

Analysis on the New Risks Arises from Maritime Autonomous Surface Ship
(MASS) and the Necessity of Modification of the Existing London Hull &
Machinery Policy

海上自主水面船之新风险与修改现行伦敦船壳险的必要性分析

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Abstract

摘要

The author starts with the definition of Maritime Autonomous Surface Ship (MASS), through the analysis of the domestic definition of “unmanned ship” and relevant legal regulations or cases in various major shipping countries, to conclude whether MASS comply with the term of “ship” in the existing H&M policies. Regarding the BCS (Base Control Station) which are the set of equipment and control units that are needed at the site or sites where safe and effective remote control and/or monitoring of the MASS or several MASS, the author analysis the issue subsequently that whether the BCS can be insured alone with MASS as subject-matter. After analysing these key issues, the author analyses the traditional covered risks in Hull & Machinery policy and also the possible new risks that MASS may face one by one to give the conclusive advises on the existing H&M policy in London Insurance Market.

Keywords 关键词: Maritime Autonomous Surface Ship, Base Control Station, Insurance, Hull and Machinery policy, Covered risks, London Insurance Market

Introduction

引言

There are attempts to develop ships that can be operated remotely and even autonomously in the future, while that mean the existing H&M policy in London insurance market may not be sufficient to cover the new risks arise from the Maritime Autonomous Surface Ship (MASS). This article aims to analyse the possible type of the new risks such as Cyber-attack and other traditional risks like Barratry, Misconduct and Incompetence under the brand-new situation, discuss the necessity of revision the H&M policy terms in London Market and try to give some advises on it.

1. Does MASS comply with the term of “ship” in the existing H&M policies

Logically, if MASS (Maritime Autonomous Surface Ship) constitutes a "ship", it will enjoy the same navigation rights as ordinary ships. If MASS is not a "ship" in the legal sense, then the question is whether this kind of marine unmanned device enjoys a series of rights, such as free navigation on the high sea as ordinary ships. UNCLOS 1982 stipulated the duty of flag state and the right of navigation, but did not define "ship" or "vessel". The term "ship" exists in the existing H&M (Hull & Machinery) policies in London insurance market, therefore, in order to meet the various insurance needs brought about by MASS, it is necessary to clarify whether MASS constitutes the "ship" in H&M policies, which is also the starting point of studying the legal risks brought by MASS.

Although UNCLOS 1982 did not make a definition of "ship", according to its Article 91, "*The domestic laws of various countries regulate the registration of ships and the conditions for ships to fly their national flag*", that is to say, the definition of "ship" is the field of adjustment in national laws of various countries. The most significant difference between traditional ship and MASS is "*whether to carry master and crew*". In CMI's unmanaged ship questionnaire, the first question is "*a 'cargo ship' in excess of 500 GRT, without a master or crew onboard...constitute a 'ship' under your national merchant shipping law*"? In the responses of 19 countries, only Croatia considered that unmanned ships did not constitute ships, while other countries considered that unmanned ships constituted ships under domestic law. For example, in UK's reply, "*the main regulation in this regard is the Merchant Shipping Act 1995. Section 313(1) states that 'Unless the context otherwise provides, 'ship' includes all descriptions of vessels used in the voyage...' At present, there is no clear reason why a ship, whether remotely controlled or autonomous, cannot meet the MSA 1995 definition of 'ship' just because of its unmanned nature*"¹. The relevant cases can be seen in ***R v Goodwin***². Other countries, such as Canada, have recognized that remotely operated submersible constitutes a ship through ***Cyber Sea Technologies, Inc v. Underwater Harvester Remotely Operated Vehicle***. The court held that "*the only standard for detecting a ship is that the device is at least partially used for navigation, and that 'unmanned' is not the decisive factor*"³. Argentina ruled in ***Sonaco SRL v. Yacimietos Petroliferos Fiscales*** that "*as long as it can navigate, a floating device without crew, engine and steering device still constitutes a ship*"⁴. Through these examples, it can be seen that the domestic legislators, especially UK, who participated in the questionnaire survey did not regard “carrying crew” as the precondition of determine the nature of ship.

¹ CMI IWG Questionnaire 'Unmanned Ships – UK' (2018)

<<https://comitemaritime.org/wp-content/uploads/2018/05/CMI-IWG-Questionnaire-Unmanned-Ships-UK.pdf>> accessed 20 August 2020

² [2005] EWCA Crim 3184; [2006]1 WLR 546.

³ CMI IWG Questionnaire 'Unmanned Ships – CANADA' (2018)

<<https://comitemaritime.org/wp-content/uploads/2018/05/CMI-IWG-Questionnaire-Unmanned-Ships-CANADA.pdf>> accessed 20 August 2020

⁴ CMI IWG Questionnaire 'Unmanned Ships – SPAIN' (2018)

<<https://comitemaritime.org/wp-content/uploads/2018/05/CMI-IWG-Questionnaire-Unmanned-Ships-SPAIN.pdf>> accessed 20 August 2020

In addition, logically speaking, there is no such element as "unmanned" in the definition of ship, which cannot overturn the essence of ship. Veal and Tsimplis believe that this can be proved by the "evolutionary approach" used by the International Court in *Costa Rica v. Nicaragua (Dispute Regarding Navigating and Related Rights)*. The dispute in this case is whether the term "commerce" used in Article VI of the treaty is extended to "tourism". At the time when the treaty was signed, "commerce" simply referred to "trade", not including "tourism". However, modern "commerce" obviously included "tourism". The International Court held that *"the general terms used in a permanent or continuing treaty have the meaning applicable to the treaty in different situations. Regardless of the original meaning of the treaty at the time of signing, the 'commerce' in this case belongs to the general term with the meaning changing with time"*⁵. Veal and Tsimplis think that "ship" belongs to this kind of general term, which is an abstract "ship", which represents the connotation of this kind of things, and unmanned ship is the extension of "ship". Therefore, "ship" in the existing H&M policies also belongs to the general term and can contain MASS.

2. Can BCS be insured alone with MASS as subject-matter

BCS (Base Control Station) *"is the set of equipment and control units that are needed at the site or sites where safe and effective remote control and/or monitoring of the MASS, or several MASS, is conducted"*⁶. The term "subject-matter" is mentioned in the existing H&M policies of the London insurance market. However, neither these standard terms nor Lloyd's Marine Policy (Mar (91) form) give a definition of this term. Some scholars believe that *"the subject-matter of insurance refers to the part of the ship which does not belong to the ship itself but is included in the marine adventure together with the ship, such as leased equipment or parts removed from the ship"*⁷. Here, the relevant question is whether BCS can constitute the "equipment" of MASS.

According to r.15, s.16, MIA 1906, the term "ship" includes *"ordinary fittings requisite for the trade"* of ships engaged in special trade. The so-called "ship" is not limited to the hull, but extends to the material and equipment of the ship, including *"all necessary, appropriate or usual appendages that may be presumed to be appendages of such a ship, for the purpose of navigation, in navigation as described"*⁸. Therefore, *"the equipment required for the voyage of the ship on a certain voyage shall be considered as an integral part*

⁵ [2009] ICJ Rep 213, 63-64.

⁶ 'Maritime Autonomous Surface Ships Industry Code of Practice, November 2018 (Maritime UK Code of Practice)' <https://www.maritimeuk.org/documents/305/MUK_COP_2018_V2_B8rlgDb.pdf> accessed 20 August 2020

⁷ Bugra, Aysegul, 'Insuring Remotely Operated Vessels: Tempestuous Waters for Hull Insurers?' (2019). NUS Law Working Paper No. 2019/023, NUS Centre for Maritime Law Working Paper 19/08, <<https://ssrn.com/abstract=3474245>> accessed 20 August 2020

⁸ Charles McArthur, *A Practical Treatise on the Contract of Marine Insurance* (1st ed, Stevens & Sons, 1885) p 93 citing Phillips, p 463.

and shall be insured together with the ship itself"⁹. However, as stated in the definition of BCS under Maritime UK Code of Practice, "BCS may exist outside the controlled ship", that is, whether the BCS can still be insured together with the MASS as the subject matter of insurance when the BCS is not attached to the insured MASS. According to *Hogarth v Walker*, "dunnage mats used for the proper carriage of goods, even if not attached to the ship or used at the time of loss, still belong to the 'fittings' of the insured ship"¹⁰. A similar case is *New Liverpool–Eastham Ferry & Hotel Co v Ocean Accident & Guarantee Corp Ltd.*, "even if they are occasionally separated from the ship, these moorings may belong to the 'ordinary fittings requirement for the trade' when used in coal trading"¹¹. Therefore, if there is no separate clause stipulating the fittings or equipment of the insured ship, the BCS not attached to the MASS can be insured together with the MASS as the subject matter of insurance. However, if IHC 03 is included in the insurance policy, the situation is very different. This is because in the context of IHC 03, one of the conditions that a claim for loss or damage to leased equipment must satisfy is "not owned by the insured, but the equipment is installed on board for use on board..."¹², therefore, if the BCS is not attached to the insured MASS, this condition will not be met, and cannot be insured with the MASS in the insurance policy including IHC 03.

3. MASS and new risks

3.1 Cyber-attack risk

3.1.1 Silent Cyber Cover

The GPS, AIS and ECDIS that may be carried on the MASS may have the weakness of network security and become the main target of cyber-attack. The design of H&M policies in London insurance market does not consider cyber-attack risk, so it may not include or exclude cyber-attack risk implicitly. However, it is worth noting that the ambiguity of insurance coverage may lead to a silent cyber scenario, and the insurer may have to pay loss claims from insurance policies not designed for this purpose, or on the contrary, in the case of silent cyber cover, if the cyber-attack risk triggers an exclusion in the insurance policy, the insured will not be able to get recovery from the insurance policy. For example, "Under the background of ITC-Hulls 95 which provides marine risk insurance, it is assumed that the insured ship collides because its ECDIS cannot fully meet the requirements to identify another ship berthing at a recognized anchorage. It is understood that a malicious code or software (distributed by a commercial competitor) is downloaded to the ship's computer system, which makes the ECDIS unable to display accurate

⁹ *ibid.*

¹⁰ [1900] 2 QB 283.

¹¹ (1929) 34 Lloyd's Rep. 421.

¹² International Hull Clauses 01/11/03, cl 3.1

information”¹³. Clause 26 of the clause states that this policy does not cover "loss, damage, liability or expense caused by any person maliciously or politically motivated". The definition of "malicious act" in the clause has been uncertain for many years, in *Atlasnavios navagacao, LDA v. Navigators Insurance Co Ltd (The B Atlantic)*, the Supreme Court concluded that "malicious act refers to a person's behavior involving malicious factors related to the insured property, or at least other property, or even a person"¹⁴. It can be seen from this conclusion that this kind of loss has occurred in the context of ITC-Hulls 95. As long as the insurer can prove that the perpetrator is the commercial competitor of the insured and causes damage to the insured ship with "malicious" or "malicious intention", the insured cannot be compensated for the loss. However, "once the source of the malicious code or malicious program cannot be determined, even if the fault is caused by cyber-attack, the loss caused will be covered by silent cyber cover"¹⁵.

3.1.2 Should cyber-attack risk be included in the insured perils

As mentioned above, even if the risk of cyber-attack is not specified in the insurance policy, under certain circumstances, the insurer may also need to pay compensation for the cyber-attack of the insured subject matter, and there may be great disputes due to the lack of specific provisions. For degree III and above MASS, (“Degree three: Remotely controlled ship without seafarers on board: The ship is controlled and operated from another location. There are no seafarers on board”¹⁶), because there is no crew intervention in the normal navigation process, the ship is controlled by the judgment of the computer system. If the ship is attacked by the network, the loss will be huge. Although the risk of cyber-attack in marine insurance is generally excluded by the Institute Cyber Attack Exclusion Clause (CL380) or other variations of this clause, however, cyber-attack risk is the risk which MASS is more likely to face. If insurer of London insurance market wants to attract more customers to insure their MASS, they should consider adding cyber-attack risk clauses which can better balance the risk and benefit in the existing H&M policies, rather than just stay in the existing market solutions.

3.2 Piracy and Cyber-attacks

¹³ Soyer Baris, *Cyber Risks Insurance in the Maritime Sector: Growing Pains and Legal Problems* (10.1007/978-3-030-31749-2_29.)

¹⁴ [2018] UKSC 26; [2018] 2 WLR 1671.

¹⁵ *ibid.*

¹⁶ Maritime Safety Committee (MSC), 100th session, 3-7 December 2018. (2018)

<<http://www.imo.org/en/MediaCentre/MeetingSummaries/MSC/Pages/MSC-100th-session.aspx>> accessed 18 August 2020

Control of a ship can be obtained by hacking and controlling its navigation software, but this does not constitute the definition of piracy in Article 101 of UNCLOS: "*a) Any unlawful act of violence, detention or any act of plunder committed for private purposes by the crew or passengers of a private ship or aircraft for the purpose of: (i) against another ship or aircraft on the high seas, or against persons or property on board that ship or aircraft; (ii) against a ship, aircraft, persons or property outside the jurisdiction of any state*"¹⁷, this virtual means of controlling ships does not involve any act of "*crew or passengers of a private vessel or private aircraft*". Moreover, the definition of UNCLOS also requires the starting point of piracy, that is, "*on the high seas*" or "*beyond the jurisdiction of any state*", however, the computer or server carrying out the attack may exist in any corner of the earth with network. If the attack on the high seas is regarded as the starting point, the cyber-attack may constitute piracy. However, if the location of computers on land or even in the sky is considered as the starting point, then cyber-attacks do not meet the UNCLOS definition of pirates in any case.

On the other hand, the definition of piracy in MIA 1906 is "*a 'physical attack' on a ship 'from shore'*"¹⁸. The United States Code also stipulates that "*a violent crime requires the use, attempted use or threat of physical attack*"¹⁹. Therefore, the cyber-attack on MASS cannot constitute piracy due to the lack of substantial "violence" factor. Although both the remote control of remote-control unmanned ship and the electronic programming of self-control unmanned ship are easy to be attacked by hackers, due to the lack of violence, hacker behavior is difficult to be evaluated as piracy in the current legal system. This means that if the nature of hacker behavior is not solved before the trial voyage of MASS, it is very difficult for the owner of MASS to realize its commercialization goal, whether based on ITC-Hulls 83 or 95 or IHC 03, insurers are likely to refuse to pay compensation for the losses caused by cyber-attacks on the ground that cyber-attacks are not piracy, which leads to a gap in risk liability that cannot be sustained by the owners of MASS alone.

Paul W. Pritchett, an American scholar, put forward a new idea to define the nature of hacker cyber-attack on MASS, that is, "*it is understood as illegal ship arrest, not piracy. Because such seizure is neither necessary to obtain control of the ship through violence, nor has there been any concern about the starting point*"²⁰. Therefore, under the circumstances that the traditional definition of piracy risk insurance cannot meet the urgent needs of the MASS policyholders, the insurer can consider including

¹⁷ United Nations Convention on the Law of the Sea (UNCLOS), Art. 101

¹⁸ Marine Insurance Act 1906, para 8, sch 1.

¹⁹ 18 U.S.C. § 16 (2012).

²⁰ Paul W. Pritchett, *Ghost Ships: Why the Law Should Embrace Unmanned Vessel Technology*, (40 Tulane Maritime Law Journal 2015) 213.

the illegal ship arrest as one of the listed perils in the existing hull insurance, and adjust the premium appropriately based on the risk prone situation.

3.3 Inchmaree clause and MASS

3.3.1 Negligence of “master, crew and pilot”

Inchmaree clause originated from the decision of the House of Lords in 1887 in *Thames and Mersey Marine Insurance Co v Hamilton Fraser and Co* in respect of the insurance claim for the loss of the "Inchmaree" ship, "*it held that the machinery damage caused by the negligence of the crew is not marine damage and is not covered by the insurance policy*"²¹. In order to expand the coverage of these losses which were not originally covered by the insurance liability, the insurer named an insurance clause on the basis of the "Inchmaree" steamer. Clause 6.2 of ITC-Hulls 83 and 95 and Article 2 of IHC 03 are incorporated into Inchmaree clause. Therefore, as an insurer in the London market, it is necessary to clarify some definitions in this clause so that it can adapt to the great changes brought about by the emergence of MASS. According to Inchmaree clause, "*the negligence of the master, crew and pilot*". Among them, the word "master" is mentioned, but there may be no personnel on the MASS, but the BCS operator controls the ship's navigation. Then the following question is whether the BCS operator meets the definition of "master". If not, whether it is necessary to add a clause to the existing insurance policy to clearly define "master". Before deciding whether the BCS operator meets the definition of "master", it is necessary to analyze two roles of the captain in the voyage:

The first is the navigation role of the master. For the degree III MASS, this role will be assumed by the BCS operator who monitors the ship's progress during the whole voyage and navigates some parts of the voyage through remote operation. This shows that the most important difference between the degree III MASS and traditional ships is that the personnel commanding or controlling the ship are not onboard the ship, but on the shore or other ships. There is no definition of master in UNCLOS and other international conventions. *The International Law of the Shipmaster* defines the master as "*a natural person who is responsible for a ship and all its goods and personnel and is responsible for enforcing the maritime law of the flag State*" and "*this definition does not require the master to onboard the ship under his command*"²². In the United Kingdom, section 313 of Merchant Shipping Act 1995 defines "master" as "*the owner*

²¹ [1887] 12 AC 484 (HL).

²² J.Cartner, R.Fiske and T.Leiter, *The International Law of the Shipmaster* (London: Informa 2009), 86.

who has the command or control of the ship (except pilot)". The definition does not require the presence of personnel on board, so "master" can include BCS operator, the remote operator of the ship. France also adopted a similar definition: *"the master is the person who actually exercises the command of the ship"*²³ and *"as long as the BCS operator actually commands the MASS, he can be regarded as the master"*²⁴. *"The definition of 'master' in the laws of other countries requires that he must be on board the ship"*²⁵. In terms of whether it is necessary to be onboard, at least not in the UK. For the degree IV MASS (degree IV: *"fully autonomous ship: the operating system of the ship is able to make decisions and determine actions by itself"*²⁶), the programmer of preset program has no room for change in the current maritime legal system. First of all, the master's "control" and "command" or "responsibility" of the ship should be immediate and continuous. Even if the MASS makes the response of route change and ship collision prevention through the preset software system, it is also the response made by the software system rather than the programmer itself. Secondly, the programmer's programming is not the "control" of the ship. The United Kingdom mentioned in the CMI questionnaire that *"the s.313 definition... Could not cover a person not indirectly connected with the navigation or control of the unmanaged ship"*²⁷. It can be imagined that if the programming of multiple MASS comes from the same programming team, it is absurd to put all the navigation behaviors of the MASS under the "control" of the programming team and make them be responsible for the consequences of the actions of all the MASS.

Secondly, the master also has some non-navigational functions. Master should supervise the loading and discharging of the cargo onboard and sign the bill of lading, *"these functions require physical presence at the loading port and the discharging port, so these functions cannot be allocated to BCS to complete"*²⁸. In ITC-Hulls 95, BCS's liability for risk may be more explicit, which sets out the want of due diligence proviso and extends liability to regulators or any other onshore management. This seems to involve the activities of BCS. However, if the insured and BCS operate independently, there may not be enough connection between them. Therefore, these provisions will need to be changed for MASS.

²³ French Transport Code, Art L, 5511-4.

²⁴ CMI IWG Questionnaire, 'Unmanned Ships – FRANCE' (2018).

<<https://comitemaritime.org/wp-content/uploads/2018/05/CMI-IWG-Questionnaire-Unmanned-Ships-FRANCE.pdf>> accessed 20 August 2020

²⁵ 'Summary of responses to the CMI questionnaire' (2018) <www.comitemaritime.org/Unmanned-Ships/02715311533200.html> accessed 26 August 2020.

²⁶ Maritime Safety Committee (MSC), 100th session, 3-7 December 2018. (2018)

<<http://www.imo.org/en/MediaCentre/MeetingSummaries/MSC/Pages/MSC-100th-session.aspx>> accessed 19 August 2020

²⁷ CMI IWG Questionnaire, 'Unmanned Ships – UK' (2018)

<<https://comitemaritime.org/wp-content/uploads/2018/05/CMI-IWG-Questionnaire-Unmanned-Ships-UK.pdf>> accessed 20 August 2020

²⁸ Soyer Baris, Tettenborn Andrew, *New technologies, artificial intelligence and shipping law in the 21st century* (Informa Law from Routledge).

As to whether other ordinary controllers of BCS meet the definition of "crew", the similar term in the Merchant Shipping Act 1995 is "seamen". According to s.313(1), "seamen" must be "*on board any ship*"²⁹. Therefore, at least in the UK, the word "crew" has no room to be extended to ordinary controllers of BCS. The problem of ship damage caused by the negligence of other ordinary BCS controllers needs further study by insurers in London insurance market.

3.3.2 Can BCS operator be analogied with “pilot”

English law definitions "pilot" as "*any person not belonging to a ship who has the conduct thereof*"³⁰. Similarly, the BCS operator is not part of the crew on board and uses remote means to control the navigation of the MASS. This means that the responsibilities of the BCS operator cover the responsibilities of the pilot. For example, the AAWA project predicts that "*when entering or leaving the port, BCS will choose to adopt remote operation mode to control or improve the supervision level of the ship*"³¹. However, this does not mean that in any scenario in which pilot assistance is required, BCS operator can be regarded as a "pilot" when entering or leaving the port by remote control of the ship. "*Because some port authorities may not allow autonomous berthing, the traditional form of piloting is required*"³², then BCS operator cannot be considered as "pilot" in this situation.

3.4 Barratry, Misconduct and Incompetence of BCS operators

3.4.1 Barratry of BCS operator and misconduct not considered as barratry

Barratry is an ancient underwriting risk. In the *Earle v Rowcroft*, Lord Ellenborough roughly defined this risk: "*barratry refers to the behavior that the master maliciously fails to comply with or fails to comply with his obligations to the owner of the ship for the purpose of committing a crime, whether the act is based on the interests of the master himself, or merely to show his malice towards the owner of the ship, or to ignore the law that the master should abide by*"³³. Article 11 of MIA 1906 rules of interpretation defines barratry as "*the master or crew act maliciously and wrongly for the purpose of harming the interests of the owner or charterer of the*

²⁹ The Merchant Shipping Act 1995, s.313(1)

³⁰ The Merchant Shipping Act 1894, s.742,

³¹ AAWA. 'Remote and Autonomous Ships – The Next Steps' (2016)

<<http://www.utu.fi/en/units/law/research/research%E2%80%9090projects/Pages/aawa.aspx>> accessed 25 August 2020

³² *ibid.*

³³ [1806] 8 East 126.

ship"³⁴. From the above definitions, it can be seen that the fraud or criminal intent of the master or crew is one of the elements constituting the underwriting risk. As mentioned above, in the United Kingdom, the BCS operator can be regarded as the "master" when controlling the insured ship, that is, the BCS operator may constitute barratry, the barratry clause in H&M policies in London insurance market still has insurance value for MASS. However, for BCS operator, the most important element is the second component of barratry, that is, the behavior of the master or crew has harmed the interests of the owner of the ship. For example, if the master's illegal smuggling behavior leads to the arrest of the ship or cargo, it can also constitute barratry, such as the case of *Vallejo v Wheeler*³⁵. The second component of barratry also requires that the BCS operator and the shipowner cannot be the same person, and the BCS operator must be independent of the shipowner or cannot have insurable interest in the insured ship. Otherwise, *"the insurer can prove that the insured privy in or agreed to do so, and then the insured could not obtain insurance compensation based on barratry"*³⁶.

The insured's wilful misconduct is one of the most typical types of fraud claims in marine insurance. Wilful misconduct is included in the exclusions in ITC-Hulls 83 / 95 and IHC 03. Article 55(2)(a) of MIA 1906 clearly stipulates that *"the insurer shall not be liable for any loss caused by the wilful misconduct of the insured"*³⁷. It should be noted that only the behavior of the insured can constitute the wilful misconduct of the insured. In other words, the insured must be personally involved in the event that caused the loss. Since this chapter is about the wilful misconduct of the BCS operator, it is assumed that the BCS operator is not independent of the shipowner (the insured). If the BCS operator is independent of the owner and is responsible for the insured ship, according to the above, it can only constitute a barratry rather than a wilful misconduct. BCS operators can be natural persons or business entities. When BCS operator is a natural person, it is relatively simple and clear to judge whether it is "BCS operator's behavior". In the case that BCS operator is a legal person (such as a ship management company), according to *Lennard's Carrying v Asiatic Petroleum*, *"it is necessary to see whether the natural person involved in the event causing the loss is the decision-maker of the relevant affairs, and whether he represents the direct will of the legal person in the relevant affairs"*³⁸. It is worth noting that the decision-maker is not limited to the senior management of the company, *"the decision-maker*

³⁴ MIA 1906, Rules for Construction of Policy, Art. 11

³⁵ (1774) 1 Cowp.143.

³⁶ *Elfie A Issaias v Marine Insurance Co Ltd* (1923) 15 LIL Rep.186.

³⁷ MIA 1906, Art. 55(2)(a)

³⁸ [1915] AC 705.

*responsible for the ship operation can also be identified as the decision-maker of the matter*³⁹. Therefore, even if the person who decides to commit malicious or fraudulent acts is the chief of the company responsible for the actual remote control of the ship, the behavior also constitutes the wilful misconduct of the whole BCS. In addition, if both the BCS operator and the shipowner have a common interest in the insured ship under the composite insurance policy, then according to *The Alexion Hope*, "in the case of composite insurance policy, the malicious or fraudulent acts of one insured may not affect the claim rights of the other insured"⁴⁰, then BCS operator's wilful misconduct will not affect the owner's claim right.

3.4.2 Incompetence of BCS operator

The Additional Perils Clause, which may be included in IHC 03, provides that "loss or damage to the ship caused by any accident or the negligence, incompetence or misjudgment of any person may be compensated at the expense of additional insurance premium"⁴¹. Moreover, the incompetence mentioned in the clause shall not be caused by the lack of due diligence of the insured, the owner and the manager, which means that if the BCS operator does not operate the ship as a servant of the owner, the incompetence of the BCS operator may lead to the unseaworthiness of the MASS. On the one hand, this will lead to the violation of the seaworthiness warranty specified in Article 39 of MIA 1906 under the condition of voyage insurance policy, and on the other hand, the insured will not be able to obtain insurance compensation due to the incompleteness of BCS operator.

However, the following problem is how to define the incompetence of BCS operator. *Steven v Scottish Boatowners Mutual Ins Assoc (The Talisman)* proposed that the test of competence is "an objective one, which aims to determine what a normally competent [fishing boat master] may reasonably expect to do under the same circumstances"⁴². This shows that BCS operator, as the "master" of MASS, will be required to have at least the appropriate level of capability expected by current seafarers. Maritime UK Code of Practice mentions that "the operator should start with the existing Seamen's skills and carry out large-scale technical related training on this basis"⁴³, which also means that BCS operator should have a clear understanding of the existing

³⁹ *The Lady Gwendolen* [1965] 1 Lloyd's Rep. 335.

⁴⁰ [1987] 1 Lloyd's Rep. IR 364.

⁴¹ IHC 2003, TAPC, cl. 41.1.3

⁴² [1989] 1 Lloyd's Rep 535.

⁴³ Maritime UK Code of Practice, para 11.7.1

relevant IMO documents (SOLAS, COLREGs, STCW and MARPOL) as seafarers. In addition, *"in terms of safety, the BCS operator shall also be required to master the knowledge related to the safe navigation of MASS or receive relevant training"*⁴⁴, especially, compared with the traditional ship control, the BCS operator has its own particularity and needs to be fully trained in network communication security, especially when the MASS is attacked by network or the communication between BCS and MASS is lost due to other cyber security reasons, BCS operator needs to use its emergency knowledge to make a reasonable response to the emergency situation in time. Otherwise, according to the decision of the House of Lords on *The Star Sea*⁴⁵, the BCS operator is likely to be regarded as incompetent. It is worth noting that a BCS operator may handle different MASS and deal with different navigation tasks, *"which requires the BCS operator to have a sufficient understanding of the specific size and grade of MASS, the area operated and the nature of the cargo carried"*⁴⁶. In addition, the BCS operator may need to control multiple MASS at the same time, which requires the BCS operator to be able to handle the navigation of multiple MASS on multiple lines and handle multiple emergencies at the same time. If such capability is not available, the BCS operator may be regarded as incompetent.

4. Conclusion and Suggestions

4.1 Whether it is necessary to modify the "ship" clause in the existing H&M policies

The definition of "ship" is not only the starting point of studying MASS problem, but also one of the concerns of H&M policies insurer. The term "ship" exists in all existing H&M policies in London insurance market. At present, when each country exercises its jurisdiction over its own ships by UNCLOS, it does not take into account whether the master and crew are "onboard" in their respective legal texts. UK also holds the same view. Secondly, logically speaking, there is no such element as "unmanned" in the definition of ship, which cannot overturn the essence of ship. The traditional relationship between ship and MASS tends to be the relationship between connotation and extension in logic, that is, MASS is only one of the forms of ship. Therefore, the term "ship" in the existing H&M policies also belongs to the general term, which can include MASS. It is suggested that the insurer does not need to change the existing H&M policies in London insurance market in this respect.

4.2 Whether it is necessary to modify the clause "master, crew or pilot" in the existing H&M policies

⁴⁴ Maritime UK Code of Practice, para 11.8.1

⁴⁵ [1995] 1 Lloyd's Rep 651, 658.

⁴⁶ Maritime UK Code of Practice, para 11.4.1

It can be said that the issue of identifying the master of MASS runs through the legal issues of MASS. As for the navigational functions, degree III MASS emphasizes more on "responsibility" or "control power" in the identification of master of ordinary ships, and BCS operator is more likely to be regarded as master, for example, the definition of "master" in MSA 1995 of the United Kingdom does not require the presence of personnel on board. However, for the degree IV MASS, the response of route change and ship collision prevention through the preset software system is considered to be the response made by the software system rather than the programmer itself. The programming designer does not belong to the "control" of the ship for the programming. Therefore, the programmer cannot be considered as the master of the MASS. As for the non-navigational functions of the master, BCS operator cannot replace the master in cargo handling and signing the bill of lading at present, although the want of due diligence proviso stipulated in ITC-Hulls 95 extends the responsibility to any shore manager, this is not enough to believe that BCS operator can replace the master in this respect. Therefore, the insurer needs to consider adding clauses to the existing H&M policies. For example, when BCS operator performs navigational functions, it can be considered as master.

As to whether other ordinary controllers of BCS operator meet the definition of "crew", at least in the UK, the insurer needs to pay extra efforts to add or modify the corresponding terms to exclude other ordinary controllers of BCS operator.

Nowadays, pilots can perform their duties by remote means, which means that it is possible for BCS operators to be regarded as "pilot" legally when performing piloting tasks. However, the port authorities of some countries do not allow autonomous berthing. In this case, BCS operator cannot be considered as "pilot". Therefore, the insurer needs to consider adding or modifying clauses to make it clear that when the port authority does not allow autonomous berthing, BCS operator cannot be regarded as "pilot" and will not pay for the loss or damage of the ship caused by its negligence when the pilot assists the MASS to enter or leave the port.

4.3 Whether it is necessary to modify the risk clauses in the existing H&M policies

Under the current legal framework, it is difficult to identify cyber-attacks as piracy due to the lack of "violence" factors. When the traditional definition of pirate risk insurance cannot meet the urgent needs of MASS policyholders, the insurer is advised to adopt the new idea of qualitative analysis of hacker

cyber-attack on MASS proposed by American scholar Paul W. Pritchett, list the illegal ship arrest as one of the insured perils in the existing H&M policies, and adjust the premium appropriately based on the risk prone situation.

The existing design of H&M policies in London insurance market does not consider cyber risks, which may lead to trigger silent cyber cover, which makes the insurer have to pay loss claims from insurance policies not designed for this purpose, and even cause great controversy. Cyber-attack risks as the risks that the MASS are more likely to face, the insurer should consider adding cyber-attack risks which can better balance the risk and income in the existing insurance policy, so as to attract more customers to insure their MASS and also to protect insurers themselves from legal disputes.

4.4 Whether it is necessary to amend the existing H&M policies clauses concerning 'incompetence, misconduct' and 'barratry'

Both barratry and wilful misconduct exist in the existing H&M policies of the London insurance market. The existing barratry clause is still of high insurance value for MASS, and the insurer does not need to spend any effort to modify the barratry clause. However, it should be noted that in the practical application level of this clause, the formation of barratry requires that BCS operator and shipowner cannot be the same person, must be independent of the owner, or cannot have insurable interest in the insured ship, otherwise, the insurer can refuse to compensate by proving that the insured privy in or agrees to do so. Wilful misconduct is one of the most typical types of fraud claims in marine insurance, which is one of the listed excluded risks. In view of the situation discussed above, the insurer does not need to amend the relevant clauses. However, it should also be noted that the insured (including the BCS operator with insurable interest in the insured ship) must personally intervene in or participate in the event causing the loss.

The "incompetence" clause in IAPC (Hulls) may be included in IHC 03, which is also an issue worthy of the insurer's attention. The clause itself does not need to be modified. However, in view of the fact that the BCS operator's incompetence may involve the seaworthiness of the MASS, thus affecting the final claim result, it is necessary to establish a multi-dimensional judgment standard for the BCS operator's incompetence. It is suggested that the insurer should refer to Maritime UK Code of Practice to formulate a reasonable judgment standard from the following aspects: Seafarers' basic competence requirements, relevant training, understanding of IMO instruments, safe navigation ability and emergency response

ability, and "*adjust according to different standards of flag state of the insured MASS*"⁴⁷, in case of legal disputes arising from different standards of incompetence.

⁴⁷ Maritime UK Code of Practice, para 11.3.1