
A Supporting System for Relieving COVID-19 Crew Change Crisis

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Abstract: Since the COVID-19 pandemic broke out, a large number of international seafarers have been stranded aboard ships. Some seafarers have been banned from coming ashore even for over 18 months. Crew change crisis is a time bomb for marine trade because seafarers play an important role in ensuring the safety of ship navigation and maintaining the smooth flow of global supply chain. The purpose of this study is to analyze the reasons of crew change crisis and legal framework of seafarers' right to stop working and leave the ships they serve, and to provide a supporting system for relieving COVID-19 international seafarers change crisis. Situation analysis, which is a widely held method in health policy research to understand the present condition, contributes to finding out the reasons for crew change crisis. Statistical analysis is used to demonstrate the obstacles encountered in public health governance on crew change. Information is collected from official websites of governments and international organizations. The study provides three solutions for relieving COVID-19 crew change crisis based on China's successful experience. The first is to implement refined management including monitoring of the pandemic, crew transportation, tracking and preventing mechanism. The second is to construct public-private collaboration mechanism and provide policy support on helping shipping companies reduce cost, which contributes to shipping companies to relieve their economic pressure on seafarers shift arrangement. The third is to construct international cooperation mechanism for crew changes.

Keywords: COVID-19, Crew Change Crisis, Crew Management, Crew Health, Marine Policy

1. Introduction

On January 30, 2020, World Health Organization (WHO) declared COVID-19 constitutes a Public Health Emergency of International Concern (PHEIC). In order to prevent the spread of COVID-19 by shipping, many countries have taken strict travel restrictions, such as domestic lockdown and border closure. [1] As of September 2020, more than 400,000 international seafarers have been stranded on board, due to severe restrictions and crew checks. [2] At the same time, over 200,000 seafarers failed to replace those who were prohibited from disembarking. [3]

However, lots of crew changes have been cancelled because of port States' strict border controls responding to maritime public health risks during the COVID-19. Taking Mearsk as

an example. There are 6,500 seafarers onboard every day, two-thirds of whom were out longer than the maximum time agreed in the contract in July. [4] Some port States allow international seafarers to shift in some of their ports but adjust their policies from now and then. For example, in mid-July 2020, Singapore released international seafarers' repatriation to a larger extent, while then cast severe restrictions on seafarers' repatriation due to tampering with virus detection results by crew members. [5]

The pandemic has been lasting for more than a year, and the continuous emergence of new mutation of virus made the crew change crisis a chronic disease. Moreover, crew change crisis may lead to infringements of seafarers' right to life and health. The watch-keeping system during navigation is significantly different from that on land: seafarers perform watch-keeping tasks on deck and cabin twice a day, 4 hours each time with 8

hours interval between them. This watch-keeping system requires tough physical and psychological ability of the crew. There is no detection reagent and specific medicine against newly emerged virus because of the poor medical conditions on board, neither is there any effective isolation measures. Once COVID-19 outbreak occurs on board, the right to life and health of all seafarers on that ship is threatened.

In addition to physical health, international seafarers' psychological health is also very important for the sustainable development of seafarers' profession. On the one hand, some countries have taken travel restrictions to prohibit seafarers from disembarking, or set harsh conditions for seafarers to disembark. Seafarers who work overdue on board are basically uncertain about whether they can get off the ship and when. Therefore, they have to deal with the double suffering of being unable to get repatriated and of being possibly infected with the virus. On the other hand, onshore seafarers are worried about the lack of incomes due to their inability to work on board. A whole shift procedure includes onboard seafarers' disembarking to rest on land and onshore seafarers embarking to work. Once shifts are hindered, international seafarers will have negative emotions such as tension and anxiety. Such emotions can lead to the decline of immune function, which is particularly detrimental to the resistance to highly infectious diseases such as COVID-19. Crew change crisis is seriously harmful to the physical and mental health of international seafarers and causing great risk to the safety of navigation. It cannot be denied that a humanitarian disaster has been happening at sea.

Considering the background above, this paper analyzed the reasons of crew change crisis and the rights enjoyed by international seafarers under international law and policies. The construction of a supporting system for relieving crew change crisis plays an important role in ensuring the physical and mental health of international seafarers, the safety of ship navigation, the smooth operation of the global logistics supply chain.

2. Reasons for COVID-19 Crew Change Crisis

2.1. The Tension Between the Risk from Imported Cases and the Safety of Public Health

It's common that international seafarers carrying the viruses enter into the port state. For instance, after the government of Australia announced that the international maritime crew could acquire for an exemption to travelling restriction, [6] seafarers caught the virus were found on board the international going ship called at Port Hedland in western Australia. On September 16th, 17 seafarers aboard Liberian-flagged Patricia Oldendorff anchored off Port Hedland tested positive for COVID-19 found. [7] On October 11th, another confirmed case was found among seafarers on Panamanian-flagged Vega Dream called at the same port. [8]

In China, maritime public health risks caused by crew changes also continued to occur. In the night of March 17, one

of the 22 seafarers on the Danish-flagged Gjertrud Maersk in Ningbo port was diagnosed as a new confirmed case, and another 4 asymptomatic infected persons. [9] On June 26th, 11 seafarers on the Panamanian-flagged MSC Flavia at Ningbo Port were diagnosed as new confirmed cases. [10] On July 17th, a crew member on board Panamanian-flagged Citrine called at Dongjiakou Port in Qingdao was diagnosed. On September 23rd, two seafarers were diagnosed on the Liberian-flagged San Diego called at Dalian Port, and two were asymptomatic infected. [11]

Although Chinese ports allow foreign crew change operations subject to the epidemic prevention and control requirements, some shipping companies failed to meet these requirements. Therefore, Chinese government has implemented a "fuse mechanism". Chinese Ministry of Transport, together with the General Administration of Customs and the State Immigration Administration, strictly implement fuse mechanism as a result of COVID-19 cases were detected on board frequently. As at 3 August, four fuses had been carried out and a total of 18 shipping lines and 438 ships had been suspended foreign crew change operations. [12]

Table 1. Statistics on shipping companies being suspended foreign crew change operations.

Date	Numbers of shipping companies	Numbers of ships
February 2, 2021	2	23
April 2, 2021	1	13
May 19, 2021	6	100
June 5, 2021	9	336
August 13, 2021	6	59

The COVID-19 is highly infectious. Since Tedros Adhanom Ghebreyesus, the Director-General of WHO, announced that the COVID-19 epidemic had shifted into the pandemic on March 11th, 2020, [13] governments all over the world have taken strict entry-exit control measures to ban crew changes, in order to prevent imported cases and to protect the safety of domestic public health. Accordingly, the primary task of ensuring the right of international seafarers to repatriate is to ensure the safety of the crew changes, to minimize the risk of input of overseas cases caused by crew changes, and to avoid endangering the public health safety of relevant countries.

2.2. The Tension Between the Enormous Demand for Crew Changes and the Limited Social Resources

Statistics show that approximately 150,000 international seafarers worldwide need to be repatriated each month. [14] During the pandemic, there are few countries that actively face the issue of crew changes. Policies of various countries are greatly affected by the severity of the pandemic and revised frequently. The ports that crew changes are allowed may adjust their policies at any time. Countries with limited social resources are difficult to cope with such a huge demand for crew changes under such circumstances.

Specifically speaking, the social resources needed for crew

changes include, inter alia, medical resources and transportation resources. First, conducting crew changes requires adequate medical resources as security, including providing qualified protective equipment for front-line port personnel and providing effective detection reagents and suitable isolation and quarantine sites for seafarers. At present, only a few countries are willing to provide their limited medical resources for crew changes. For example, since September 1st, 2020, the Singapore Maritime and Port Authority has established a crew facilitation center at Tanjong Pagar Terminal. The organization contains on-site medical center, detection, reception sites, as well as \$736,000 crew changes fund. [15] Second, governments have opted to suspend international flights and close borders, ports and airports in order to avoid imported cases. As a result, traffic resources are sharply reduced, and it is difficult to meet the needs for crew changes.

2.3. The Tension Between the Soaring Cost of Crew Changes and the Goal of Reducing of Enterprises Cost

From the perspective of enterprise management, reducing enterprise cost is an important goal of shipping enterprises in cost control. The crew cost lies in the fixed operating cost of the enterprises and is an important part of the cost of shipping enterprises.

During the pandemic, affected by the travelling restriction policies of various countries, some shipping companies have to arrange ships to a very small number of ports that allow seafarers to repatriate, and to help seafarers reach repatriation destinations from port countries through chartering flights. Compared with crew changes during the normal situation without the pandemic, the aforesaid process may cause hundreds of thousands of dollars increase in the cost of shipping enterprises. Moreover, international seafarers may finally reach their repatriation destination after crossing borders of countries one after another, which requires multiple COVID-19 tests and long-term isolation, resulting in a huge increase in the cost of crew changes. Taking the Capesize bulk carrier as an example, since January 2020, the cost of crew changes has increased by 10% daily. By mid-July, the cost had reached 3144 dollars. [16] There was an another shipping company paid 820 thousand dollars for 18 international seafarers' repatriation. [17]

3. Necessity of Relieving Crew Change Crisis by Law

3.1. Requirements of International Conventions and Domestic Laws

Those seafarers who were denied crew changes and had to keep working onboard far beyond their contracts service periods should be allowed to exercise their rights to stop working, leave ships, and return home. These are basic rights of seafarers by virtue of Maritime Labour Convention (MLC, 2006), adopted by International Labour Organization (ILO).

MLC, 2006 Standard A2.5.2 (b) stipulates that the maximum duration of service periods on board for seafarers shall be less than 12 months.

Some states parties to MLC, 2006 have made the same or similar provisions in their domestic laws. In the view of Chinese law, the same provision exists in a Chinese administrative regulation on shipboard seafarers' working and living conditions to ensure seafarers are rested before next voyage.

3.2. Appeals from International Organizations

To help crew changes take place safely and recover the sustainable development of world shipping economy, International Civil Aviation Organization (ICAO), ILO, and the International Maritime Organization (IMO) issued a joint-statement to call upon member government states to recognize seafarers as "key workers". [18] The UN Secretary-General also designate seafarers and other marine personnel as "key workers" in June 2020. [19] Besides, the UN General Assembly unanimously adopted a resolution on "International cooperation to address challenges faced by seafarers as a result of the COVID-19 pandemic to support global supply chains" (A/RES/75/17) on 1 December 2020. Member states are urged to designate seafarers and other maritime personnel as key workers. Moreover, the continuous emergence of new COVID-19 variants also makes the crew change crisis a chronic issue, which arouses great concern of international society.

4. Suggestions on Facilitating Crew Changes

4.1. Refine Management Mechanism for Pandemic Prevention and Control

4.1.1. Legal Basis of Refine Management Mechanism in China

Port, the gateway for a nation, is one of the most effective line for containing the spread of the pandemic. In order to protect the right to life and health of international seafarers, comprehensively promote the pandemic prevention and control, the Ministry of Transport, the Ministry of Foreign Affairs, the National Health Commission, the General Administration of Customs, the National Immigration Administration and the Civil Aviation Administration of China jointly issued the Notice on Accurately Preventing and Controlling the Epidemic Situation among International Seafarers on April 22, 2020. The notice points out that the management of COVID-19 pandemic prevention and control shall be refined.

4.1.2. The Implementation of a Refined Management Mechanism

When it comes to crew change crisis, the implementation of a refined management is to divide crew changes activities into several stages and then ensure maritime public health security at each stage. In this way, a full-chain of pandemic risk

prevention and control system for crew changes will be built.

Management activities for crew changes can be divided into the following three stages:

1. Monitoring of the pandemic

At this stage, the maritime administration should closely monitor the latest pandemic situation of the ship and collect accurate information. Crew change applications must be submitted with a certificate of negative COVID-19 nucleic acid test result issued within three to seven days. For the seafarers on board, the information about the ship's navigation route, sanitary condition of ships and health status of seafarers is an important factor to determine whether they are allowed to be repatriated and how to be repatriated.

However, in the event of COVID-19 outbreak on board, crew changes will be suspended. 15 crew members aboard the Liberian-flagged Omicron Sky, which is managed by Omicron Ship Management, tested positive for the coronavirus. Another 21 crew members aboard Panamanian-flagged Asia Spring, which is managed by Dia Yuan International Shipping Co., also tested positive for the virus. In such a case, crew changes of the vessels managed conducted by these two companies were suspended in China for 30 days in response to the virus.

2. Crew transportation

At this stage, seafarers onboard will be allowed to leave the ship, enter the country, receive nucleic acid testing and a shortened compulsory quarantine period of about 14 days at designated place of quarantine. Local governments shall ensure the public health safety through the whole closed-loop epidemic prevention and control process enabled by the point-to-point model. That is, arranging the special cars respectively among ports, stations and airports. At the same time, the trajectory and health status of international seafarers should be recorded by mobile Internet-based health QR code so that a strong defense against the virus at the borders could be built.

3. Tracking and preventing mechanism

The goal of this stage is to avoid regulatory loopholes by reviewing early and mid-term management work. First of all, the local government should collect, collate, analyze, and report fully and completely the public information such as seafarers' health status and travel statistics, and share the information with other departments to meet the requirements of the joint prevention and control mechanism. Besides, the COVID-19 virus has an incubation period about 14 days. Some international seafarers infected with the virus may become vectors of the virus because of the incubation period. Therefore, at this stage, once the international seafarers are found abnormal, the situation should be reported immediately to avoid the regulatory loopholes.

4.2. Assistance for Shipping Companies from Government

4.2.1. Heavy Responsibilities of Shipping Companies

In order to avoid international seafarers overdue service, shipping enterprises bear the obligation to conduct crew changes. In order to achieve a smooth process of crew changes during COVID-19 pandemic, this obligation should be strictly

enforced.

The border policies of each country vary with the severity of the pandemic. Affected by this, shipping companies have to arrange ships to a very small number of ports where seafarers are allowed to get off their ships, and charter flights to help seafarers arrive at the destination of repatriation from port states. During this period, seafarers are required to undergo multiple nucleic acid tests and long-term isolation. The costs generated from these activities have driven up the costs for crew changes and led to a huge increase in shipping cost, which have become one of the main reasons for heavy responsibilities of shipping companies.

The Neptune Declaration on Seafarer Wellbeing and crew changes, aiming to relieving crew change crisis, has been signed up by more than 800 organizations. [20] The declaration proposed several key actions and called on governments to join in line with shipping companies to make their efforts to conduct crew changes.

4.2.2. Policy Support on Helping Shipping Companies

Reduce Costs

As the crew change crisis continues, shipping companies are obliged to reduce the number of overdue seafarers. However, it is quite a hard work for shipping companies to conduct crew changes on their own during COVID-19 outbreak. Many of them call for a concerted effort from governments. In this case, social public resources should be integrated, and cooperation between public authorities and shipping companies should be strengthened to maximize social utility through resource complementarity.

In order to ensure safe and quick crew changes, the port state should cooperate with shipping companies based on the principle of territorial management to reduce costs of crew changes. Firstly, it is advisable for local government to encourage port enterprises to reduce port fees. For example, Capinpin port, where crew changes are allowed, charges only half the fees for ships conducting crew changes. [21] Secondly, local governments can encourage airlines to expanding hub airport capacity. Some airlines cut capacity or suspend flights during COVID-19 crisis. Normal crew changes are unable to be carried out due to the lack of airline connectivity while international flights are the primary means by which seafarers arrive at repatriation destinations. International Chamber of Shipping (ICS) and International Air Transport Association (IATA) also appealed to governments all over the world to ensure airline connectivity between key shipping hubs so that seafarers can be repatriated by air. The approaches above contribute to mitigating the shortage of international transportation resources and reducing the crew changes costs for shipping enterprises effectively.

4.3. International Cooperation mechanism for Crew Changes

4.3.1. The Necessity of International Cooperation

Generally, few international seafarers complete shifts by direct means, and need to transfer between countries. The process of globalization undermines the capacity of sovereign

states to protect the public from infectious diseases alone. Public health has become an international issue waiting to be addressed through international cooperation. The MLC, 2006 Guideline B4.3.11.1 recommends that all members cooperate in seafarers' health protection.

Repatriation of international seafarers generally requires intercountry transfers. Travel restrictions, such as domestic lockdowns and border closures, may prevent scheduled crew changes during the COVID-19 outbreak. In addition to the policy gap between countries, international seafarers need adequate social resources to complete shifts. Firstly, crew changes are highly dependent on international traffic resources. In August 2020, 93 repatriation destinations around the world closed their borders entirely to tourism. [22] By December 2020, 25% of tourist destinations had continued to close the borders. [23] Travel restrictions in some countries have further led to flight stoppages. [24] Even if seafarers are granted travel restrictions exemption in some countries, crew changes will be indirectly blocked due to the sharp decline in international traffic resources. Secondly, enough medical resources are needed to ensure that crew changes will safely take place during the pandemic, including providing qualified protective equipment for port front-line personnel, providing effective detection reagents and quarantine facility and suitable place of isolation for seafarers.

4.3.2. The Current Situation and Prospect of International Cooperation Mechanism

There are mainly two forms of international cooperation: one is cooperation among countries, and the other is cooperation among countries and international organizations. Cooperative governance, a problem-solving-oriented governance model, provides temporary solutions and is able to take advances in science and technology quickly. Implementing the principle of international cooperation, which echoes the concept of building "community of shared future for mankind", contributes to protecting the health of the crew and resolving crew change crisis.

At international level, there are international organizations, such as WHO, IMO, ILO, the International Federation of Transport Workers (ITF), promoting global coordination and communication by providing practical guidance and recommendations. In addition, many countries have begun to carry out multilateral or bilateral cooperation mechanisms among countries or regions on crew change crisis. During the outbreak of COVID-19, IMO has issued a series of complementary circulars on crew changes. Most member states have actively advocated these circulars and accordingly adjusted domestic rules.

February 10, 2021, IMO issued a Circular Letter No. 4221 / Add. 8 to share China's Guidance on the Prevention and Control of COVID-19 on board (Version 5.0). This is the fifth time that IMO has shared China's experience in the prevention and control of marine crew epidemic with the world following the former four versions of the guidance. At the same time, multiple approaches such as full reference of international advanced rule of law and active communication

with IMO and WHO are used to carry out international exchanges and cooperation in international crew changes work by Chinese government.

In most cases, port state authorities only allow seafarers of their nationality on international navigation ships to shift at their territory within their territory during COVID-19 outbreak. In fact, a large number of seafarers, whose right to stop working and leave the ships they serve on should also be paid attention to, failed to leave ships. In China, Chinese seafarers, who are in trouble abroad and strongly request to be arranged to return home, should be arranged in a proper way. [25] During the pandemic, a new mode of crew changes emerged, that is, taking foreign ports as the transfer station. For example, there were eight seafarers having to extend their service on Vessel COSCO Belgium. On 25 May 2020, COSCO Belgium called at Port of Rotterdam, together with the vessel COSCO Virgo. Eight Chinese seafarers boarded the vessel COSCO Virgo and returned to their home country and families successfully. This mode contributes to meeting seafarers' demand for repatriation from non-domestic voyages.

Considering that this approach cannot always work, as for other seafarers who are unable to be repatriated, the states of nationality of seafarers should carry out diplomatic activities centered on facilitating crew changes according to the principle of international cooperation. Specifically, the States of nationality of seafarers can try to negotiate with other coastal governments and relevant international organizations on international cooperation to facilitate crew changes. The content of the negotiation is that all parties update entry policy for seafarers, grant international seafarers the COVID-related travel restrictions exemption or set up special temporary visa-free transit area for seafarers. These adjustments typically occur when port states allow local embassies and consulates of the states of nationality of seafarers to assist or treat their seafarers in distress. Accordingly, the country of nationality of the seafarer should help port states alleviate the shortage of medical resources with capacity-oriented approaches. To be specific, it can provide port states with medical resources such as protective equipment and COVID-19 nucleic acid detection kit to help these countries to solve the problem of insufficient medical resources.

5. Conclusion

Many ships are refused entry to ports and scheduled crew changes are prevented at the mercy of travel restriction. Plentiful of seafarers have been required to extend their service on ships long beyond their contracts working period and unable to be replaced during COVID-19. Extremely long periods of service are threatening their health.

There are about two million seafarers employed throughout the world merchant fleet. [26] According to the 2020 China Seafarers Development Report, there are 808,183 seafarers in China by the end of 2020, including 592,998 international seafarers. [27] These seafarers play a decisive role in the global supply chain and the future of shipping. World maritime trade volumes rose to 11.1 billion tons in 2019 and

will plunge by 4.1% in 2020 under the influence of COVID-19. [28] The influence of seafarers on world maritime trade cannot be ignored.

To help seafarers exercise their rights to stop working, leave ships, and return home, suggestions on relieving crew change crisis are provided. Once after berthing of a vessel, government of port states shall monitor pandemic aboard, transport crew members by the point-to-point model, and track physical condition of crew members to reduce the likelihood of disease spread caused by crew changes. What's more, government of port states are advised to provide assistance to shipping companies bearing heavy responsibilities for costs of crew changes from the perspective of port fees and airport capacity. Considering that repatriation of seafarers is usually based on intercountry transfers, international cooperation mechanism for crew changes is necessary. Relieving crisis of crew changes is both an implementation of the obligations under MLC, 2006 and a response to the identity of "key workers" of seafarers.

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