to address all technologies.*

Analysis of implications

14 Minimal costs to the maritime industry are anticipated. There are no additional administrative requirements or burdens. The completed checklist for identifying administrative requirements and burdens is set out in annex 1.

Benefits

15 A regulatory framework for all types of steering systems, including propulsion/steering systems, will provide the basis for a consistent evaluation of such systems helping to achieve IMO's safety objectives.

Industry standards

16 The co-sponsors are considering in the analysis any relevant existing industry standards for non-traditional propulsion/steering systems.

Output

17 The following new output is proposed:

> "Revision of SOLAS chapters II-1 (Part C) and V to address both traditional and non-traditional propulsion and steering systems".

18 Parts I and II of the check/monitoring sheet, as given in annex 2 to the *Guidance on drafting of amendments to the 1974 SOLAS Convention and related mandatory instruments* (MSC.1/Circ.1500/Rev.1), have been completed and are provided in annex 3.

* With a view to addressing this agenda output (if approved), a dedicated study on the subject called "STEERSAFE Steering and Manoeuvrability Study" has been commissioned by EMSA and carried out by DNV (http://emsa.europa.eu/publications/reports/item/4398-steersafe.html).

Human element

19 The completed checklist for considering human element issues contained in the *Checklist for considering human element issues by IMO bodies* (MSC-MEPC.7/Circ.1) is set out in annex 2. This proposal is not considered to have any relevant implications for the human element.

Urgency

20 It is proposed that the output be included in the Committee's post-biennial agenda (2022-2023), with two sessions needed to complete the item by the SSE Sub-Committee.

Action requested of the Committee

21 The Committee is invited to consider the foregoing, in particular paragraphs 12 and 13, the proposals in paragraphs 17 and 20, and take action, as appropriate.

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ANNEX 1

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>
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ANNEX 2

CHECKLIST FOR CONSIDERING HUMAN ELEMENT ISSUES BY IMO BODIES

Instructions:

If the answer to any of the questions below is:

(A) **YES**, the preparing body should provide supporting details and/or recommendation for further work.

(B) **NO**, the preparing body should make proper justification as to why human element issues were not considered.

(C) **NA** (Not Applicable) – the preparing body should make proper justification as to why human element issues were not considered applicable.

Subject Being Assessed: (e.g. Resolution, Instrument, Circular being considered)

SOLAS chapters II-1 (Part C) and V

Responsible Body: (e.g. Committee, Sub-committee, Working Group, Correspondence Group, Member State)

MSC/SSE

1. Was the human element considered during development or amendment process related to this subject?	❑Yes ❑No ☑NA
2. Has input from seafarers or their proxies been solicited?	❑Yes ❑No ☑NA
3. Are the solutions proposed for the subject in agreement with existing instruments? (Identify instruments considered in comments section)	❑Yes ❑No ☑NA
4. Have human element solutions been made as an alternative and/or in conjunction with technical solutions?	❑Yes ❑No ☑NA
5. Has human element guidance on the application and/or implementation of the proposed solution been provided for the following:	
• Administrations?	❑Yes ❑No ☑NA
• Shipowners/managers?	❑Yes ❑No ☑NA
• Seafarers?	❑Yes ❑No ☑NA
• Surveyors?	❑Yes ❑No ☑NA
6. At some point, before final adoption, has the solution been reviewed or considered by a relevant IMO body with relevant human element expertise?	❑Yes ❑No ☑NA
7. Does the solution address safeguards to avoid single person errors?	❑Yes ❑No ☑NA
8. Does the solution address safeguards to avoid organizational errors?	❑Yes ❑No ☑NA
9. If the proposal is to be directed at seafarers, is the information in a form that can be presented to and is easily understood by the seafarer?	❑Yes ❑No ☑NA

10. Have human element experts been consulted in development of the solution?	❑Yes ❑No ☑NA
11. **HUMAN ELEMENT**: **Has the proposal been assessed against each of the factors below?**	
❑ CREWING. The number of qualified personnel required and available to safely operate, maintain, support, and provide training for system.	❑Yes ❑No ☑NA
❑ PERSONNEL. The necessary knowledge, skills, abilities, and experience levels that are needed to properly perform job tasks.	❑Yes ❑No ☑NA
❑ TRAINING. The process and tools by which personnel acquire or improve the necessary knowledge, skills, and abilities to achieve desired job/task performance.	❑Yes ❑No ☑NA
❑ OCCUPATIONAL HEALTH AND SAFETY. The management systems, programmes, procedures, policies, training, documentation, equipment, etc. to properly manage risks.	❑Yes ❑No ☑NA
❑ WORKING ENVIRONMENT. Conditions that are necessary to sustain the safety, health, and comfort of those on working on board, such as noise, vibration, lighting, climate, and other factors that affect crew endurance, fatigue, alertness and morale.	❑Yes ❑No ☑NA
❑ HUMAN SURVIVABILITY. System features that reduce the risk of illness, injury, or death in a catastrophic event such as fire, explosion, spill, collision, flooding, or intentional attack. The assessment should consider desired human performance in emergency situations for detection, response, evacuation, survival and rescue and the interface with emergency procedures, systems, facilities and equipment.	❑Yes ❑No ☑NA
❑ HUMAN FACTORS ENGINEERING. Human-system interface to be consistent with the physical, cognitive, and sensory abilities of the user population.	❑Yes ❑No ☑NA

Comments: (1) Justification if answers are NO or Not Applicable. (2) Recommendations for additional human element assessment needed. (3) Key risk management strategies employed. (4) Other comments. (5) Supporting documentation.

Human element is not considered further as the proposal is to align existing requirements with technology that is already in use.

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ANNEX 3

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.1)

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

1	*Submitted by (Document Number and submitter)* **MSC 104/15/8 – Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United States, European Commission and IACS**
2	*Meeting session* **MSC 104**
3	*Date (date of submission)* **30 June 2021**

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* ***2 and 6***
2	*Title of the output* ***Revision of SOLAS chapters II-1 (Part C) and V to address both traditional and non-traditional propulsion and steering systems***
3	*Recommended type of amendments* (MSC.1/Circ.1481) (delete as appropriate)
	• **Four-year cycle of entry into force**
4	*Instruments intended for amendment (SOLAS, LSA Code, etc.) or developed (new code, new version of a code, etc.)* **SOLAS chapters II-1 (Part C) and V**
5	*Intended application (scope, size, type, tonnage/length restriction, (International/non-international), activity, etc.)* **All ships to which SOLAS chapter II-1, Part C 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* **2023**
10	*Expected date(s) for entry into force and implementation/application* **1 January 2028**
11	*Any relevant decision taken or instruction given by the Committee* **None**