

SUB-COMMITTEE ON SHIP SYSTEMS AND
EQUIPMENT
4th session
Agenda item 12

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

**Unified interpretation of arrangements for steering capability and function on ships
fitted with propulsion and steering systems other than traditional arrangements for a
ship's directional control (IACS UI SC242)**

Submitted by IACS

SUMMARY

Executive summary: IACS has revised and updated unified interpretation (UI) SC242 which relates to SOLAS regulations II-1/29.1, 29.2.1, 29.3, 29.4, 29.6.1, 29.14, 28.3 and 30.2 and the arrangements for steering capability and function on ships fitted with propulsion and steering systems other than traditional arrangements for a ship's directional control

Strategic direction: 1.1

High-level action: 1.1.2

Output: 1.1.2.3

Action to be taken: Paragraph 9

Related documents: DE 55/3, DE 55/22 (paragraphs 3.2 and 3.3) and MSC 90/28 (paragraph 9.2)

Introduction

1 SOLAS adequately addresses steering gear arrangements having a traditional propulsion system and a rudder-type steering system. However, it appears that this Convention does not provide for modern combined propulsion/steering systems such as azimuth thrusters, podded propulsors, waterjets, cycloidal propellers, etc.

2 In order to provide requirements/interpretations to cover modern steering systems, IACS developed unified interpretation (UI) SC242. This IACS UI was considered at DE 55 (DE 55/3 (IACS) and DE 55/22, paragraphs 3.2 and 3.3). MSC 90 subsequently approved the *Unified interpretation of SOLAS regulations II-1/28 and II-1/29* (MSC.1/Circ.1416) (MSC 90/28,

paragraph 9.2). Experience in the application of UI SC242 and feedback from the industry has indicated that further clarification was needed, in particular in relation to the interpretations of SOLAS regulations II-1/29.1 and 29.6.1. Consequently, IACS has undertaken work to update UI SC242.

Discussion

3 It was considered important to clarify the various terms used for steering systems and its associated equipment. Hence, a definition for "steering system" was introduced in the "Introduction" section of the UI to complement the definition of "steering gear power unit" in the interpretation of SOLAS regulation II-1/29.6.1.

4 The interpretation of SOLAS regulation II-1/28.2 on "Means of going astern" was not considered necessary and therefore deleted from the original version of UI SC242.

5 The interpretation of SOLAS regulation II-1/29.1 was rephrased as a functional requirement. It is further considered that the requirement in SOLAS regulation II-1/29.1 is satisfied if each of the steering systems is equipped with its own dedicated steering gear and each of the steering systems fulfils the requirements for main steering gear (as given in the interpretation of SOLAS regulation II-1/29.3).

6 The interpretation of SOLAS regulation II-1/29.6.1 was rephrased as a functional requirement. It was further clarified that the capacity requirements apply regardless of whether the steering systems are arranged with common or dedicated power units.

7 A new interpretation of SOLAS regulation II-1/30.2 clarifies that these requirements apply to each steering system in ships fitted with multiple steering systems.

8 Based on the above understandings, IACS has revised UI SC242. The Sub-Committee is invited to note that IACS members intend to implement revision 1 of UI SC242 for propulsion and steering systems other than traditional arrangements for a ship's directional control:

- .1 when an application for certification of non-traditional steering systems is dated on or after 1 July 2017; or
- .2 which are installed in a new ship for which the date of contract for construction is on or after 1 July 2017,

unless they are provided with written instructions to apply a different interpretation by the Administration on whose behalf they are authorized to act as a recognized organization.

Action requested of the Sub-Committee

9 The Sub-Committee is invited to:

- .1 consider the foregoing, in particular the work IACS has undertaken in updating UI SC242 and the implementation provisions explained in paragraph 8 above; and
- .2 consider updating MSC.1/Circ.1416 to reflect the revised IACS unified interpretation, as indicated in the annex to this document,

and to take action as appropriate.

ANNEX

UPDATES TO THE UNIFIED INTERPRETATION OF SOLAS REGULATIONS II-1/28 AND II-1/29 (MSC.1/CIRC.1416)

(Proposed changes to the annex of MSC.1/Circ.1416 are shown as ~~additions/deletions~~)

"INTRODUCTION

The SOLAS requirements for steering gears have been established for ships having a traditional propulsion system and one rudder-type steering system. For ships fitted with alternative propulsion and steering ~~arrangements~~ systems without rudder, such as but not limited to azimuthing propulsors or water jet propulsion systems, SOLAS regulations II-1/~~28.2,~~ 28.3, 29.1, 29.2.1, 29.3, 29.4, 29.6.1, 29.14 and 30.2 should be interpreted as follows, except 29.14, which is limited to the steering systems having a certain steering capability due to ~~vessel speed~~ the rudder stock diameter also in case propulsion power has failed.

Definition: *Steering system* is ship's directional control system, including main steering gear, auxiliary steering gear, steering gear control system and rudder if any.

REGULATION 28 – MEANS OF GOING ASTERN

~~Paragraph 2~~

~~28.2 The ability of the machinery to reverse the direction of thrust in sufficient time, and so to bring the ship to rest within a reasonable distance from maximum ahead service speed, shall be demonstrated and recorded.~~

...

REGULATION 29 – STEERING GEAR

Paragraph 1

For a ship fitted with ~~multiple~~ alternative propulsion and steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, the main steering arrangement and the auxiliary steering arrangement should be so arranged that the failure of one of them will not render the other one inoperative. ~~the requirement in SOLAS II-1/29.1 is considered satisfied if each of the steering systems is equipped with its own dedicated steering gear.~~

For a ship fitted with multiple steering systems, the requirement in SOLAS regulation II-1/29.1 is considered satisfied if each of the steering systems is equipped with its own dedicated steering gear provided that:

- .1 each of the steering systems is fulfilling the requirements for main steering gear (as given in interpretation of SOLAS regulation II-1/29.3.); and
- .2 each of the steering systems is provided with an additional possibility of positioning and locking the failed steering system in a neutral position after a failure of its own power unit(s) and actuator(s).

...

Paragraph 4

The auxiliary steering arrangements for ship directional control should be:

- .1 of adequate strength and capable of steering the ship at navigable speed and of being brought speedily into action in an emergency;
- .2 capable of changing direction of the ship's directional control system from one side to the other at declared steering angle limits at an average rotational speed, of not less than 0.5°/s; with the ship running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater; and
- .3 for all ships, operated by power where necessary to meet the requirements of regulation II-1/29.4.2 and in any ship having power of more than 2,500 kW propulsion power per thruster unit.

~~The definition of "declared steering angle limits", given under the interpretation of paragraph 3 above, applies.~~

Paragraph 6.1

In a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, an auxiliary steering gear need not be fitted, provided that:

- in a passenger ship, each of the steering systems is ~~fitted with two or more identical power units~~, capable of satisfying the requirements in regulation II-1/29.3.2 while any one of the power units is out of operation;
- in a cargo ship, each of the steering systems is ~~fitted with one or more identical power units~~, capable of satisfying the requirements in regulation II-1/29.3.2 while operating with all power units;
- each of the steering systems is arranged so that after a single failure in its piping or in one of the power units, ship steering capability (but not individual steering system operation) can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed).

~~The above capacity requirements apply regardless of whether the steering systems are arranged with common or dedicated power units.~~

Definition: *Steering gear power unit* – For the purposes of alternative steering arrangements, the steering gear power unit should be considered as defined in SOLAS regulation II-1/3. For electric steering gears, refer to SOLAS regulation II-1/3; electric steering motors should be considered as part of power unit and actuator.

...

REGULATION 30 – ADDITIONAL REQUIREMENTS FOR ELECTRIC AND ELECTROHYDRAULIC STEERING GEAR

Paragraph 2

For a ship fitted with multiple steering systems, the requirements in SOLAS regulation II-1/30.2 should be applied to each of the steering systems."
