

Shipbuilding Industry Concern to the IMO Issues

Tripartite 2023 Tokyo
9th November 2023
Session 3 - Strategic Issues

The Shipbuilders' Association of Japan (Member of ASEF)

Japan Marine United Corporation

NIHON SHIPYARD CO., LTD.

Kenji TAKAGISHI

For example...

- GHG Reduction
- Maritime Autonomous Surface Ships (MASS)
- Emergency Towing Arrangement (ETA) for Ships other than Tankers
- Guidelines for Underwater Noise Reduction
- Fire Protection on Containerships, Car Carrier etc.
- Propulsion and Steering Systems

→ **Revision of SOLAS requirements relating to Propulsion and Steering Systems and Standards for Ship Maneuverability**

Conceptual image of Example of Zero-Emission Ship

Ammonia-fueled ship



Credit: Ministry of Land, Infrastructure, Transport and Truism
(<https://www.mlit.go.jp/common/001354313.pdf>)

Conceptual image of future MASS system



Credit: Japan Ship Technology Research Association
(<https://www.jstra.jp/en/R&D/>)

Revision of SOLAS requirements relating to Propulsion and Steering Systems and Standards for Ship Manoeuvrability

Outline of Today's presentation

1. Overview of the Revision
2. Main Contents of the Proposed Amendments
3. Proposed Amendments to SOLAS requirements
4. Proposed Amendments to Standards for Ship Manoeuvrability
5. Our Opinion to the Proposed Amendments

1. Overview of the Revision (1/3)

Revision of SOLAS requirements relating to propulsion and steering systems and Standards for Ship Manoeuvrability will be discussed at SDC10 (Jan. 2024).

The revision is proposed in the document of MSC105/18/1 (13 January 2022).

The screenshot shows the IMO document MSC 105/18/1. It includes the IMO logo, the title 'WORK PROGRAMME', and a summary section. Three orange boxes highlight specific parts: the title, the list of submitting countries, and a key sentence from the summary. An orange arrow points from the first box to the second box.

IMO INTERNATIONAL MARITIME ORGANIZATION **E**

MARITIME SAFETY COMMITTEE
105th session
Agenda item 18

MSC 105/18/1
13 January 2022
Original: ENGLISH
Pre-session public release: E

WORK PROGRAMME

Elaboration on the proposal contained in document MSC 104/15/8

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 and EC

SUMMARY

Executive summary: This document elaborates on the proposal in document MSC 104/15/8. It provides the suggested amendments to SOLAS chapters II-1 (Part C) and V, and related non-mandatory instruments, and underscores the urgency of the matter. The draft submission addresses both traditional and non-traditional propulsion and steering systems.

2 and 6

Not applicable

Paragraphs 18 and 19

References: DE 55/3; SSE 6/12, SSE 6/18 and MSC 104/15/8

MSC 104/15/8 (Austria et al.), proposing to revise SOLAS chapters II-1 and related non-mandatory instruments, to address both traditional and propulsion and steering systems, was 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.

The preliminary assessment of this output (MSC 104/WP.2) resulted in considering it for the post-biennial agenda of SSE, in line with what was originally proposed in paragraph 6 of document MSC 104/15/8. As the Committee could not consider document MSC 104/15/8 for MSC 104 owing to lack of time, the approval/adoption of the revisions, in the best case, may occur in 2027, entering into force in 2030, more than a decade after the initial proposals were submitted. The objective of this document is therefore to highlight that a comprehensive and mature set of amendments to SOLAS chapters II-1 (Part C) and V, and related non-mandatory instruments, to address both traditional and non-traditional propulsion and steering systems, is ready available based on a dedicated study (see paragraph 6).

Elaboration on the proposal contained in document MSC 104/15/8

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 and EC

and underscores the urgency of the matter. The draft submission addresses both traditional and non-traditional propulsion and steering systems.

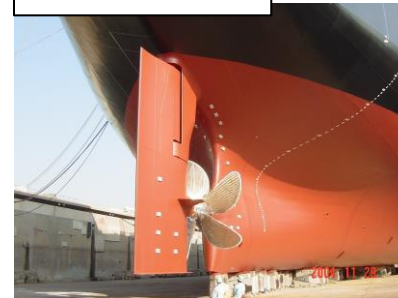
1. Overview of the Revision (2/3)

The current SOLAS Convention and its related circulars are mainly based on the traditional propulsion and steering systems consisting of a single propeller and a single rudder.

The revision is proposed to address both traditional and non-traditional propulsion and steering systems such as azimuth thrusters, podded propulsors, waterjets, etc.

MSC also instructs the sub-committee to clarify whether traditional propulsion and steering systems were included.

traditional



Non-traditional



1. Overview of the Revision (3/3)

■ SAJ's Opinion to the Overview of the Revision

We acknowledge that the current SOLAS Convention and its related circulars do not adequately address non-traditional propulsion and steering systems and recognize the urgent importance of developing regulations to address such non-traditional propulsion and steering systems.

On the other hand, we understand that, as far as those current SOLAS requirements apply to traditional propulsion and steering systems, there have been no significant accidents caused by insufficient performance of a propulsion and steering system.

So, we believe that there is insufficient justification to apply the revision regarding to performance requirements to traditional propulsion and steering systems.

2. Main Contents of the Proposed Amendments

Main proposed amendments relating to Standards for Ship Manoeuvrability in MSC105/18/1 are as follows;

➤ **To SOLAS CHAPTER II-1, PART C, REGULATION 28 and 29**

regulation 28 : Means of going astern

regulation 29 : Steering gear

Some manoeuvring abilities are made mandatory in those SOLAS requirements.

➤ **To MSC.137(76) and MSC/Circ.1053**

MSC.137(76) : Standards for Ship Manoeuvrability

MSC/Circ.1053 : Explanatory Notes

Some of the proposed amendments to the standards should be carefully considered.

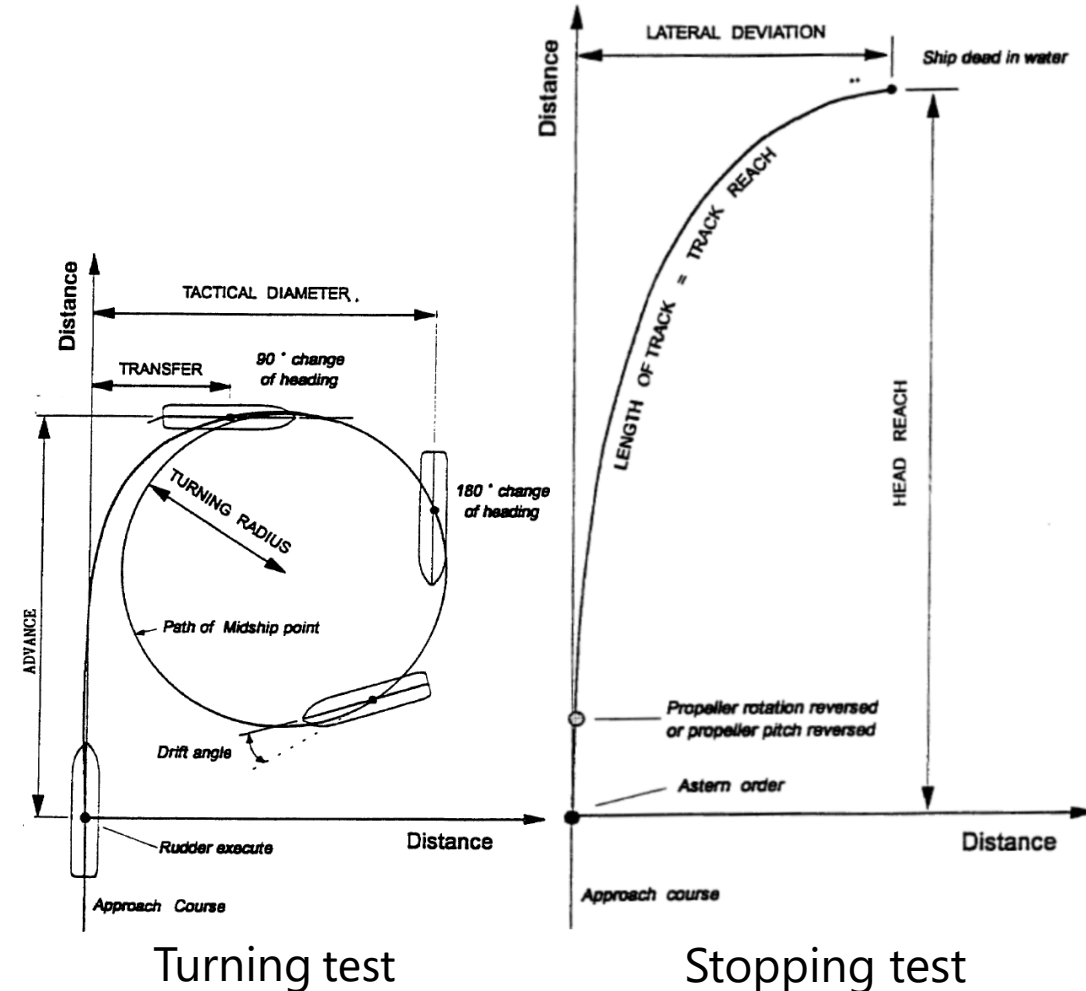
3. Proposed Amendments to SOLAS requirements (1/3)

Proposed amendments to SOLAS requirements regarding Means of going astern and Steering gear are as follows;

In those SOLAS requirements, **Stopping and turning abilities**, as outlined in the Standards for Ship Manoeuvrability, are made **mandatory**.

Furthermore, **heading-keeping** ability is added in the Standards and made **mandatory**. (The detail of the ability will be shown later)

These abilities are required to be demonstrated by sea trial.



3. Proposed Amendments to SOLAS requirements (2/3)

Concerns about the proposed amendments to SOLAS requirements regarding Means of going astern and Steering gear (mandatory requirements for ship manoeuvrability) are as follows;

➤ **Conversion methods of the loading condition**

Many cargo ships other than tankers conduct sea trials in ballast conditions.

Some conversion methods of the sea trial results in ballast condition to fully loaded condition are outlined in Explanatory Notes, but those multiple approaches may lead to variable or inconstant results.

Moreover, there is uncertainty in the results due to variations in parameter selection, even when using the same conversion method.

3. Proposed Amendments to SOLAS requirements (3/3)

Concerns about the proposed amendments to SOLAS requirements regarding Means of going astern and Steering gear (mandatory requirements for ship manoeuvrability) are as follows;

- **Approval systems** including handling of vessels that fail to comply the standards

Since the results will be obtained only after sea trials and subsequent actions are impractical, it is necessary **to develop a means to verify the performance requirements are complied at design stage.**

Alternatively, it may be necessary to consider an approval system including **handling of vessels that fail to comply the standards.**

If these are not considered, not only shipbuilders but also ship owners, shipping companies, classification societies, and other related parties may be seriously affected.

4. Proposed Amendments to Standards for Ship Manoeuvrability (1/5)

Proposed amendments to Standards for Ship Manoeuvrability and Explanatory Notes are as follows;

Some points of proposed amendments should be carefully considered.

- **Application of “declared steering angle limit”**
- **Added heading keeping test**
- **Added reduced criteria**
- **Heading direction during approach run** of turning and stopping tests

etc.

4. Proposed Amendments to Standards for Ship Manoeuvrability (2/5)

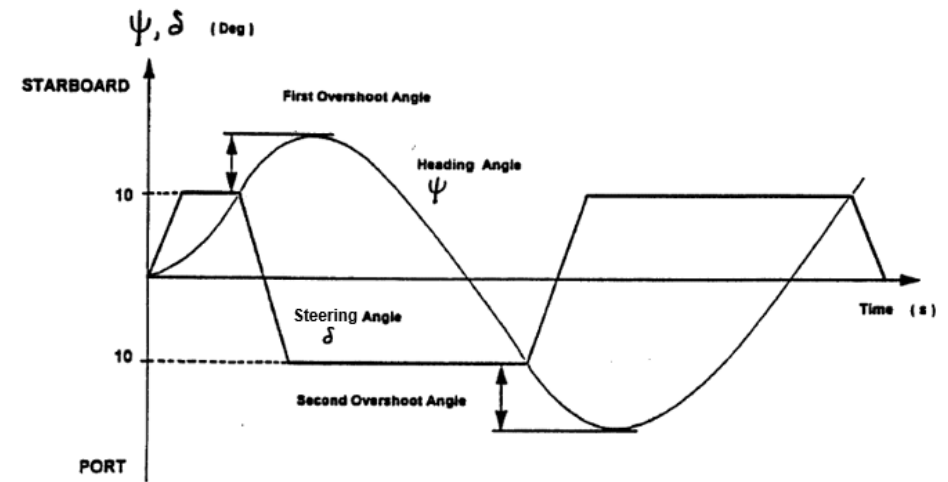
Concerns about the proposed amendments to Standards for Ship Manoeuvrability and Explanatory Notes are as follows;

- **Application of “declared steering angle limit”** to steering angle in zig-zag test.

Steering angles in $10^\circ/10^\circ$ and $20^\circ/20^\circ$ zig-zag test are replaced by $1/3$ and $2/3$ of declared steering angle limit.

Zig-zag test is an evaluation method established using a lot of actual ship data during the development of current Standards for Ship Manoeuvrability.

The amendments of steering angle in zig-zag test **may allow unstable ships.**



Zig-zag test

4. Proposed Amendments to Standards for Ship Manoeuvrability (3/5)

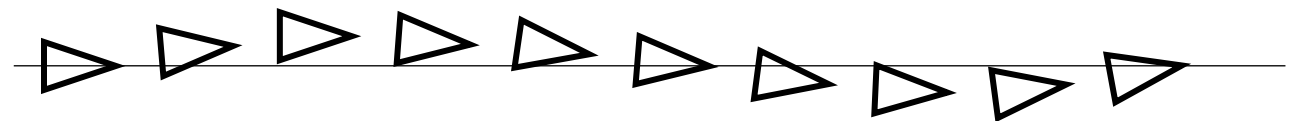
Concerns about the proposed amendments to Standards for Ship Manoeuvrability and Explanatory Notes are as follows;

- **Added heading keeping test** (Heading deviation within 2 degrees for 30 min. straight running)

Heading keeping test is added in Standards for Ship Manoeuvrability.

The results of heading keeping test could change **depending on auto-pilot control**.

Since there is a similar description in MSC.64(67), Annex 3, which is the performance standards for auto-pilot, there is no need to add the heading keeping test to Standards for Ship Manoeuvrability.



Heading keeping test

4. Proposed Amendments to Standards for Ship Manoeuvrability (4/5)

Concerns about the proposed amendments to Standards for Ship Manoeuvrability and Explanatory Notes are as follows;

- **Added reduced criteria** (performance requirements under failure conditions of propulsion and steering systems)

Reduced criteria is added in Standards for Ship Manoeuvrability.

It is not adequately explained the reason to add that requirements, and **the validity of the criteria is not clear** because the proposed criteria are not decided based on theoretical calculations or actual ship data.

Thus, it is needed to the process of careful consideration whether the criteria is appropriate or not, after obtaining actual ship data.

4. Proposed Amendments to Standards for Ship Manoeuvrability (5/5)

Concerns about the proposed amendments to Standards for Ship Manoeuvrability and Explanatory Notes are as follows;

➤ **Heading direction during approach run** of turning and stopping tests

Heading direction during approach run of turning and stopping tests is changed from heading towards wind to head from wind.

The current criteria for stopping tests were developed in Standards for Ship Manoeuvrability using a lot of actual ship data mainly tested under headwind conditions in accordance with Explanatory Notes .

This amendments in test conditions may make it practically impossible for large full ships to satisfy the criteria.

5. Our Opinion to the Proposed Amendments

SAJ's opinion to the proposed amendments relating to Standards for Ship Manoeuvrability in MSC105/18/1 are as follows;

➤ **To SOLAS requirements regarding Means of going astern and Steering gear**

Making ship manoeuvrability mandatory in related SOLAS requirements should be carefully considered.

Conversion methods of the loading condition, Approval systems

➤ **To Standards for Ship Manoeuvrability and Explanatory Notes**

Some of amendments to Standards for Ship Manoeuvrability and Explanatory Notes should be carefully considered.

Application of "declared steering angle limit", Added heading keeping test, Added reduced criteria, Heading direction during approach run, etc.

As pointed out above, those amendments are premature, and we believe that technical discussions are necessary first among the related parties.

A photograph of a shipbuilding yard at dusk or dawn. The sky is a deep blue, and the sun is low on the horizon, creating a bright glow. Several large cranes are visible, silhouetted against the sky. The hull of a ship is partially visible in the foreground, showing dark and light sections.

Shipbuilding,
to connect present with future.

Thank you for your kind attention!