
4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: +44 (0)20 7735 7611 Fax: +44 (0)20 7587 3210

MSC.1/Circ.1604
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INTERIM GUIDELINES FOR MASS TRIALS

- 1 The Maritime Safety 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 Interim Guidelines for MASS trials, as set out in the annex.
- 2 The Committee agreed to keep the Interim Guidelines under review and to amend them in view of the experience gained with their application and/or as and when the circumstances so warrant.
- 3 Member States and international organizations are invited to use the annexed Interim Guidelines and bring them to the attention of all parties concerned.

ANNEX

INTERIM GUIDELINES FOR MASS TRIALS

1 INTRODUCTION

1.1 Aim

These Guidelines have been developed to assist 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.

1.2 Scope and application

1.2.1 These Guidelines provide guidance to:

- .1 relevant authorities:
 - .1 coastal State;
 - .2 flag State; and
 - .3 port State; and
- .2 relevant stakeholders such as shipowners/authorized representatives, operators and other involved parties in the conduct of MASS trials.

1.2.2 These Guidelines should be used when conducting trials of MASS-related systems and infrastructure. The term "trial" means an experiment or series of experiments, conducted over a limited period, in order to evaluate alternative methods of performing specific functions or satisfying regulatory requirements prescribed by various IMO instruments, which would provide at least the same degree of safety, security and protection of the environment as provided by those instruments.

1.2.3 The obligations and responsibilities of the relevant authorities with respect to MASS trials are established by the individual instruments. It is the responsibility of the flag State Administration to authorize a ship to participate in a trial. Where necessary, authorization should also be obtained from the coastal State and/or port State Authority where the trial will be conducted.

2 PRINCIPLES AND MAIN OBJECTIVES

Trials should be conducted in a manner that provides at least the same degree of safety, security and protection of the environment as provided by the relevant instruments. The following objectives are provided to guide relevant authorities and stakeholders when planning, authorizing and conducting trials of MASS-related systems and infrastructure.

2.1 Risk management

2.1.1 Trials should address the risks to safety, security and protection of the environment. The risks associated with the trials should be appropriately identified and measures to reduce the risks to as low as reasonably practicable and acceptable should be put in place.

2.1.2 Appropriate and effective emergency plans and measures should be established based on the results of the risk assessment to reduce the impact of any foreseeable incidents or failure.

2.1.3 Trials safety should be continuously evaluated, and trials should be suspended or stopped where safety parameters are exceeded.

2.2 Compliance with mandatory instruments

2.2.1 Compliance with the intent of mandatory instruments should be ensured.

2.2.2 The scope of application of mandatory instruments, including provisions for exemptions and equivalencies, to a ship involved in a MASS trial should be determined by the flag State Administration in accordance with those instruments. Such determination should take into account the objectives of the trial, the anticipated capabilities and limitations of the ship and related systems and infrastructure during the trial, and the risk control measures adopted for the trial.

2.3 Manning and qualifications of personnel involved in MASS trials

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.

2.4 Human element (including monitoring infrastructure and human-system interface)

For the safe, secure and environmentally sound conduct of MASS trials, the human element should be appropriately addressed.^{*} The trial should consider the human-system interface as harmonization between human centred design and automation is a key component of MASS.

2.5 Infrastructure for safe conduct of trials

2.5.1 Proper infrastructure should be established to provide for the safe, secure and environmentally sound conduct of MASS trials. In this regard, appropriate strategies should be implemented to mitigate the effects of incident and/or failure of systems, technology and testing. These strategies should include the ability to respond to emergencies.

2.5.2 Information related to the ship's performance and the basis of judgement by automated systems should be available to any personnel involved in MASS trials, whether remote or onboard.

* Refer to the *Human element vision, principles and goals for the Organization* (resolution A.947(23)).

2.6 Trial awareness

Reasonable steps should be taken to ensure that potentially impacted third parties are informed of the trial of MASS systems and infrastructure.

2.7 Communications and data exchange

An appropriate means for communications and data exchange, including redundancy, should be provided for the safe conduct of the trial.

2.8 Reporting requirements and information sharing

2.8.1 Details of trials should be reported to the relevant authorities, as appropriate, as early as practicable, so as to enable the dissemination of information on the trials to all impacted third parties in the specified area.

2.8.2 Reporting requirements as included in IMO instruments should be complied with.

2.8.3 Relevant authorities are encouraged to report the results and lessons learned from trials to the Organization through appropriate means.

2.8.4 All stakeholders involved in trials are encouraged to share relevant information, as appropriate.

2.9 Scope and objective for each individual trial

Each individual MASS trial should have its scope and objective specified.

2.10 Cyber risk management

Appropriate steps should be taken to ensure sufficient cyber risk management of the systems and infrastructure used when conducting MASS trials.
