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**DEVELOPMENT OF A GOAL-BASED INSTRUMENT FOR  
MARITIME AUTONOMOUS SURFACE SHIPS (MASS)**

**Trials under regulation I/13 of the STCW Convention in which the officer of the  
navigational watch acts as the sole lookout in periods of darkness  
in relation to MASS trials**

**Submitted by Germany, Kingdom of the Netherlands and ICS**

**SUMMARY**

*Executive summary:* This document proposes a clarification of MSC/Circ.566, MSC/Circ.733 and MSC/Circ.867 concerning trials under regulation I/13 of the 1978 STCW Convention in which the officer of the navigational watch acts as the sole lookout in periods of darkness, in relation to MSC.1/Circ.1604 concerning MASS trials.

*Strategic direction,  
if applicable:* 2

*Output:* 2.23

*Action to be taken:* Paragraph 18

*Related document:* MSC 69/22

**Introduction**

1 This document has been submitted in accordance with the provisions of paragraph 6.12 of the *Organization and method of work of the Marine Safety Committee and the Marine Environmental Protection Committee and their subsidiary bodies* (MSC-MEPC.1/Circ.5/Rev.4) and provides a proposal for a clarification of MSC/Circ.566, MSC/Circ.733 and MSC/Circ.867 concerning trials under regulation I/13 of the 1978 STCW Convention in which the officer of the navigational watch acts as the sole lookout in periods of darkness, in relation to MSC.1/Circ.1604 concerning MASS trials.

**Background**

2 Regulation I/13 of the 1978 STCW Convention allows an Administration to authorize ships entitled to fly its flag to participate in trials, i.e. experiments or series of experiments, conducted over a limited period, which may involve the use of automated or integrated systems

in order to evaluate alternative methods of performing specific duties or satisfying particular arrangements prescribed by the Convention, which would provide at least the same degree of safety, security and pollution prevention as provided by these regulations.

3 The Committee at its fifty-ninth session (13 to 24 May 1991) approved *Provisional guidelines for the conduct of trials in which the officer of the navigational watch acts as the sole look-out in periods of darkness* (MSC/Circ.566).

4 The purposes of the provisional Guidelines were to collect information which would facilitate deliberations by the Organization on the practice of allowing the officer of the navigational watch to act as sole lookout in periods of darkness, to determine whether and under what conditions the officer of the navigational watch can safely perform the duties of the lookout in periods of darkness, and to evaluate such matters as what constitutes an acceptable bridge layout, an appropriate level of control equipment and instrumentation and safe and healthy operational procedures.

5 As set forth in the provisional Guidelines, the role of an Administration is, among others, to authorize ships individually to participate in trials, to monitor trials, to inform the Organization when trials are to be carried out, and to report the results of such trials to the Organization.

6 As furthermore set forth in the provisional Guidelines, the authorization for conducting trials with the officer of the watch as sole lookout in periods of darkness is based on the condition that all the basic principles as specified in regulation II/1 (notwithstanding the words "in daylight" in paragraph 9(b)) and regulation III/1 of the 1978 STCW Convention will be observed and are being taken into account.

7 Based on the provisional Guidelines, several Administrations have conducted a number of trials with the officer of the navigational watch acting as the sole lookout during periods of darkness.

8 On the basis of the results of these trials and risk analyses carried out, these Administrations had concluded that this watchkeeping concept provided at least the same degree of safety and pollution prevention as traditional watchkeeping arrangements. Consequently, these Administrations, on an individual basis, had authorized ships which participated in the trials to continue to operate with the watchkeeping concept where the officer of the navigational watch acts as the sole lookout during periods of darkness.

9 The Committee, at its sixty-ninth session (11 to 20 May 1998), recalled that a decision had been taken by a majority at its sixty-fifth session that trials conducted in accordance with MSC/Circ.566 should be discontinued. The Committee further recalled that this decision was implemented by means of a circular adopted at its sixty-sixth session (MSC/Circ.733) which called on Administrations authorizing trials to discontinue trials not later than 31 December 1997, and to submit the results of the trials to MSC 69 for its determination. At its sixty-ninth session, the Committee considered the results of trials which were submitted by a number of Administrations. The Committee recognized that some Administrations were convinced by the trials that the solo watchkeeping arrangements provided at least the same degree of safety and pollution prevention as provided by traditional watchkeeping arrangements with a separate lookout forming part of the watch. Nevertheless, the majority of the Committee remained concerned that solo watchkeeping in periods of darkness would have a potentially adverse impact on safety of navigation and protection of the marine environment. In view of this concern, the Committee, at its sixty-ninth session (MSC 69/22, paragraph 21.32):

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- .1 determined, pursuant to paragraph 8.4 of regulation I/13 of the STCW Convention, that it was not necessary or appropriate to amend the watchkeeping provisions of the STCW Convention; and
  - .2 called upon Administrations which have authorized ships to participate in trials, or which have authorized ships to continue the practice of solo watchkeeping in periods of darkness indefinitely, to cancel or discontinue such authorizations.

This call upon Administrations to cancel or discontinue authorizations was circulated by the Organization on 27 May 1998 (MSC/Circ.867). Consequently, the Administrations concerned decided to terminate authorizations granted under regulation I/13 of the STWC Convention.

## Developments

10 Twenty-five years following the call upon Administrations to cancel or discontinue trials and authorizations regarding the practice of solo watchkeeping in periods of darkness, technology has advanced significantly. New means of detection technology have emerged which, in the context of rule 5 of the Convention of the International regulations for preventing collisions at sea may provide for a proper lookout on board of a ship, and which may possibly surpass the human detection capabilities.

11 Furthermore, technology has advanced as such that ships in the near future may undertake voyages autonomously, i.e. either unmanned (whether remotely operated or not) or with reduced crew on board. In light of autonomous shipping, the Organization, as stated on its website, "aims to integrate new and advancing technologies in its regulatory framework – balancing the benefits derived from new and advancing technologies against safety and security concerns, the impact on the environment and on international trade facilitation, the potential costs to the industry, and their impact on personnel, both on board and ashore. The Organization wants to ensure that the regulatory framework for Maritime Autonomous Surface Ships (MASS) keeps pace with technological developments that are rapidly evolving."

12 At its 101st session (5 to 14 June 2019), the Committee, with the aim of assisting relevant authorities and relevant stakeholders in ensuring that the trials of MASS-related systems and infrastructure are conducted safely, securely and with due regard for protection of the environment, approved the *Interim Guidelines for MASS trials* (MSC.1/Circ.1604).

## Discussion

13 It is the view of the co-sponsors that technological developments are indeed rapidly evolving. New technologies may well serve as 'alternative methods of performing specific duties or satisfying particular arrangements prescribed by the STCW Convention, which would provide at least the same degree of safety, security and pollution prevention as provided by these regulations' (STCW regulation I/13), e.g. as alternative method for the particular arrangement of a look-out in periods of darkness.

14 The co-sponsors are of the view that the call upon Administrations which in the past authorized ships to participate in trials, or which have authorized ships to continue the practice, of solo watchkeeping in periods of darkness indefinitely to cancel or discontinue such authorizations should in no way constitute any hindrance to conduct MASS trials.

- 15 It is the understanding of the co-sponsors that:
- .1 The call upon Administrations in circulars MSC/Circ.733 and MSC/Circ.867 solely address trials conducted not later than 31 December 1997 to be discontinued;
  - .2 MSC/Circ.733 and MSC/Circ.867 do not address new trials to be conducted in the future on the basis of evolved technology and insight; and
  - .3 New trials under regulation I/13 of the STCW Convention in which the officer of the navigational watch acts as the sole lookout in periods of darkness may be considered as part of MASS trials in accordance with MSC.1/Circ.1604, provided that these trials concern MASS-related systems affecting the lookout function, and taking into account the provisions for the conduct of trials, as set out in regulation I/13.4 to .7 of the STCW Convention, requiring that details and results of trials shall be reported to the Organization and any objection from any Party to any particular authorized trials shall be respected by the Administration which has authorized that particular trial.

### **Proposal**

16 The co-sponsors propose to establish confirmation that for trials under regulation I/13 of the STCW Convention in which the officer of the navigational watch acts as the sole lookout in periods of darkness, the following applies:

- .1 MSC/Circ.733 and MSC/Circ.867 are intended for trials which have been conducted prior to 1 January 1998; and
- .2 new trials under regulation I/13 of the STCW Convention in which the officer of the navigational watch acts as the sole look-out in periods of darkness, may be conducted in accordance with the *Interim Guidelines for MASS trials* (MSC.1/Circ.1604), taking into account the provisions for the conduct of trials, as set out in regulation I/13.4 to .7 of the STCW Convention, requiring that details and results of trials shall be reported to the Organization and any objection from any Party to any particular authorized trials shall be respected by the Administration which has authorized that particular trial.

17 If the Committee agrees with the understanding outlined in paragraph 15 and the proposal outlined in paragraph 16, the co-sponsors propose to develop a circular in which this understanding is outlined and in which circulars MSC/Circ.566, MSC/Circ.733 and MSC/Circ.867 are revoked, as prepared in the annex to this document for the consideration of the Committee.

### **Action requested of the Committee**

18 The Committee is invited to consider the above discussion and the proposal in paragraphs 16 and 17 and to take action, as appropriate.

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**ANNEX**

**DRAFT MSC CIRCULAR**

**TRIALS UNDER REGULATION I/13 OF THE STCW CONVENTION IN WHICH THE  
OFFICER OF THE NAVIGATIONAL WATCH ACTS AS THE SOLE LOOKOUT IN  
PERIODS OF DARKNESS**

1 The Marine Safety Committee, at its sixty-sixth session (...to ..November 1995) decided that trials conducted in accordance with MSC/Circ.566 (*Provisional guidelines for the conduct of trials in which the officer of the navigational watch acts as the sole look-out in periods of darkness*) should be discontinued, and implemented this decision by means of circular MSC/Circ.733 (Officer of the navigational watch acts as the sole look-out in periods of darkness).

2 The Committee, at its sixty-ninth session (11 to 20 May 1998), called upon Administrations which have authorized ships to participate in trials, or which have authorized ships to continue the practice of solo watchkeeping in periods of darkness indefinitely, to cancel or discontinue such authorizations. This call upon Administrations to cancel or discontinue authorizations was circulated by the Organization by means of circular MSC/Circ.867 (Officer of the navigational watch acting as the sole look-out during periods of darkness).

3 The Administrations concerned decided to terminate authorizations granted under regulation I/13 of the STCW Convention. The Secretary-General of the Organization transmitted statements from these Administrations concerning these decisions by means of circulars STCW.5/Circ.32, STCW.5/Circ.33 and STCW/Circ.34.

4 The Committee, at its 101st session (5 to 14 June 2019), with the aim of assisting relevant authorities and relevant stakeholders with ensuring that the trials of Maritime Autonomous Surface Ships (MASS) related systems and infrastructure are conducted safely, securely and with due regard for protection of the environment, approved the *Interim Guidelines for MASS trials* (MSC.1/Circ.1604).

5 The Committee, at its [107th session (... to ... June 2023)], approved clarifications regarding the conduct of trials under regulation I/13 of the STCW Convention in which the officer of the navigational watch acts as the sole lookout during periods of darkness, in relation to the *Interim Guidelines for MASS trials*, as set out in the annex.

6 This circular revokes circulars MSC/Circ.566, MSC/Circ.733 and MSC/Circ.867.

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ANNEX

**TRIALS UNDER REGULATION I/13 OF THE STCW CONVENTION IN WHICH THE  
OFFICER OF THE NAVIGATIONAL WATCH ACTS AS THE SOLE LOOKOUT IN  
PERIODS OF DARKNESS**

**Paragraph 3 of MSC/Circ.733 reads as follows:**

"In view of the decision at MSC 65, the Committee recommended by a majority at its sixty-sixth session (MSC 66/24, paragraph 7.38) that Administrations take measures to ensure that trials of the officer of the navigational watch acting as the sole look-out in periods of darkness are discontinued not later than 31 December 1997.

**Paragraph 3.2 of MSC/Circ.867 reads as follows:**

'The Committee, at its sixty-ninth session:

(..)

.2 called upon Administrations which have authorized ships to participate in trials, or which have authorized ships to continue the practice of solo watchkeeping in periods of darkness indefinitely, to cancel or discontinue such authorizations.'

**Paragraph 2.3 of MSC.1/Circ.1604 reads as follows:**

"2.3.1 Appropriate steps should be taken to ensure that the intent of minimum manning requirements is met.

2.3.2 Onboard or remote operators of MASS should be appropriately qualified for operating MASS subject to the trial.

2.3.3 Any personnel involved in MASS trials, whether remote or onboard, should be appropriately qualified and experienced to safely conduct MASS trials."

**Interpretation**

Circulars MSC/Circ.566, MSC/Circ.733 and MSC/Circ.867 were intended solely for trials under regulation I/13 of the STCW Convention in which the officer of the navigational watch acts as the sole lookout in periods of darkness, which have been conducted prior to 1 January 1998.

New trials under regulation I/13 of the STCW Convention in which the officer of the navigational watch acts as the sole lookout in periods of darkness may be considered as MASS trials in accordance with the *Interim Guidelines for MASS trials* (MSC.1/Circ.1604), provided that these trials concern MASS related systems affecting the lookout function, and taking into account the provisions for the conduct of trials, as set out in regulation I/13.4 to .7 of the STCW Convention, requiring that details and results of trials shall be reported to the Organization and any objection from any Party to any particular authorized trials shall be respected by the Administration which has authorized that particular trial.