Digitalization and Maritime Autonomous Surface Ships (MASS)

REGULATORY SCOPING EXERCISE

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MSC 98 included in its agenda a new output on “Regulatory scoping exercise for the use of Maritime Autonomous Surface Ships (MASS)”

This scoping exercise intends to determine how the safe, secure and environmentally sound operation of these ships might be introduced in IMO instruments.
CONSIDERATION BY IMO

During its consideration of the matter, the Committee highlighted:

• The leading and proactive roles that IMO should play
• The complexity of the regulatory scoping exercise
• The need:
  • to consider the human element
  • to consider legal aspects, such as responsibility in case of an accident involving a MASS and its consequences
  • for a MASS definition
  • to address different levels of automation
THIS WORK REFLECTS THE EVER INCREASING DEMANDS IN THE SHIPPING INDUSTRY COMBINED WITH THE FAST TECHNOLOGY DEVELOPMENT AND THE COMMITMENT TO MEET STRINGENT REGULATORY REQUIREMENTS
DEFINITION

In general, when a new concept is introduced within an existing framework, it is fundamental to first decide on the definition of such a new concept in order to set a common understanding.

Only then can a proper substantive debate on the associated regulations take place, whilst still taking into account the vessels’ exposition to the various elements of nature.
CONSTRUCTION

The lack of man-machine physical interface on these vessels entails a careful consideration at the construction stage as to how to deal not only with possible breakdowns and accidents, but also with routine maintenance operations.
The introduction of MASS in the maritime transport sector will present challenges to the regulations relating to preventing collision at sea. While COLREG 72 regulations have not been subject to really major or comprehensive review, the vast technological development in recent years and the prospects of MASS becoming a reality will require a COLREG’s review to ensure that it is fit for purpose.
The skills and competence of seafarers are ensured through the provisions of the 1978 STCW Convention and Code, as amended, which concentrate on the following functions:

• Navigation;
• Controlling the operation of the ship and care for persons on board;
• Cargo handling and stowage;
• Marine engineering;
• Electrical, electronic and control engineering;
• Maintenance and repair; and
• Radiocommunications
If a vessel is going to be unmanned and operated remotely, the current standard of competence would still be required and, additionally, the necessary competence for remote operations in order to ensure:

- Operation of vessels to the present levels of safety and security; and
- Provide protection to the environment,

taking into account:

- The need for a radio spectrum for vessel’s command and control and the consequential involvement of ITU; and
- The subsequent regulatory framework for the use of the spectrum
DEALING WITH EMERGENCIES

Accidents/emergencies will still happen. Whilst failure of machinery may generally be dealt with by means of duplication; incidents such as groundings, collisions, fire, flooding of holds and problems relating to cargoes will need careful consideration in the context of unmanned or remotely operated vessels
CONDUCT OF TRIALS

When new technology is introduced, it is required to be fit for purpose and to meet the industry needs.

With this in mind, STCW regulation I/13 was introduced, when the Convention was reviewed and updated in 1995, in order to:

- Lay down the criteria for Administrations to authorize ships flying their flags to participate in trials; and
- Ensure during such trials at least the same level of safety, security and pollution prevention as provided in IMO regulations.
RESPONSIBILITY, LIABILITY AND INSURANCE

In the context of MASS, responsibility, liability and insurance are somehow unknown territories.

There is then a need for a detailed consideration by the Legal Committee so as to ensure that the responsibility and liability regimes duly cover the operation of MASS as and when the technical IMO’s regulatory regime for the same comes into force.

Dialogue with the insurance industry is also needed to ensure the coverage of risks emanating from the MASS’ operations.
DEVELOPMENT AND EVOLUTION OF DIGITAL TECHNOLOGY

The regulatory regime to be developed after the finalization of the scoping exercise should cater for the astonishing pace the digital technology is evolving
MARITIME AUTONOMOUS SURFACE SHIPS (MASS)

CONCLUSIONS

1. The technology is available
2. There are significant challenges to be addressed
3. Shipping needs common regulations to be uniformly applied worldwide
4. IMO is the only international shipping regulator
5. A prescriptive regulatory regime may not be suitable for unmanned surface vessels due to the pace of development of digital technology

PROPOSAL

1. Review and amend the IMO instruments to put in place an appropriate international regulatory regime to allow for the operation of MASS; and
2. Develop a new bespoke new instrument based on goals and functional requirements for the construction and operation of MASS