

**MARINE SAFETY AND SECURITY MANAGEMENT SYSTEM**

**TIER I – POLICY**

**OVERSIGHT OF SMALL MARITIME AUTONOMOUS SURFACE SHIPS (MASS)**

Effective Date	Date of Revision
2022-02-01	

# MARINE SAFETY AND SECURITY MANAGEMENT SYSTEM

## TIER I – POLICY

### OVERSIGHT OF SMALL MARITIME AUTONOMOUS SURFACE SHIPS (MASS)

#### 1 Policy Objective

- 1.1 This policy aims to set the requirements for the operation of small Canadian Maritime Autonomous Surface Ships (MASS) when operated within Canadian waters. MASS do not have a crew or passengers on board and therefore will require alternative arrangements to comply with the existing regulatory requirements applicable under the [Canada Shipping Act, 2001](#) for manning, the prevention of collision at sea, and navigation safety.

#### 2 Policy Statement

- 2.1 The Authorized Representative (AR) of a small MASS must prepare a risk assessment before operating.
- 2.2 The risk assessment shall include proposed mitigating measures, to ensure the safety of navigation during the MASS operation provides a level of safety at least equivalent to a regularly crewed vessel.
- 2.3 The risk assessment must be made in accordance with an appropriate standard such as the *MASS UK Industry Conduct Principles and Code of Practice 2021 (V5)*<sup>1</sup> published by UK Maritime and as updated from time to time and take into account the elements and conditions stated in Annex 1 of this policy.
- 2.4 The AR must apply to the Marine Technical Review Board (MTRB) for approval before operation. Elements to be considered and provided when applying to the MTRB are listed in Annex 1.
- 2.5 Small MASS, including pleasure craft, of not more than 2 metres in length and gross weight not more than 100 kg are not required to perform a risk analysis nor submit an MTRB application, provided they operate within the conditions stated in Annex 2 of this policy.

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<sup>1</sup> To download for free the latest version, visit:

<https://www.maritimeuk.org/priorities/innovation/maritime-uk-autonomous-systems-regulatory-working-group/mass-uk-industry-conduct-principles-and-code-practice-2021-v5/>

### 3 Scope

- 3.1 This policy applies to small MASS of degree of autonomy three or four that are not more than 12 m in length as defined by the [Small Vessel Regulations](#), or not more than 15 Gross Tonnage.
- 3.2 The policy does not apply to MASS that has a crew or passenger on board.
- 3.3 This policy does not apply to small MASS that are physically tethered to a mother vessel, or a shore installation and that cannot interfere with other vessels' navigation during their operation.

### 4 Authority

- 4.1 This policy falls under the authority of the Director General, Marine Safety and Security. Acceptance of vessels complying with this policy comes under the overall authority of the Marine Technical Review Board under Sections 26 to 28 of the *Canada Shipping Act, 2001* (CSA, 2001) and has been approved by the Marine Safety & Security Executive (MSSE) committee.

### 5 Responsibility/ further information

- 5.1 The Executive Director, Domestic Vessel Regulatory Oversight, is responsible for the development, approval, and maintenance of this policy.
- 5.2 The Manager, Flag State Inspection & Compliance (AMSDF) is the Office of Primary Interest (OPI) for this policy and will develop and manage the program framework needed to support this policy.
- 5.3 The Regional Directors, Marine Safety and Security, are responsible for the implementation of this policy and will assign an employee to act as the regional OPI for MASS.
- 5.4 Please address your questions or comments to:  
Director, Domestic Vessel Regulatory Oversight (AMSD)  
Transport Canada, Marine Safety and Security  
330 Sparks Street  
Ottawa, ON K1A 0N8  
1-855-859-3123 (Toll Free)  
[insp.stand-norm.insp@tc.gc.ca](mailto:insp.stand-norm.insp@tc.gc.ca)

### 6 Related Documents

- 6.1 [Canada Shipping Act, 2001](#)
- 6.2 [Collision Regulations](#)
- 6.3 [Small Vessel Regulations](#)
- 6.4 [Radio Aids to Marine Navigation \(RAMN\)](#)

6.5 [Marine Personnel Regulations](#)

6.6 [MASS UK Industry Conduct Principles and Code of Practice 2021 \(V5\)](#)

## 7 Background

- 7.1 Transport Canada Marine Safety and Security (TCMSS) has the regulatory oversight responsibility for all small vessels in Canada.
- 7.2 TCMSS recognizes that MASS are an emerging technological system and is actively engaging in the development of this new field, considering their safe navigation, their interaction with other vessels, the safety and security of all waterway users, and the protection of the environment.
- 7.3 MASS are subject to the same regulations under the *Canada Shipping Act, 2001* as any other vessels of similar size. Due to their highly automated operation of MASS of degree three and four, and in certain cases the absence of onboard qualified crew, MASS may not always comply with existing regulatory requirements such as mandatory look-out, ship to ship communications, operation of machinery or equipment, etc.
- 7.4 There is an ongoing effort at the International Maritime Organization (IMO), the International Standardization Organization (ISO) and various other interested forums to develop new requirements for the operation of MASS.
- 7.5 In the absence of dedicated regulations or standards for MASS, TCMSS aims to provide, through this policy, an interim framework regarding the required minimum standards in respect to design, construction, and operation of small MASS in Canadian waters to provide a level of safety at least equivalent to the regulations made under the *Canada Shipping Act, 2001*.

## 8 Definitions

- 8.1 Maritime Autonomous Surface Ship (MASS) is defined, by the IMO, as a “ship which, to a varying degree, can operate independently of human interaction”. The IMO currently defines the following degrees of automation:
- **Degree one:** Ship with automated processes and decision support: Seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised but with seafarers on board ready to take control.
  - **Degree two:** Remotely controlled ship with seafarers on board: The ship is controlled and operated from another location. Seafarers are available on board to take control and to operate the shipboard systems and functions.

- *Degree three*: Remotely controlled ship without seafarers on board: The ship is controlled and operated from another location. There are no seafarers on board.
- *Degree four*: Fully autonomous ship: The operating system of the ship can make decisions and determine actions by itself.

## **9 Date of Application**

9.1 This policy comes into effect on February 1, 2022.

## **10 RDIMS Reference**

10.1 The English version of this document is saved in RDIMS under reference number 18354586. The applied naming convention is PUBLICATION - TP 13585 - POLICY - OVERSIGHT OF SMALL MARITIME AUTONOMOUS SURFACE SHIPS (MASS).

10.2 La version française du présent document est dans le SGDDI et porte le numéro de référence 18354621. La règle d'affectation des noms est PUBLICATION - TP 13585 - POLITIQUE - SURVEILLANCE DES PETITS BÂTIMENTS DE SURFACE AUTONOMES (PBSA).

10.3 This is the first approved and finalized revision of the English version of this document.

## **11 Keywords**

- Maritime Autonomous Surface Ship (MASS).
- Small vessels
- Oversight
- Marine Technical Review Board (MTRB)

# ANNEX 1 - APPLICATION TO THE MARINE TECHNICAL REVIEW BOARD FOR A MASS LESS THAN 12M IN LENGTH OR NOT MORE THAN 15 GROSS TONNAGE

## 1 Elements to be considered and provided when applying for the acceptance of alternative safety requirements:

- 1.1 The small MASS design and construction must comply with the requirements of the [Small Vessel Regulations](#), Section 709 “Particular Design – Vessel” using appropriate recommended practices and standards such as the latest version of the *MASS UK Industry Conduct Principles and Code of Practice*<sup>2</sup>, published by UK Maritime, updated from time to time.
- 1.2 The risk assessment must be made in accordance with an appropriate standard, equivalent to the requirement found within the *MASS UK Industry Conduct Principles and Code of Practice*.
- 1.3 The small MASS must be fitted with a Class A or B Automatic Identification System (AIS) system that can broadcast a distinct signal that can be recognized by other vessels and vessel traffic and communication services to identify the MASS.
- 1.4 The small MASS operation requires a safety management system (SMS), for the vessel remote control centre. The SMS shall comply with the industry standard such as described within the latest version of the *MASS UK Industry Conduct Principles and Code of Practice*.
- 1.5 Details of the proposed small MASS operation must be submitted with the application, including elements such as:
  - a. Purpose of the operation
  - b. Schedule of operation
  - c. Areas of operation
  - d. Maximum allowable sea state and environmental conditions during the operation
  - e. Emergency plan in case of malfunction or another incident
  - f. Competency requirements for personnel in control station ashore
- 1.6 Details of the small MASS, including a general arrangement plan and the principal particulars, must be provided.

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<sup>2</sup> To download the latest version for free of the code, visit:

<https://www.maritimeuk.org/priorities/innovation/maritime-uk-autonomous-systems-regulatory-working-group/mass-uk-industry-conduct-principles-and-code-practice-2021-v5/>

- 1.7 Details of all collision avoidance, surveillance, communications and operating systems, intended to replace prescribed equipment, on board crew, or safety operation requirements, must be provided.
- 1.8 Details of prescribed pollutants or noxious substance carried on board must be provided, together with an emergency pollution response plan.
- 1.9 A small MASS does not need to comply with the Safety Equipment requirements of the [Small Vessel Regulations](#) (Section 505 to 508).
- 1.10 The small MASS must be registered and marked in accordance with the regulations.

## **2 Operating conditions to be considered with the application**

- 2.1 The Authorized Representative (AR) must prepare a passage or voyage plan prior to each operation.
- 2.2 The small MASS AR must have sufficient liability insurance coverage.
- 2.3 There must be a plan for shore-side support, such as rapid tow in place in case of incident or malfunction with the small MASS.
- 2.4 The AR must communicate the small MASS operations to the local Canadian Coast Guard (CCG) Marine Communications and Traffic Services (MCTS) (See Section 1.8 of the [Radio Aids to Marine Navigation \(RAMN\)](#)) 48 hours prior to operation in a form and manner specified by the Regional CCG MCTS so that a [NAVWARN](#) can be issued defining the operating period and areas, and the distinctive AIS signal. In addition, the Regional CCG MCTS will require the AR to provide information including but not limited to:
  - a. Vessel description (Type, Length, Height, Colour, etc.)
  - b. Type of AIS equipment on board
  - c. MMSI No of the Vessel
  - d. Operation area (Geographical description, Coordinates of area borders)
  - e. Operation timeline (Start date, Cessation date, Hours of operation)
  - f. Course and speed (If known)
  - g. 24 hours contact information
- 2.5 When operating within a harbour limit, pilotage area or within any Canadian Vessel Traffic Services Zone, the AR must communicate with the appropriate authority before operation and comply with the communication protocol until the operation is ceased.
- 2.6 A small MASS with a degree of autonomy three or four, will require a qualified person at the control centre of the MASS at all times during operation either to operate remotely or at stand by to take charge in case of any emergency.

- 2.7 The person in control must have the required training for the use of the small MASS specifically and have adequate training (including drills) in emergency procedures. The person in control must hold a Certificate of Competency issued by Transport Canada for a vessel of similar size and its area of operation as specified in the [Marine Personnel Regulations](#), Section 212, Table 1. The hours of rest prescribed by the *Marine Personnel Regulations* (sections 320, 322 and 323) must be respected by the operators.
- 2.8 If the AR intends to operate multiple small MASS from one control Station simultaneously, such operation should be included in the risk assessment, and the mitigating measures should be clearly indicated ensuring adequate qualified person is always available at the control station during MASS in operation.
- 2.9 The small MASS AR must maintain records of operation, including all system health and navigation events. The AR must make records available to the Minister, on the Minister's request.
- 2.10 Any incident encountered with the small MASS must be immediately reported to the local [Transport Canada Centre](#) (TCC) nearest to its place of operation, or through the Canadian Coast Guard (CCG) [Marine Communications and Traffic Services](#) (MCTS) if vessel is within one of the vessel traffic services zones.



## **ANNEX 2 - OPERATION OF MASS OF NOT MORE THAN 2 METRES IN LENGTH AND NOT MORE THAN 100 KG IN GROSS WEIGHT.**

### **1 Operating conditions**

- 1.1 The very small MASS must always operate within sight of the qualified operator.
- 1.2 The very small MASS is not operated after sunset and before sunrise, or in periods of low visibility, or in weather /sea conditions which can compromise its navigation or its recovery.
- 1.3 Measures are in place for the very small MASS to be supported by shore-side operations, including the ability to tow or recover promptly in case of incident or malfunction.
- 1.4 The operator of the very small MASS must hold a Pleasure Craft Operator Competency card or a certificate of competency, training certificate, endorsement or other equivalency listed in the schedule of the [Competency of Operators of Pleasure Craft Regulations](#).
- 1.5 Without regards to the installed power, the very small MASS must be either registered (or licensed in case of a pleasure craft) and marked in accordance with the regulations.
- 1.6 The very small MASS must not operate in any area that may expose other vessels or persons to a safety, security or environmental risk, including but not limited to:
  - Commercial ship traffic lanes
  - Harbours, marinas, anchorages, locks
  - Beaches and other areas where swimmers may be present
- 1.7 The very small MASS does not operate in areas where the operation of vessels is prohibited.
- 1.8 The very small MASS does not carry any pollutant or noxious substance as cargo.