

VENEZUELAN MARITIME LAW ASSOCIATION'S ANSWERS TO THE COMITÉ MARITIME INTERNATIONAL (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 or 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.

<p>1. NATIONAL LAW</p> <p>1.1. Would a "cargo ship" in excess of 500 grt, without a master or crew onboard, which is either</p> <p>1.1.1. controlled remotely by radio communication?</p> <p>1.1.2. controlled autonomously by, inter alia, a computerised collision avoidance system, without any human supervision</p> <p>constitute a "ship" under your national merchant shipping law?</p>
<p><i>Answer: Under Venezuelan legislation and case law, a 'ship' or vessel is every "floating structure, capable of navigating in water, whichever its classification and dimensions that has safety, buoyancy and stability, Every floating structure with no means of propulsion is considered a</i></p>

navigation accessory.”

This definition stated in the law, differentiates between self-propelled as vessels or ship and not self-propelled as navigation accessory. However, case law from the Venezuelan Supreme Court clarified the position, stating that a differentiation inasmuch vessels were self-propelled or not, was no more than a differentiation between types “ships” regarding their ability to be propelled, but did not in any case required that a vessel was self-propelled in order to be considered as such [ship].

The above broadened the definition of what was considered ship or vessel to a great spectrum, including all floating structures capable of navigating by water.

The all-encompassed Venezuelan definition of Vessel, therefore, does not require it to be manned in order to be considered a Vessel – as it is the case of a barge, for example.

Therefore, under Venezuelan law, a cargo ship in excess of 500 grt without a master or crew onboard (Question 1.1.) would indeed be considered a ship, as stated in the example above of a barge.

Additionally, if we take the premise that a remotely radio controlled, and an autonomously controlled vessel have buoyancy, safety stability and are capable of water navigation, then both (1.1.1. and 1.1.2.) would be considered ships.

1.2. Would an unmanned “ship” face difficulty under your national law in registering as such on account of its unmanned orientation?

Answer: Theoretically, no. A barge is an unmanned ship, and barges are habitually registered before the Maritime Authority in Venezuela, so long as all its certificates, class, insurance, customs and flag requirements are in order. The same could apply to autonomous vessels.

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?

Answer: No.

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

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

Answer: Venezuelan law imposes a two-tier requirement of minimum academic preparation plus sailing time, in order to achieve the respective ranks and licenses required in accordance with the law and the Maritime Authorities. Additionally, relevant provisions of the Venezuelan law expressly state that the license and/or diplomas grant the Merchant Mariners to carry on certain duties “on board” vessels. By way of example, “a Chief Engineer has powers to carry on such functions as Chief Engineer “on board” vessels of any class in all of the seas.”

Therefore, under national law, none of the persons in 1.4.1, 1.4.2 or 1.4.3 will be considered “master” just by remotely controlling a vessel from shore (1.4.1), or pre-programming the autonomy or response of a computerized system which will eventually dictate the response of a

<i>ship (1.4.2), and even less so for being designated as responsible on paper (1.4.3).</i>
1.5. Could other remote-controllers constitute the “crew” for the purposes of your national merchant shipping laws?
<i>Answer: See answer to question 1.4 above, applicable to all ranks and ratings.</i>
1.6. Under your national merchant shipping law, could either of the following constitute the unmanned ship’s “master”
<p>1.6.1.The chief on-shore remote-controller</p> <p>1.6.2.The chief pre-programmer of an autonomous ship</p> <p>1.6.3.Another 'designated' person who is responsible on paper, but is not immediately involved with the operation of the ship</p>
<i>Answer: Repeated question in 1.4 above.</i>
1.7. Could other remote-controllers constitute the “crew” for the purposes of your national merchant shipping laws?
<i>Answer: Repeated question in 1.5 above.</i>
1. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA, 1982 (UNCLOS)
1.1. 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?
<i>Answer: To this date, Venezuela has not entered as a party to UNCLOS.</i>
<i>However, Venezuela has enacted laws that contain several provisions such as those in UNCLOS (i.e.: freedom of navigation, rights of passage, rights of coastal and port states to intervene and duties of flag states). Thus, other than the strictly required use of a Pilot for manoeuvres approaching to and sailing from public ports and if in accordance with Venezuelan law, we do not anticipate any issues since, as stated above, unmanned ships would be considered vessels.</i>
1.2. 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?
<i>Answer: Venezuela is not a party to UNCLOS.</i>
2. IMO CONVENTIONS – THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA (SOLAS) 1974 (AS AMENDED)
2.1. 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?
<i>Answer: Minimum Manning is required as per the vessel’s Minimum Safe Manning Certificate. Thus, if certificates and class state that the vessel can operate unmanned, then the Maritime Authorities based on navigation, safety and buoyancy should not oppose the operation.</i>

<p>2.2. 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 contest 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?</p>
<p><i>Answer: As stated above, the Maritime Authority in Venezuela requires mandatory Pilotage for vessels of 500 grt or more for public ports as a matter of safety.</i></p>
<p>2.3. 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.)?</p>
<p><i>Answer: No. Venezuelan Maritime Commerce Law (MCL) contains a chapter on the issue of salvage. Provisions therein are applicable to “[...] any floating construction suitable for navigation, that lack own propulsion, which operate in the aquatic environment or navigation auxiliary, whether they are destined for it or not; to artificial islands, and to installations and structures located in an aquatic space at the moment these are underway by water”.</i></p>
<p><i>In that sense, unmanned ships are too governed by the provisions in the chapter regarding salvage. Article 339 MCL provides the obligations that must be performed the salvor, which include carrying out salvage operations with the due diligence, avoiding pollution to the environment, request the help of other ship-owners and accept the intervention of other ship-owners when required by the Captain, the Owner or the Owners of the goods to be salvaged.</i></p>
<p><i>Even though article 342 MCL states that the Owner will not incur liability in case the Master fails to comply with its duty to render assistance to every vessel or person that is in distress as provided by the law, the Master or on-shore party responsible for the navigation of the unmanned ship may be considered liable under the circumstances, especially when there is a call regarding persons in distress at sea.</i></p>
<p>3. THE INTERNATIONAL REGULATIONS FOR PREVENTING OF COLLISIONS AT SEA, 1972 (COLREGS)</p>
<p>3.1. 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?</p>
<p><i>Answer: No. unmanned ships should be governed by the same principles as traditional ships. The lack of on board personnel cannot exempt or excuse the fulfilment of principles related to “good seamanship” as such principles will need to be fulfilled or satisfied by the shore-based remote controller. An unmanned ship should be capable of handling the risks of navigation, avoiding disasters and pollution to the environment, and this can be achieved via available technology.</i></p>
<p>3.2. 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?</p>
<p><i>Answer: Although it may be considered a long reach, if the autonomous system has been programmed taking into consideration the basic principles of “good seamanship” and performs its operation with consideration of safety, using available technology to “react” in real time to</i></p>

<i>solving issues that may arise, the principle of good seamanship stated in COLREGS.</i>	
3.3. 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?	
<i>Answer: If the camera and aural sensor can provide enough visibility and perspective to those navigating the ship from shore, in order for them to be aware of the ship’s surrounding and direction, it’s safe to say that the ship would be fulfilling with the COLREG Lookout Rule. However, this can be debatable in stating that there is a delay in the transmission of the cameras and sensors, thus the lookout is not as effective as originally designed, but in general terms the lookout would indeed be covered.</i>	
3.4. 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?	
<i>Answer: The relevant COLREG Rule does not seem to refer to command as it is now understood on the issue of unmanned vessels, but to exceptional circumstances in which a vessel is unable to manoeuvre for some reason. Therefore, an autonomous or unmanned vessel would not be considered a “vessel not under command”.</i>	
4. THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING CERTIFICATION AND WATCHKEEPING, 1978 (STCW CONVENTION)	
4.1. 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?	
<i>Answer: Yes. The Convention expressly applies seafarers serving on board seagoing ships, and as such it does not apply to a remotely controlled or unmanned ship. The convention in the existing terms needs to be amended to include training and certification for crew operating autonomous vessels - in the broad sense - including both shore-based controllers and pre-programmers, or it would eventually be moot.</i>	
4.2. 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)?	
<i>Answer: No. Given that the STCW was expressly drafted bearing in mind that seafarers were to be on board seagoing ships, no matter the number of seafarers required under the Manning Certificate, any shore-based control would not comply with the Rule.</i>	
5. LIABILITY	
5.1. 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?	
<i>Answer: Shipowner’s duties to man, supply and make the vessel seaworthy are non-delegable under Venezuelan law. Thus, Shipowners will face full liability under the relevant maritime laws, without prejudice for its recovery under the applicable civil laws against the manufacturers of the autonomous system.</i>	
5.2. 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?

Answer: At a national level today, the Venezuelan Maritime Commerce Law regulates the collision issues based in cases of fault.

In case of shore-based remotely controlled vessels under the law as it is drafted today, the rules for collision would apply and the shipowner whose vessel collided would be at fault, given that there were crewmembers and a Captain remotely operating the vessel and the analogy could be drawn from the traditional vessels.

However, in case of fully autonomous vessels, we do anticipate these types of actions may make way for no-fault strict liability actions since the cause of the damage would be the vessel herself. Although, as stated above, initially the actions will be directed towards the shipowners as stated in the law today, and these could repeat or recover from the programmer, until the case law tackles the no-fault strict liability issue when it becomes ripe.

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