



COMITÉ MARITIME INTERNATIONAL

PRESIDENT

29 March 2017

Presidents of NMLAs

Copy to: Executive Councillors and Consultative Members

Dear President

Unmanned Ships - Questionnaire

I am pleased to **attach** a memorandum which has been prepared by Tom Birch-Reynardson, the Chair of the IWG on Unmanned Ships together with the Questionnaire and Position Paper which the IWG has prepared.

You will see from Tom's note that he would like to receive your responses within the next two months, that is by the end of May. It is appreciated that this may be difficult for many MLAs. The significance of that date is that the IMO's Maritime Safety Committee on Autonomous Vessels is likely to be discussing this topic on 8 or 9 June.

For your information I am also **attaching** the Maritime Safety Committee document MSC98/20/2 dated 27 February 2017.

If you are unable to complete the Questionnaire in time for that meeting this topic will also be the subject of a report to the Assembly meeting in Genoa and the more responses that have been received by then the better able the IWG will be able to proceed with its work.

With kind regards



Stuart Hetherington

STUART HETHERINGTON C/O COLIN BIGGERS & PAISLEY,
TEL: +61 2 8281 4477 E-MAIL: stuart.hetherington@cbp.com.au FAX: +61 2 8281 4567
REGISTERED OFFICE CMI, AISBL: Ernest Van Dijckkaai 8, B-2000 Antwerp, Belgium
Enterprise n° 0867 385 381
www.comitemaritime.org

JUZ84GTEC9

CMI INTERNATIONAL WORKING GROUP ON UNMANNED SHIPS – POSITION PAPER AND QUESTIONNAIRE

REQUEST TO RESPOND TO QUESTIONNAIRE BY 31 MAY 2017

We are enclosing the Position Paper and Questionnaire prepared by the CMI International Working Group on Unmanned Ships.

“Unmanned Ships” are becoming a reality, and it is anticipated that the first unmanned cargo ship may be launched as soon as 2018.

As is clear from the Position Paper, there is much to be done to prepare the legal framework for the safe operation of such ships (if ships they are), and this has now been recognised by the IMO Maritime Safety Committee which has included on the agenda for its June meeting a proposal by a number of countries that IMO should commence a scoping exercise to establish the extent of the need to amend the regulatory framework to enable a safe, secure and environmental operation of “unmanned ships” within the existing IMO instruments.

The IWG has been invited to attend this meeting and we anticipate participating in the exercise. It will be of considerable benefit if National Associations are able to respond to the questionnaire attached as soon as possible – preferably before the end of May – so that responses can be used to outline for the MSC some of the issues arising.

We very much hope that you will be able to respond to the Questionnaire by the deadline of 31 May 2017.

With many thanks,

Tom Birch Reynardson
Chair of CMI International Working Group on Unmanned Ships

CMI QUESTIONNAIRE ON UNMANNED SHIPS

INTRODUCTION

Unmanned ships are those which are capable of controlled movement on the water in the absence of any onboard crew. Control is performed in essentially two ways. It can be performed by remote-control, whereby a shore-based remote controller uses a computer and joystick to control the unmanned ship's movement and signalling using radio and satellite communications. In doing so the controller is aided by the streaming of the ship's vicinity effected by cameras and aural sensors affixed to the ship's hull / chassis. There is a small delay in the transmission of information to and from the ship, like with all forms of satellite communication. On the other hand, the ship may be "controlled" autonomously. This involves the ship being pre-programmed before deployment, and, thereafter, performs a predetermined nautical course without any human interaction. This control, as well as a degree of collision avoidance capability, is affected with the use of highly sophisticated software technology, control algorithms and sonar radar.

Whereas unmanned ships in operation today are small in size (<20m in length) and essentially used for marine scientific research and military purposes their number has risen exponentially in recent years and so has the number of research projects aimed at developing the first unmanned merchant ships of 500 grt or more.

In order to ensure that the required regulations are in place once these ships become a technical reality, CMI Executive Council has set up an International Working Group (IWG) to study the current international legal framework and consider what amendments and/or adaptations and/or clarifications may be required in relation to unmanned ships.

In answering the questions below please assume that they are made in relation to an unmanned ship of 500 grt or more.

1. National law

- 1.1. Would a "cargo ship" in excess of 500 grt, without a master or crew onboard , which is either
 - 1.1.1. controlled remotely by radio communication?
 - 1.1.2. controlled autonomously by, inter alia, a computerised collision avoidance system, without any human supervisionconstitute a "ship" under your national merchant shipping law?
- 1.2. Would an unmanned "ship" face difficulty under your national law in registering as such on account of its unmanned orientation?
- 1.3. Under your national law, is there a mechanism through which, e.g. a Government Secretary may declare a "structure" to be a "ship" when otherwise it would not constitute such under the ordinary rules?
- 1.4. Under your national merchant shipping law, could either of the following constitute the unmanned ship's "master"
 - 1.4.1. The chief on-shore remote-controller

CMI QUESTIONNAIRE ON UNMANNED SHIPS

1.4.2. The chief pre-programmer of an autonomous ship

1.4.3. Another 'designated' person who is responsible on paper, but is not immediately involved with the operation of the ship

1.5. Could other remote-controllers constitute the "crew" for the purposes of your national merchant shipping laws?

2. United Nations Convention on the Law of the Sea, 1982 (UNCLOS)

2.1. Do you foresee any problems in treating unmanned ships as "vessels" or "ships" under the Law of the Sea in your jurisdiction (i.e. that such ships would be subject to the same rights and duties such as freedom of navigation, rights of passage, rights of coastal and port states to intervene and duties of flag states) in the same way as corresponding manned ships are treated?

2.2. Paragraphs (3) and (4) of UNCLOS Article 94 include a number of obligations on flag states with respect to the manning of such ships. Do you think that it is possible to resolve potential inconsistencies between these provisions and the operation of unmanned ships without a crew on board through measures at IMO (under paragraph (5) of the same Article) or do you think other measures are necessary to ensure consistency with UNCLOS. If so, what measures?

3. IMO Conventions – The International Convention for the Safety of Life at Sea (SOLAS) 1974 (as amended)

3.1. Does your national law implementing the safe manning requirement in Regulation 14 of Chapter V of SOLAS require at least a small number of on board personnel or does the relevant authority have the discretion to allow unmanned operation if satisfied as to its safety?

3.2. Regulation 15 of SOLAS Chapter V concerns principles relating to bridge design. It requires decisions on bridge design to be taken with the aim of, inter alia, "facilitating the tasks to be performed by the bridge team and the pilot in making full appraisal of the situation...". In the context of a remote controlled unmanned ship, could this requirement be satisfied by an equivalent shore-based facility with a visual and aural stream of the ship's vicinity?

3.3. As interpreted under national law, could an unmanned ship, failing to proceed with all speed to the assistance of persons in distress at sea as required by Regulation 33 of SOLAS Chapter V, successfully invoke the lack of an on-board crew as the reason for omitting to do so (provided that the ship undertook other measures such as relaying distress signals etc.)?

4. The International Regulations for Preventing of Collisions at Sea, 1972 (COLREGS)

4.1. Would the operation of an unmanned "ship" without any on board personnel, per se, be contrary to the duty / principle of "good seamanship" under the COLREGS, as interpreted nationally, regardless of the safety credentials of the remote control system?

CMI QUESTIONNAIRE ON UNMANNED SHIPS

- 4.2. Would the *autonomous* operation of a “ship”, without any on-board personnel or *any human supervision*, be contrary to the duty / principle of “good seamanship”, under the COLREGS, as interpreted nationally, regardless of the safety credentials of the autonomous control system?
- 4.3. As interpreted under national law, could the COLREG Rule 5 requirement to maintain a “proper lookout” be satisfied by camera and aural censoring equipment fixed to the ship transmitting the ship’s vicinity to those “navigating” the ship from the shore?
- 4.4. Would a ship navigating without an on-board crew constitute a “vessel not under command” for the purposes of COLREG Rule 3(f), read together with COLREG Rule 18, as interpreted under your national law?
5. The International Convention on Standards of Training Certification and Watchkeeping, 1978 (STCW Convention)
- 5.1. The STCW Convention purports to apply to “seafarers serving on board seagoing ships”. Would it therefore find no application to a remotely controlled unmanned ship?
- 5.2. As interpreted under national law, can the STCW requirement that the watchkeeping officers are physically present on the bridge and engine room control room according to Part 4 of Section A-VIII/2 be satisfied where the ship is remotely controlled? Is the situation different with respect to ships with a significantly reduced manning (bearing in mind that the scope of the convention only applies to seafarers on board seagoing ships)?
6. Liability
- 6.1. Suppose a “ship” was navigating autonomously i.e. through an entirely computerised navigation / collision avoidance system and the system malfunctions and this malfunction is the sole cause of collision damage – broadly, how might liability be apportioned between shipowner and the manufacturers of the autonomous system under your national law?
- 6.2. Arts. 3 and 4 of the 1910 Collision Convention provide for liability in cases of fault. As interpreted under your national law, does the fact that the non-liability situations listed in Art. 2 are not conversely linked to no-fault, leave room for the introduction of a no-fault (i.e. strict) liability (for e.g. unmanned ships) at a national level?

CMI INTERNATIONAL WORKING GROUP POSITION PAPER ON UNMANNED SHIPS AND THE INTERNATIONAL REGULATORY FRAMEWORK

1. Introduction

Unmanned ships are those which are capable of controlled movement on the water in the absence of any onboard crew. Instead, control is performed in essentially two ways.¹ It can be performed by remote-control, whereby a shore-based remote controller uses a laptop computer and joystick to control the unmanned ship's movement and signalling using radio and satellite communications. In doing so the controller is aided by the streaming of the ship's vicinity effected by cameras and aural sensors fitted to the ship's hull / chassis. On the other hand, the ship may be "controlled" autonomously. This involves the ship being pre-programmed before deployment (or before setting sail), and, thereafter, performs a predetermined nautical course without any human interaction whatsoever. This control, as well as a degree of collision avoidance capability, is affected with the use of highly sophisticated software technology, control algorithms and sonar radar. There are other control methods between these two modes of operation although, as will be seen, it is this binary distinction which is relevant from the point of view of regulatory compliance. It is also important to note that both of these modes of operation may be used consecutively on the same voyage, depending on the ship's operational itinerary. For the purposes of this paper "unmanned" refers to both "remote controlled operation" as well as "autonomous operation". These will be referred to individually where a distinction is drawn. Autonomous ships may be either supervised or unsupervised by a shore-based remote controller. This distinction will be drawn where relevant.

At present the operational usage of unmanned ships is modest when compared to their manned counterparts. They are presently used predominantly by the marine scientific research communities and also the defence sector for a broad range of marine operations. Today's unmanned ships are also comparatively modest in size, with even the largest of unmanned ships seldom extending beyond 15-20m in length. However, this is about to change. Prototypes are currently being developed by a range of protagonists to develop unmanned containers carriers and passenger liners of comparable size and operational capability with manned ships performing these functions.

¹ This is a simplification to assist analytical expression. There are many different formulations of the levels of autonomy, see e.g. See A Serdy, M Tsimplis, R Veal et al, *Liability for Operation in Unmanned Maritime Vehicles with Differing Levels of Autonomy*, (European Defence Agency, Brussels, 2016). To obtain a copy, please contact Mr. Paul O'Brien of the EDA at paul.obrien@eda.europa.eu. This study refers to the levels of autonomy established by the SARUMS Group. These are (0) Human on board; (1) Operated; (2) Directed; (3) Delegated; (4) Monitored and (5) Autonomous.

The exponentially developing nature of this unmanned technology makes regulatory preparedness an ever more pressing concern, not least because, at least in some types of operation, although there are obvious risks, there are also clear safety advantages to the exploitation of unmanned technology in carriage operations which come in the form of not having to expose seafarers to the still formidable perils of the seas.

2. The Regulatory Framework

Maritime law is a functional term used for describing a whole range of laws and other sources that govern the legal framework related to ships and their operation. It includes a variety of different legal systems, ranging from international law to regional and national rules and down to local rules. It covers issues of public concerns, such as safety, security and environmental protection as well as civil law matters, such as contracts of carriage, liability and compensation for damage, salvage and rules related to marine risks and insurance, to name but a few.

The prospect of unmanned ships addresses a very fundamental feature in shipping – the role of the master and crew on board a ship – and will hence affect a multitude of laws and regulation across the whole range of maritime law.

The focus of this paper is on the international (global) rules. Three main kinds of such rules need to be distinguished. First, there are jurisdictional rules, which lay down states' rights and obligations to take measures with respect to ships. These are mainly laid down in the 1982 UN Convention on the Law of the Sea (UNCLOS), which is discussed in section 3. Second, the technical rules covering safety, environment and training and watchkeeping standards etc. are discussed in section 4. They are usually adopted by specialized UN agencies, such as, notably, the International Maritime Organization (IMO). Third, a series of international rules have been established in the field of private law to harmonise issues such as shipowners' civil liability for pollution, collisions or cargo-related losses and how such claims may be enforced. These rules are not as complete or widely ratified as the public law conventions discussed in sections 3 and 4 and may therefore be subject to greater national variation. The main relationships of these liability rules to unmanned shipping are discussed in section 5.

3. Law of the Sea

3.1 General

The law of the sea deals with the rights and obligations of states over the seas. As far as shipping is concerned, the key issues addressed by this body of law include: to what extent ships can navigate in different sea areas; what obligations do states have over ships flying their flag; and what rights do other states have to interfere in the navigation of ships in different sea areas?

Today's law of the sea governing navigation is more stable than ever before in history. The 'Constitution for the Oceans', UNCLOS, enjoys a widespread formal acceptance worldwide (169 contracting parties) and its provisions concerning navigational rights and duties are widely accepted as representing customary law (and hence apply to non-parties as well). The convention lays down the rules on establishment and delimitation of maritime zones and includes detailed rules for each zone with respect to states' rights and obligations.

A first – and fundamental – question to be resolved is whether ships without a crew on board are 'ships' or 'vessels' within the meaning of the convention at all. The two terms are used interchangeably in UNCLOS, but neither is defined. Article 91 provides that each state shall fix the conditions for the grant of its nationality to ships, which implies that the national law of the flag state will be critical for the definitions used. It does, however, follow from the nature of the activities carried out by large, self-propelled, cargo-carrying, commercially-operated unmanned ships that they probably will have to be regarded as vessels/ships by virtue of their size, features and functions. Existing international conventions that define the term ship do not include references to crewing² and at national level, too, the definition of a ship is usually disconnected from the question of whether or not the ship is manned.³ It would also seem unjustified that two ships, one manned and the other unmanned, doing similar tasks involving similar dangers would not be subject to the same rules that have been designed to address those dangers.

From the assumption that unmanned ships are 'ships' and 'vessels' within the meaning of UNCLOS, it follows that they are subject to the same rules of the law of the sea as any ordinarily manned ship. The same obligations apply to unmanned ships and their flag states with respect to compliance with international rules. On the other hand, they also enjoy the same passage rights as other ships and cannot be refused access to other states' waters merely because they are not crewed.

3.2 Flag State Jurisdiction

Flag state jurisdiction represents the traditional cornerstone of the regulatory authority over ships. UNCLOS establishes that all states have a right to sail ships flying their flag and to fix the conditions for granting nationality to ships (Articles 90 and 91(1)). However, the convention also includes a number of detailed duties for flag states.

Every state has the obligation to "effectively exercise its jurisdiction and control

² E.g. study by Professor Sozer, attached to CMI Working Group on Ship Nomenclature, (available at

www.comitemaritime.org/Uploads/Work%20In%20Progress/Ship%20Nomenclature/Ltr%20to%20Presidents%20re%20IWG%20on%20Vessel%20Nomenclature%20-%20080316.pdf).

analyses the definition of the terms in almost 20 key maritime conventions. Not a single one of these instruments links the definition of ship to the presence of crew on board.

³ See A Serdy, M Tsimplis, R Veal et al, *Liability for Operation in Unmanned Maritime Vehicles with Differing Levels of Autonomy*, (European Defence Agency, Brussels, 2016). To obtain a copy, please contact Mr. Paul O'Brien of the EDA at paul.obrien@eda.europa.eu.

in administrative, technical and social matters over ships flying its flag" (Article 94(1)), including to "assume jurisdiction under its internal law over each ship flying its flag and its master, officers and crew in respect of administrative, technical and social matters concerning the ship" (Article 94(2)(b)). The flag state shall also "take such measures ... as are necessary to ensure safety at sea with regard, inter alia, to ... the manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments" (Article 94(3)(b)), including measures necessary to ensure "that each ship is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship" (Article 94(4)(b)). When adopting these measures each flag state is required "to conform to generally accepted international regulations, procedures and practices and to take any steps which may be necessary to secure their observance" (Article 94(5)).

UNCLOS, in other words, generally avoids the need to formulate more precise obligations of flag states by referring to an abstract, and continuously changing, set of international rules to be developed elsewhere. In this way it avoids 'freezing' the requirements at a given point in time or at a given technical level, while still preserving the international character of the rules in question. The more precise extent of flag states' obligations is hence left to be developed by the IMO in particular.

3.3 Port and Coastal State Jurisdiction

While the flag state's jurisdiction applies irrespective of the ship's location, other states' parallel jurisdiction over the same ship depends on the maritime zone concerned. The coastal state's authority over a foreign ship increases with the proximity of the ship to its shores.

If the ship is voluntarily present in one of its **ports or internal waters**, the coastal/port state has broad jurisdiction over foreign ships. Internal waters form part of the sovereignty of the state (Article 2) and in the absence of specific limitations, the jurisdiction over foreign ships in this area is therefore complete. Moreover, ships have no general right to access foreign ports and the port state's wide discretion to place entry conditions for foreign ships is widely acknowledged, including in UNCLOS Articles 25(2), 211(3) and 255. In other words, a port state may (unless it has accepted specific obligations to the contrary) refuse unmanned ships access to its ports or internal waters, provided that the refusal complies with certain more general criteria of reasonableness that exist in general international law, such as non-discrimination, proportionality between the measure and its objective and that the prohibition does not constitute an abuse of right (Article 300). This may turn out to be a significant limitation of the freedom of movement of unmanned ships, but the potential limitation is by no means unique to unmanned ships.

With respect to ships passing through its **territorial sea** (which may extend up to 12 nautical miles from the coastline/baseline), the rights of coastal states are

more limited. Under a longstanding principle of the law of the sea, all ships enjoy a right of 'innocent passage' through other states' territorial seas. Passage is deemed to be innocent as long as it is not "prejudicial to the peace, good order or security of the coastal state" (Article 19(1)). A list of activities that meet those criteria is given in Article 19(2), but as the list focuses on ships' *activities* (such as use or threat of force, military activities, fishing activities or wilful and serious pollution) questions related to a ship's manning will not as such render passage non-innocent under the wording of UNCLOS.

Regarding the coastal state's legislative jurisdiction, Article 21(2) provides that a state may not impose its national requirements on the construction, design, equipment or manning of foreign ships in its territorial sea, unless those requirements are giving effect to "generally accepted international rules and standards" (Article 21(2)). Independently of what laws the coastal state has adopted, it may not "impose requirements on foreign ships which have the practical effect of denying or impairing the right of innocent passage" (Article 24(1)(a)). The right of innocent passage extends to ships that may be deemed to pose a particular risk for the coastal state, such as tankers and nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances (Articles 22(2) and 23).

The areas of a coastal state's territorial sea which form part of a '**strait used for international navigation**' are subject to even more limitations for coastal states (and correspondingly stronger passage rights for ships). There are different kinds of such straits, but many of the most important straits that are completely covered by the bordering straits' territorial seas, such as the Straits of Dover and Malacca, are subject to the regime of 'transit passage', where ships' right of passage are granted and may not even be temporarily suspended by the bordering states (Articles 37-44). Many other important straits, including the Danish and the Turkish Straits, are governed by long-standing international conventions which guarantee the navigational rights of foreign ships (Article 35(c)).

The jurisdiction to prescribe national requirements is even more limited with respect to ships sailing in the **exclusive economic zone (EEZ)**, which may extend beyond the territorial sea, up to a maximum of 200nm from the coastline/baseline. In this zone freedom of navigation for all states applies, subject to having due regard to the interest of other states (Article 58). The most express prescriptive jurisdiction of coastal states over foreign ships in the EEZ concerns laws aiming at the protection of the marine environment and even here, coastal states' jurisdiction is limited to prescribing rules that give effect to international rules (Article 211(5)). Similarly, enforcement measures are limited to requiring information (Art. 220(3)), save for the most serious cases of pollution and damage where the coastal state may exceptionally interfere in the passage (220(5)).

In sea areas which lie beyond the jurisdiction of any coastal state, **the high seas**, the starting point is that the flag state alone has jurisdiction over the ship. A

number of exemptions to this main rule exist, but none of them is relevant for the question of navigational rights of unmanned ships.

3.4 Other relevant provisions in UNCLOS

Apart from the jurisdictional provisions, certain other UNCLOS provisions may turn out to be problematic for unmanned ships. The obligation set out in Article 94(4)(b) that each ship needs to have a (properly qualified) master and a crew has been mentioned above. While this requirement may arguably be met in case of remotely operated ships, it is less obvious how a fully automated ship would qualify. Since unmanned shipping operations will often involve differing degrees of automation, depending on sea areas, traffic density etc., further clarifications of this obligation may be needed, at least at the level of the 'generally accepted international regulations, procedures and practices' (Article 94(5)).

Another UNCLOS provision which presumes a crew on board is the obligation of the *master* to render assistance to persons in danger or distress according to Article 98(1) (as specified in SOLAS Regulation V/33). The rule would find no application to the extent that an unmanned ship has no *master*, although this is little comfort since this an express requirement of Article 94(4)(b) UNCLOS, as stated above. The communication part of the duty can presumably be met by remotely operated ships with relayed radio communications, but it is less clear how physical assistance can be rendered by a ship without a crew on board. The duties include qualifications by reference to "in so far as he can do so without serious danger to the ship" or "in so far as such action can be reasonably expected of him" which will probably reduce the extent of obligations for unmanned ships, as the available options will be fewer. However, the absence of a crew does not in itself obviate the duty to provide assistance to the extent necessary and reasonable.

4. Technical Requirements

4.1 General

There are over 50 IMO international shipping regulations and conventions in force today. The majority of the obligations imposed by IMO regulations are imposed on flag states, and these states must discharge these obligations by prescribing enforceable domestic shipping legislation reflecting the internationally agreed standards. State legislatures often delegate the tasks of enforcement of the domestic regulations to expert governmental maritime administrations or authorities. These administrations may not always have all the necessary technical expertise to cover every aspect of marine activity and hence essential expertise is also provided by classification societies. It will be seen that considerable discretion is afforded to the relevant maritime administrations and classification societies, particularly in terms of the adequacy of alternative compliance. Thus, each will play an integral role in the applicability of prescribed technical requirements to unmanned ships.

The following is not a comprehensive review of the application of IMO regulations to unmanned ships but instead an exploration of some of those regulations most pertinent in the context of the conduct of navigation of unmanned ships, both remote controlled and autonomous. These will be the essential initial regulatory hurdles to be negotiated if unmanned shipping is to become widespread. The analysis will consider the International Convention for the Safety of Life at Sea, 1974 (SOLAS), the International Regulations for the Preventing of Collisions at Sea, 1972 (COLREGS) and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention). It will consider both applicability of these regulations to unmanned ships and the ability of such ships to comply with them, as well as how the relevant level of unmanned ship autonomy impacts upon the position.

4.2 The International Convention for the Safety of Life at Sea, 1974 (SOLAS)

The International Convention for the Safety of Life at Sea obliges contracting states to ensure minimum standards, in particular, in construction, equipment and operation with the view to ensuring the safety of life at sea. The SOLAS Convention is supplemented by a highly detailed annex which spans twelve chapters. These include: Chapter I *General Provisions* (including definitions); Chapter II-1 *Construction* (including structure, subdivision and stability, machinery and electrical installation); Chapter II-2 *Fire Protection, Fire Detection and Fire Extinction*; Chapter III *Life Saving Appliances and Arrangements*; Chapter IV *Radiocommunications*; Chapter V *Safety of Navigation*; Chapter VI *Carriage of Cargoes*; Chapter VII *Carriage of Dangerous Goods*; Chapter VIII *Nuclear Ships*; Chapter IX *Management the Safe Operation of Ships*; Chapter X *Safety Measures for High Speed Craft*; Chapter XI *Special Measures to Enhance Maritime Safety* and Chapter XII *Additional Safety Measures for Bulk Carriers*.

Chapter I – General Provisions

It can be assumed that, in general, the provisions of SOLAS would find application to unmanned ships to the extent that they are flagged and engaged on international voyages.⁴ SOLAS prescribes no general definition of “ship” and so unmanned operability presents no impediment to applicability. Instead, SOLAS refers to “cargo ships” defined broadly as any ship which is not a passenger ship i.e. a ship not carrying at least 12 passengers.⁵ Importantly, the Convention and its Annex generally find no application to ships of less than 500 gross registered tons (grt) although this is subject to the specific applicability provisions in each chapter.⁶

⁴ Defined in 2(d) as “voyage from a country to which [SOLAS] applies to a port outside such a country, or conversely”.

⁵ Regulation 2(g).

⁶ Regulation 3(a)(2).