

# Regulatory Scoping Exercise of IMO instruments

Amsterdam Ship Tech Symposium  
25-27 June, 2019

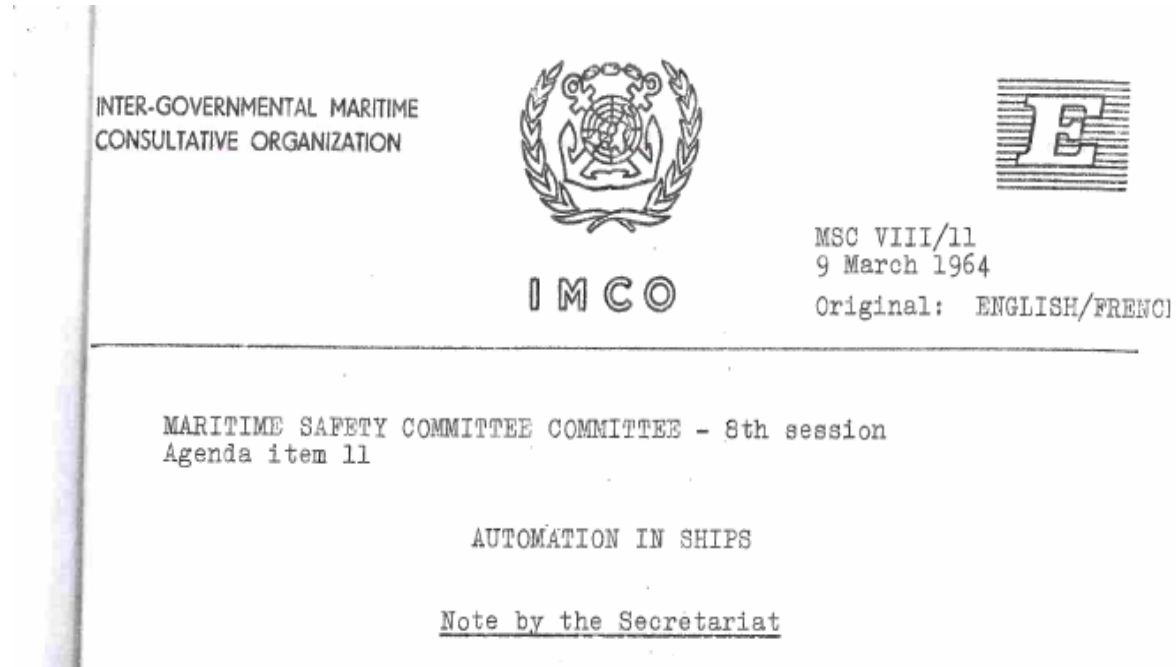
**Henrik Tunfors**  
Senior advisor

# International Maritime Organization

- 1948 Inter-Governmental Maritime Consultative Organization (IMCO), changed to IMO in 1982
- Governance and organization structure:
  - Assembly
  - Council
  - Main Committees (**MSC**, MEPC, LEG, FAL)
  - Sub-Committees
- Member States and International Organizations (IGOs, NGOs etc.)

# Looking back...

## MSC VIII (March 1964)...



# Autonomous ships

## IMO's regulatory scoping exercise on MASS

The ninety-eighth session of the Maritime Safety Committee (MSC 98), agreed to work on a "**Regulatory scoping exercise for the use of Maritime Autonomous Surface Ships (MASS)**", with a target completion year of 2020.



# Autonomous ships

## IMO's regulatory scoping exercise on MASS

### MSC 98–101 (June 2017–June 2019)

- The need to take into consideration the human element and legal aspects
- Not a “drafting exercise”
- The work on MASS should be user-driven and not technology driven
- LEG 105 (April 2018) RSE with a target completion year of 2020 for LEG instruments same for FAL.
- MSC to take a coordinating role, incl. framework.
- Harmonized reporting formate.

# Autonomous ships

## IMO's regulatory scoping exercise on MASS

### Framework – definition

For the purpose of the regulatory scoping exercise, MASS is defined as:

**“a ship which, to a varying degree, can operate independent of  
human interaction”**

# Autonomous ships

## IMO's regulatory scoping exercise on MASS

### Framework – degrees of autonomy

1. Ship with automated processes and decision support: Seafarers on board but some operations may be automated and at times be unsupervised.
2. Remotely controlled ship with seafarers on board: The ship is controlled and operated from another location. Seafarers are available on board to take control.
3. Remotely controlled ship without seafarers on board: The ship is controlled and operated from another location. There are no seafarers on board.
4. Fully autonomous ship: The operating system of the ship is able to make decisions and determine actions by itself.

# Autonomous ships

## IMO's regulatory scoping exercise on MASS

### Framework – methodology – the 2 steps

- **First step:** to identify provisions in IMO instruments which, as currently drafted preclude MASS...
  - First step “regulation by regulation”
  - Identify gaps and themes (common issues throughout)
- **Second step:** to analyse and determine the most appropriate way of addressing MASS operations, taking into account, inter alia, human element, technology and operational factors...
  - Second step “high level”.



# Instruments to be considered

COLREGs 1972

CSC 1972

LL 1966

LL PROT 1988

SAR 1979

SOLAS 1974

SOLAS AGR 1996

SOLAS PROT 1978

STCW 1978

STCW-F 1995

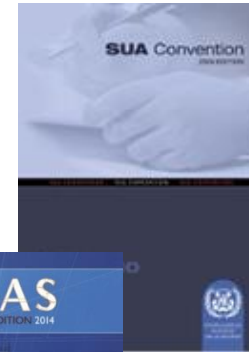
STP 1971

SPACE STP 1973

TONNAGE 1969

...and 13 Codes.

MARPOL 73/78  
FAL 1972  
SUA 2005  
SALVAGE 1989  
OPRC 1990  
CLC 1969  
NUCLEAR 1971  
HNS 1996  
...



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# Autonomous/Smart ships

## IMO's regulatory scoping exercise on MASS

### Timeline for the regulatory scoping exercise (MSC)

- **First step:** January-April-September 2019
- Inter-Sessional Working Group September 2019
- **Second step:** October-December 2019
- MSC 102 Final consideration: May 2020

# Autonomous ships

## IMO's regulatory scoping exercise on MASS

### First step

- Web platform (GISIS)
- 27 instruments: status



Maritime Autonomous Surface Ships (MASS)  
Regulatory scoping exercise on Maritime Autonomous Surface Ships (MASS).

Instruments
Code for Recognized Organizations (RO Code)
Code of Safe Practice for Cargo Stowage and Securing (CSS Code)
Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code)
Convention on the International Regulations for Preventing Collisions at Sea, 1972, as amended (COLREG 1972)
IMO Instruments Implementation Code (IIC Code)
International Code for Application of Fire Test Procedures, 2010 (2010 FTP Code)
International Code for Fire Safety Systems (FSS Code)
International Code for Ships Operating in Polar Waters (Polar Code)
International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code)
International Code for the Safe Carriage of Grain in Bulk (ISG Code)
International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships (INF Code)
International Code on Intact Stability, 2008 (2008 IS Code) - Part A
International Code on the Enhanced Programme of Inspections during Surveys of Bulk and Oil Tankers, 2001 (2011 ESP Code)
International Convention for Safe Containers (CSC), 1972
International Convention on Load Lines, 1966 (LL 1966)
International Convention on Maritime Search and Rescue, 1979 (SAR 1979)
International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995 (STCW-F 1995)
International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended (STCW 1978) and Seafarers' Training, Certification and Watchkeeping Code (STCW Code)
International Convention on Tonnage Measurement of Ships, 1969 (TONNAGE 1969)
International Life-Saving Appliance Code (LSA Code)
International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISMP Code)
International Maritime Dangerous Goods Code (IMDG Code)
International Maritime Solid Bulk Cargoes Code (IMSBC Code)
International Ship and Port Facility Security Code (ISPS Code)
Protocol of 1988 relating to LI, 1966 (LI PROT 1988)
SOLAS chapter II-1 (Construction - structure, subdivision and stability, machinery and electrical installations)
SOLAS chapter II-2 (Construction - fire protection, fire detection and fire extinction)
SOLAS chapter III (Life-saving appliances and arrangements)
SOLAS chapter IV (Radiocommunications)
SOLAS chapter IX (Management for the safe operation of ships)
SOLAS chapter V (Safety of navigation)
SOLAS chapter VI (Carriage of cargoes and oil fuels)
SOLAS chapter VII (Carriage of dangerous goods)
SOLAS chapter XI-1 (Special measures to enhance maritime safety)
SOLAS chapter XI-2 (Special measures to enhance maritime security)
SOLAS chapter XIV (Safety measures for ships operating in polar waters)

# Autonomous ships

## IMO's Interim Guidelines for MASS trials

### In general...

- High-level, generic: scope/application, principles and main objectives
- Applicability determined by respective mandatory instrument
- Roles and responsibilities: relevant authorities and stakeholders
- Compliance with mandatory instruments should be ensured
- Case-by-case: every trial is unique
- Keep it under review

# Autonomous ships

## IMO's Interim Guidelines for MASS trials

### Principles and main objectives...

- Risk management
- Compliance with mandatory instruments
- Manning and qualifications of personnel involved in MASS trials
- Human element (including monitoring infrastructure and system-human interface)
- Infrastructure for safe conduct of trials
- Communications and data exchange
- Reporting requirements and information sharing
- Trial awareness
- Cyber risk management
- Scopes and objectives for each individual trial.

# Summing up and final remarks

- Regulatory scoping exercise on Maritime Autonomous Surface Ships (MASS) is **ongoing**
- High level exercise
- Deadlines 2020 - so far
- MSC, LEG, FAL --- MEPC?
- Participation of **all stakeholders** is required: IMO, ship owners, industry, Administrations, shore services, other international organizations, amongst others
- Interim guidelines for MASS trials in effect.

**Thank you** for your attention!

Questions?

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