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## Research on safety management for marine tourist ships in Jiaozhou Bay

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**WORLD MARITIME UNIVERSITY**

Dalian, China

**RESEARCH ON SAFETY MANAGEMENT FOR  
MARINE TOURIST SHIPS IN JIAOZHOU BAY**

By

**ZHANG GUODONG**

**The People's Republic of China**

A research paper submitted to the World Maritime University in partial  
Fulfillment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

**(MARITIEM SAFETY AND ENVIRONMENTAL MANAGEMENT)**

2015

## **DECLARATION**

I certify that all the materials in this research paper that are not my own work have been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this research paper reflect my own personal views, and are not necessarily endorsed by the University.

(Signature): .....Zhang Guodong.....

(Date): .....June 29, 2015.....

**Supervised by:**

Zheng Yunfeng

Professor

Dalian Maritime University

## **ACKNOWLEDGEMENTS**

It is my honour to study in Dalian Maritime University (DMU), thanks all the persons who help me so much.

In the beginning, I would like to express my sincere appreciation to my supervisor, Professor Zheng Yunfeng who guides my paper throughout all the process. And also, I would like to thank to all the professors and my dear classmates in the course of Maritime Safety and Environmental Management (MSEM) for their help and support all the year round.

Furthermore, I appreciate Shandong MSA and its branch department Qingdao MSA for offering me with the opportunity to study here.

Last but not least, I would like to dedicate this research paper to my family members who support me so much during this period.

## **ABSTRACT**

**Title: Research on Safety Management for Marine Tourist Ships in Jiaozhou Bay**

**Degree: MSc**

Along with social progress and economic development, the demand for tourism has been increasingly diversified, and the consumption for high-end leisure has been increasingly frequent. Among them, sea sightseeing or tourism using marine ships as a carrier, is both emerging travel demand. Sea sightseeing tourism has developed to a very high degree abroad, especially in the forms of yacht and cruise tourism. But in China, it is only in an emerging or primary stage of development.

As an important coastal tourist city in northern China, the tourism resources of Qingdao are mainly concentrated in Jiaozhou Bay. Jiaozhou Bay tourism is one of the main features of Qingdao's tourism economy, and marine tourism safety is the lifeline of Jiaozhou Bay's tourism industry development. For transportation, once tourist ships encounter water accidents, there will be serious threats to the safety of people's lives and property, especially major accidents that will lead to serious social influences and negative effects. Therefore, it is very necessary to analyze and study the effects brought by tourist ships on the water traffic environment in Jiaozhou Bay, also to master safety situations comprehensively. These are the imperative steps to present practical security suggestions. Besides, in the process of marine tourism development, marine administration institutions gradually improve the management mode and experience of marine tourism safety.

Based on the analysis of development of tourist ships both at China and abroad, the

study pointed out that Jiaozhou Bay has the advantages to develop it. Combined with the present status of the marine tourism safety in Jiaozhou Bay, via plenty of questionnaires, on-the-spot investigations, studies, and based on the perspectives of marine sector management and navigation safety protection, the study analyzed the existing problems of tourist ship safety in Jiaozhou Bay, summarizing the countermeasures for the research of safe, efficient and convenient tourist ship safety management.

**Keywords:** Jiaozhou Bay; tourist ships; Management

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## **LIST OF ABBREVIATIONS**

|          |  |
|----------|--|
| AIS      | Automatic Identification System  |
| MSA      | Marine Safety Administration   |
| SOLAS    | CONVENTION FOR THE SAFETY OF LIFE AT SEA                                   |
| MARPOL   | The International Convention for the Prevention of Pollution<br>from Ships |
| ISPS     | International Ship and Port Facility Security Code                         |
| ISM      | International Safety Management  |
| IMO      | International Maritime Organization  |
| GMDSS    | Global Marine Distress and Safety System                                   |
| ECDIS    | Electronic Chart Display and Information System                            |
| GPS      | Global Positioning System  |
| WCDMA    | Wideband Code Division Multiple Access                                     |
| Co.,LTD. | Company Limited  |
| FSC      | Flag state control   |
| PSC      | Port state control   |

|      |                                  |
|------|----------------------------------|
| FRP  | Fibre Reinforced Polymer/Plastic |
| CCTV | Closed-circuit television        |
| CCS  | China Classification Society     |
| KR   | Korean Register of Shipping      |
| TEU  | Twentyfoot Equivalent Unit       |

## **Chapter 1 Introduction**

### ***1.1 The Research Background and Significance***

#### **1.1.1 The Research Background**

In April 2009, during the period of inspection in Shandong, General Secretary Hu Jintao indicated, "Developing the marine economy, exploiting the marine resources scientifically, cultivating marine advantaged industry, will build the Blue Economic Zone in the Shandong peninsula." In the Shandong Peninsula Blue Economic Zone development planning, there is a clear statement of building Qingdao, Yantai, Weihai and other cities as well-known coastal carefree holiday destinations at China and abroad. In the development and construction of the Blue Economic Zone, tourism has an irreplaceable advantage; so marine tourism development has an important significance in promoting city transformation and industry adjustment. The geographical position of Qingdao is ideal, and the marine tourism resources are abundant. So the focus of tourism development in Qingdao is to develop the marine tourism vigorously, and this is one of the ways to realize the transformation and upgrade of tourism in Qingdao. The study on the present situation and development of tourist ships in Jiaozhou Bay caters to the trend of the tourism development in the region. (Cheng, 2014)

As a coastal tourist city, Qingdao should make an area focused on the "sea", but the development of marine tourism resources are mainly concentrated along the coast, and the development in marine tourism is slow. There are a few enterprises engaged in marine tourism development and operation. The product providers of marine tourism are either vendors who work in their own way, or scenic spots managed by



public institutions. The number of marine tourism companies with real marketing and corporate management is smaller. Secondly, the navigation environment of Sino-Korean and the Sino-Japanese routes is complicated, the ship density of navigable waters is high, the weather and sea conditions are harsh, and marine accidents frequently occur. Moreover, the existing laws and regulations are not fully applicable to non-operating yachts and such problems bring certain difficulties to water management work. Via studying the situation of tourist ship safety management in Jiaozhou Bay, a status quo of tourism safety management was reached. Based on the present situation, suggestions and measures on water tourism safety management were presented, so as to further promote healthy and long-term development of tourist ships in Jiaozhou Bay.( Fan, 2014)

### **1.1.2 The Research Significance**

#### **1.1.2.1 The Theoretical Significance**

1) On the theoretical basis of the research on ship safety management, innovations to marine tourism safety were made. From the perspective of marine administration, some new ideas for marine tourist ship safety management were presented.

2) Based on the exploration of marine tourist ship management practice, combined with regional, environmental, cultural and other factors, the emphasis and difficulty of marine tourism safety management in Jiaozhou Bay was studied. The key points and difficulties of marine safety management services were reached. The future development direction of marine tourism safety was analyzed. All of these help prevent tourist ships from encountering marine safety accidents, and promote the development of marine tourism security.

3) On the basis of comparative analysis between current policies on marine tourism safety, from the perspective of marine management, policy suggestions on marine tourism in Jiaozhou Bay were provided, creating a reference point for the decision-making of relevant departments in the government.

### **1.1.2.2 The Practical Significance**

#### 1) Demonstration Effect

The management of marine tourist ship was explored, and the advantages and disadvantages of marine tourist ship safety management in Jiaozhou Bay were studied. At the same time, a study on marine safety management was conducted. Valuable measures and suggestions on marine safety management were proposed via research, and innovations on management measures of tourist ship safety were reached, to create a safe environment for marine tourism in Jiaozhou Bay, to provide reference value for domestic marine tourist ship safety management, and to further promote the development of domestic marine tourism economy.

#### 2) Radiation significance

The marine tourism industry of Jiaozhou Bay is the leader in Shandong, so the success or failure of the marine tourism development in Jiaozhou Bay, will directly affect the surrounding cities, such as Rizhao, Weihai and others, and even the whole marine tourism development in Shandong province. Via the comparative analysis on the management policies and measures of marine tourism safety, how to maximize the service provided by marine tourism safety management to marine tourism in Jiaozhou

Bay was studied. Promoting the development of the local tourism economy will lead the marine tourism development in Shandong province towards the direction of safety and health.

## ***1.2 Literature Review***

### **1.2.1 The Current Situation of Overseas Research**

There is a long history of the marine transport industry, in the area of transport management; there are many studies on marine transportation management. The corresponding international conventions, national laws and regulations, local decrees and administrative or local rules are relatively perfect. One of the earliest developments in marine tourism is mainly cruise travel, which cruises to major ports around the world. And with advantage of coastal tourism resources, some countries and cities developed coastal tourism. So since the early 19th century, both at China and abroad, especially in western developed countries, increasing attention has been paid to the safety management of marine transport industry, and the research of marine tourism has been increasingly broadened and improved.

1) The establishment of the SOLAS and MARPOL conventions, ISPS code, ISM rules, other conventions and rules, has regulated the administration of the shipping company, and significantly controlled the prevention of ship navigation safety and pollution events.

( Yu,2014,pp.25-28. )

2) Professor Chengi Kuo from the Ocean and Marine Engineering department of Strathclyde University Glasgow, put forward five steps on how to realize the navigation

safety of passenger ships: risk identification, risk assessment, risk aversion, crisis management and safety management.( Wei, 2013, pp. 19-24)

3) The water traffic safety management is mainly conducted according to law. In Japan, for example, they have already formed the relatively perfect system of water safety laws and regulations. In addition to numerous ministry instructions, there are regulations and normative documents formulated by the Japanese coast guard, which are all matching with related laws. Japan also has the Six Sea Rules, Six Harbour Rules, Six Ship Rules, Six Crew Rules, and Six Rules of Marine Security, etc.( Li,2012)

4) In an article by Australian academics Jeffrey Wilks and Barry Watson the tourism traffic safety was studied and the dangers of international tourists sailing in an unfamiliar Australian environment were discussed, and a national research and management plan to guide the policy and planning in that region was proposed.( Wilks &Watson, 1999, pp.645-654)

5) Dracos vassalos et al think that advanced technology can improve the safety of passenger ships, but this needs the power of IMO and other organizations to accelerate the science and technology promotion and application.( Gao & Dracos , 2013,pp.77-87)

### **1.2.2 The Current Situation of Domestic Research**

1) Professor Ma Guozhong from Southwest Jiaotong University pointed out: marine tourism is a tourism project involving numerous industries; some problems in the traffic safety of city water tourism are needed to be solved. Among them, one is how the government should regulate, guide, and serve marine tourism. As the responsible

department for transportation, the marine sector plays a dual role in supervising and serving. ( Yang & Ma & Zhou, 2008, pp.30-32)

2) Deputy Director Wang Xiufeng from Jiangsu Marine Bureau pointed out in the context of “the Study on Construction of Service-oriented Marine Approaches”, that to construct service-oriented marine affair, there must be effective managements, safe development guarantees, and insistence on the concept that the most effective management is the best service. ( Zhou, 2013))

3) The Division Head Xie Ruiliang from Zhujiang Aviation Administration Bureau, via the analysis of the current situation, concluded that the east channel cruise ship safety management of Zhujiang river does not adapt to the current situation of tourism development.He conducted a deep analysis, and proposed thatthe establishment of long-term mechanism and building of integrated water management platforms can ensure navigation safety and high-quality service.( Xie,2009,pp.32-37)

4) Mo Huajian from Zhanjiang Marine Bureau, conducted analysis on the el-Salam 98 marine accident and put forward marine safety precautions.( Mo, 2006, pp.51-53.)

5) Division Head Jin Hailin from Shaoxing Local Marine Bureau, analyzed the current situation of tourist ship safety on the Shaoxing river, and proposed to speed up the relevant laws and regulations, to promote the construction of a safety management mechanism, to improve the system of cruise ship navigation, to set up a regular report and contact system, to implement the crew safety education and other suggestions and countermeasures on tourist ship safety management. ( Jin,2007,pp.32-36)

6) Guo Jing from Rizhao Marine Bureau, via the analysis on some passenger ship accidents, researched the characteristics of passenger ships, the causes of accidents, regulatory focus and difficulties. Via applying the theory and method of systematology, quantitative evaluation model to assess passenger ship safety and reliability was established. Combined with practical work experience in marine, the key points for management on passenger ship in Shandong area were explored; the management pattern reforms of marine safety administration on passenger ships are discussed. ( Guo,2014)

### ***1.3 Main Contents and Methodology***

This paper introduces marine tourism resources which conducive to the development of tourist ships and related management experiences at China and abroad, and analyses the present situation of the safety management on four kinds of marine tourist ships in Jiaozhou Bay. Thus it gives suggestions on how to strengthen maritime safety management.

The research is based on data collection, questionnaire survey, the domestic and foreign management experience analysis, etc. The main research methods include the following four aspect:

First, theoretical research. For example, through researching related laws and regulations of maritime regulatory, loopholes and inadequacies are found out. Its applicability and pertinence is enhanced.

Second, data analysis. For example, analyses geographical locations, natural conditions,

ports, wharfs, the number of vessels, routes, seats, and visitors, and researches the Marine tourism resources, and then gets tourism development trend of ship research, which can help create a decision guide for ship safety management.

Third, technology research. The current domestic ship information technology has developed rapidly; GMDSS (Global Marine Distress and Safety System), ECDIS (Electronic Chart Display and Information System), GPS (Global Positioning System), AIS (Automatic Identification System), and other kinds of equipment have been gradually applied to tourist ships. With the application of modern information technology, the transportation information of the ship itself, between other ships, port traffic centres, and ship companies can be processed, and formed into an information network, which is conclusive help for the maritime sector real-time monitoring and emergency disposal and emergency rescue.

Four, statistical analysis research. For example, The analysis of the quantity of tourist ship traffic accidents and the reasons ( See Appendix Table 6 )provides the experience of marine traffic security management and guidance for performing security management responsibilities of marine departments.

## **Chapter 2 Tourist Ship Review**

### ***2.1 Relevant Concepts***

#### **2.1.1 The Definition of Tourist Ship**

Boats and ships: the generic term for all sorts of vessels, which can sail or berth in waters, with the use of transporting or operating as transportation means (Guo, 2013). “The Marine Traffic Safety Law of the People's Republic of China Article 50” provides a clearer definition of ship: "ship" refers to all types of displacement or non-displacement ships, rafts, seaplanes, submersibles, and mobile platforms.

Marine tourism has a strong target, generally with specific routes, voyages, and the navigation area basically is confined to coastal waters or rivers. Marine tourist ships are transportation means that help tourists achieve marine space displacement, with the purpose of travelling.

#### **2.1.2 The Classification of Marine Tourist Ships in Jiaozhou Bay**

Marine tourist ships in Jiaozhou Bay can be divided into four categories: marine tourist sighting ships, land (island) island passenger transport ships, Sino-Korean, Sino-Japanese Passenger-Container Liners and private yacht.

1) Marine tourist sighting ships refers to all kinds of motor ships operating in water sightseeing, leisure, entertainment and other activities in the waters of Jiaozhou Bay. Such as commercial sightseeing ships (below 12 passengers), marine tourism and passenger ships (more than 12 passengers) in other routes, etc.



2) Land (island) island passenger transport ships refers to passenger ships engaged in tourism traffic ferry in the area of jurisdiction, including ferrying between land and island, or island-to-island.

3) Sino-Japanese Passenger-Container Liners. In Jiaozhou Bay, they are mostly liners in Sino-Korean and Sino-Japanese routes.

4) Private yacht. Private yachts are not for profit.

## ***2.2 The Features of Tourist Ships***

### **2.2.1 The Conditions and Features of Marine Ship Safety**

1) Ships are in good working condition

The ship possesses conditions for safe navigation on construction, hull, performance, machinery equipment, etc. It can deal with general marine dangers completely. The ship is surveyed by authorized and recognized institutions, and issued the certificate of seaworthiness, which justifies the seaworthiness by law. If ship is without relevant effective certificates of seaworthiness, then it is unseaworthy. (Jasenko, 2008, pp. 489-507)

2) Appropriate ship equipment, crew outfit, and ship supply

Appropriate ship equipment refers to ships properly equipped with all kinds of instruments and equipment demanded by navigation, as well as the necessary documents such as a sea navigation map. Appropriate crew outfit refers to the ships equipped with enough qualified crew. Appropriate ship supply refers to ships with proper fuel, fresh

water, food, medicines and supplies for the voyage.

What appropriate instruments, equipments, and documents is a ship equipped with? This is a highly technical question. In the 1960s, for example, the ship was not equipped with radar, which would not be considered as unworthy for the sea. But the amendment to the “1974 International Convention of Safety For Life at Sea” formulated by the International Marine Organization has already stipulated that all ocean-going ships must install a radar. On one hand, qualified crewmembers refer to crewmembers that must have a corresponding certificate of quality. On the other hand, it refers to the crewmembers that must have the corresponding ability to work, and to be competent. Ships generally must have the pledge that it is supplied with enough fuel to ensure full voyage. Fuel shortage or fuel that cannot meet quality requirements can be regarded as unseaworthy.

### 3) Ship with appropriate goods

The ship with appropriate goods is another important part of the ship seaworthiness. Appropriate goods for the ship require loading and unloading the goods with correct loading, stowage, and storage and care procedures. The overall safety of the vessel should be taken into account, avoiding negative effects brought by overload or imbalance on the ship’s stability, which can lead to un-seaworthiness of the ship. The ship seaworthiness not only refers to the safe navigation ability of the ship, but also to reasonable ability of carrying cargo to the destination port safely.

## **2. 2. 2 Different Features of Tourist and Cargo ships**

Tourism safety can be understood as during the process of tourism, there are no accidents, no threats, and the travel is safe. China tourism safety management expert Zheng Xiangmin divided tourism safety into six aspects, and traffic safety is included inside. So it is obvious that tourism traffic safety is an important part of tourism, it also marks the primary difference between tourist and cargo ships.

The features of cargo ships are mainly reflected in convenience, safety, and speed of transportation. For tourist ships, they are reflected more in safety, comfort, and convenience. This determines the difference on management between tourist and cargo ships.

The difference between passenger and cargo ships:

- 1) Safety comes first. In the SOLAS convention, there is a clear regulation that passenger safety is superior to that of the ship and cargo when ships encounter accidents.
- 2) The customer driven concept runs throughout tourist ship services;
- 3) Generally, passenger ships have higher demands for weather and sea conditions than cargo ships.

## ***2.3 Brief Introduction of Marine Tourism at China and abroad***

### **2.3.1 The Origins of Marine Tourism**

Tourism is non-domiciled travel that people do for leisure, entertainment, visiting friends

or business, as well as the total sum of all relationships and phenomena that happen in the process of visiting. The Industrial Revolution has accelerated the urbanization process in western capitalist countries, which has brought the need from residents to get close to nature and increased the number of tourists. The speeding up of urbanization has expanded the scale of travelling outdoors. The progress of science and technology, application of steam technology in the transportation, and the emergence of new transportation means, such as steamships, trains, etc., have made large-scale population flow possible. The development of the shipbuilding technology has accelerated the pace of marine tourism. (Wu, 2012)

### **2.3.2 The History and Characteristics of Marine Tourism**

Ancient marine tourism originates from the cruise tourism; it is a trip that connects travel destinations with travel along the way during the voyage. This kind of travel began in the late 18th century, and thrived in the 1960s. Cruise tourism is pioneered by European aristocrats during holidays, with the characteristic of allowing family and friends to search for history and explore new knowledge on the vast ocean. Modern marine tourism is combined with beautiful urban scenery, different history and culture, convenient transportation facilities, high-quality entertainment, services, etc, which is a travel pattern, making cities important tourism destination.

Marine tourism has similarities with marine passenger transport. They use the same carrier, and both are sailing on the sea, in the same way of using ships to carry passengers. However the main purpose of marine tourism is to provide sightseeing for tourists in the process of sailing or setting the marine transport for sightseeing, while the main purpose of marine passenger transport is to achieve the space displacement of

passengers. ( Wu, 2012)

## ***2. 4 Overview of Related Marine Tourism Management***

### **2. 4. 1 Marine Tourism Management at China and abroad**

The marine transport of human beings has a long history. There are numerous studies of marine transport safety management in the perspective of its industry, relevant international conventions, regulations, and laws are relatively perfect. The earliest development of marine tourism mainly is cruise travel. The management, laws and regulations of the marine transport industry are relatively perfect at China and abroad. There is more research with greater maturity on marine tourism.

The SOLAS Convention stipulates the safety and pollution prevention management of ships; The ISPS code stimulated by "9/11" Incident has accelerated the pace to strengthen marine safety legislation. A series of ship safety procedures, guidelines and rules has been established by the International Maritime Organization (IMO). The international ship safety operation and pollution prevention management rules "(ISM), released in November 1993, has clarified the responsibilities and permissions of the company staff and crew . ( Qi,2009,116-118.)

The laws and regulations of water traffic safety management abroad are also very perfect. In Japan, for example, they have already formed the relatively perfect system of water safety laws and regulations. In addition to numerous ministry instructions, there are regulations and normative documents formulated by the Japanese Coast Guard, which all match with related laws. Japan also has the Six Sea Rules, Six Harbour Rules, Six

Ship Rules, Six Crew Rules, and Six Rules of Marine Security, etc.

The relevant laws and regulations of domestic marine traffic safety are also relatively perfect. At present, we have enacted laws of “the Production Safety Law of People's Republic of China”, “the Marine Traffic Safety Law of People's Republic of China”, “the Marine Environmental Protection Law of People's Republic of China”, “River Safety Management Regulations of People's Republic of China”, etc. All have made specific provisions on the responsibilities of responsible departments in traffic safety, staff configuration of enterprise security management, ship equipment configuration, ship manning configuration, navigation requirements, etc.

As early as 2000, our country issued “the Division and Assessment of Inland River Cruise Ships”, consisting of nine chapters. This standard aims to establish the service image of cruise ships through the service quality rating, and the management method of service quality evaluation, to promote tourist ship service quality in China.

## **2. 4.2 The Safety Management of Tourist Ship at China and abroad**

### **2.4.2.1 Sydney Transport Administration’s Research on Special Management in a Special Period**

In Sydney, in 1998, the Sydney Transport Administration analyzed the Manley and Taronga route, and found that more than 250 sailing enthusiasts drove ships through this route in a day on the weekend, so they summarized that the speed limit for cross-regional ships is needed for this particular period on the weekend, in order to avoid unnecessary collision accidents. ( Wang, 2001, pp. 25-26)

#### **2.4.2.2 The Public Management and Service of Tourism on the Rhine River**

The Rhine River originates from the northern slope of the Swiss Alps. The river flows through six countries, with a total length of 1320 km. The Rhine River is one of Germany's most important tourism resources; the tourism economy of the Rhine River in that area of Germany is second only to manufacturing. Germany strives to develop the tourism as an important way to comprehensively control the Rhine, speed up the industrial transformation, and to promote the growth of the national economy. First, building a comprehensive treatment pattern of water environment, in order to solve the Rhine water pollution that was called "the sewer of Europe" before. Second, making an integrated planning system. Except for relevant policies uniformly formulated by the Rhine International Protection Committee, such as the "Berne Convention", "the Convention on the Prevention and Control of Chemical Pollution", "Action Plan for the Rhine", etc., all local regions have compiled the tourism development planning according to their own situation. For example, Hesse-Darmstadt which the Rhine flows through has created "the Hesse Tourism Policy Framework of Action" and other special planning of tourism; third, constructing convenient and smooth traffic network, especially water traffic. The water system of shipping passenger and cargo from Basel, Switzerland to Rotterdam and Amsterdam in the Netherlands has been built; Four, establishing an efficient tourism management mode in official and semi-official forms, functional departments provide related information on tourist destinations through exhibitions and networking to tourism investors and operators, and directly providing tourists with public tourism service information. (Plum & Nathalie & Anne, 2014, pp.95-106)

#### **2.4.2.3 The Establishment of Water Tourism Traffic Patterns on the Zhujiang River**

The water tourism traffic pattern on the Zhujiang River has been relatively successful. First, the government consummated the related laws and regulations and controls of the market access properly. Different management departments of government should have a clear division of responsibilities, cooperate with each other, and strengthen the guidance, monitoring and coordination of urban water tourism industry. Second, from the aspect of industry, a communication platform of operating enterprises should be established to strengthen the coordination and communication between enterprises, and to avoid vicious competition disorder. Third, combining the characteristics of the urban water tourism, operating enterprises should strengthen the security of the internal management from various aspects, adapt standardized management, especially to do well on sailing management of cruise ships, establish and improve the ship staff operational procedures, and strengthen the safety education personnel training, etc. Through the cooperation between different public government administrations and shipping companies, the traffic safety and healthy development of water tourism in the Zhujiang River have been ensured .(Plum,2014, pp.95-106)

#### **2.4.2.4 The Management Services of Water Tourism in Taihu Lake**

The government management department is preliminarily strengthening the planning and legislative protection of Taihu Lake. For example, Suzhou legislation has required that ships sailing in Taihu Lake must be equipped with GPS, in order to protect water resources. In order to ensure the safety of ships and tourists, the management department of tourist ship safety in Taihu Lake are actively involved in making the enterprise system, implementing the responsibilities, allocating personnel, educating the crew, etc. The



Marine Department in Taihu Lake has proposed that "better management is service". It provides quality services by initiating informative certificate application procedures, providing severe weather warnings, and announcing Taihu shipping routes. (Zhang & Tong, 2011, pp.108-126)

#### **2.4.2.5 The Intelligent Safety Management for Marine tourist Ships in Qiandao Lake**

As early as 2007, Hangzhou Traffic Management Department launched e-visa for ships in the Qiandao lake area. On the dynamic regulation of tourist ships, GPS communication systems have been combined to conduct real-time monitoring on ship sailing conditions. In 2012, Qingdao Lake put forward the target of constructing a wisdom navigation zone, loading video terminals on tourist ships, using mobile communication WCDMA wireless network transmission technology. The Marine Sector can check any boats for the first time by inner-ship video monitoring, timely grasp the running status of ships, conduct scientific scheduling of ships, and improve the management level of tourist ship safety. Furthermore, large capacity hard disks have been used for real-time recording and saving the inside and outside of ship-born video and audio information, which can be used for later verification. The intelligent management has been practically applied to tourism safety management. (Zhao & Fang, 2011, pp.17-22)

## **Chapter 3 Development Environmental Analysis on Marine Tourist Ships in Jiaozhou Bay**

### ***3.1 The Coastline Condition and Marine Resources***

#### **3.1.1 The Geographic Position**

Jiaozhou Bay is located in the south of the Shandong Peninsula in Shandong Province, China. It is also known as Jiao Ao, with the Nanjiao River running into it. Jiaozhou Bay has a narrow mouth and is broad inside, with a width of 15 miles from east to west, and the length of 18 nm (low tide) from north to south, covering an area of 446 square kilometres. It is a half closed bay that stretches inland. The depth of natural deepwater channel is 10 ~ 15 m, without sediment deposition, and generally remains unfrozen in winter. Qingdao port is located in the mouth of the northern bay, as the hub of the Yellow Sea coastal water transportation. It is one of the important sea-lanes in Shandong province and parts of the central plains. Southwest of the mouth of the bay, there is Huangdao Oil Wharf, which is one of the three largest special crude oil output wharfs in China. (Baidu.2015)



Figure1:Geographic Location of Jiaozhou Bay

Source: Internet

### 3.1.2 Natural Conditions

Wind conditions: Mostly south and southeast wind during the summer, more north and northwest wind during the winter. The number of days in a year with the wind force greater than magnitude 7 is about 8; the typhoon takes place approximately 1 ~ 2 times a year, with little influence on the port.

Precipitation: The average annual rainfall is 755.6 mm, most rainfall is in June- August, accounting for 70% of the year.

Fog conditions: The average annual number of fog days is 51.6, mostly in April-July each year, with little influence on shipping or production.

Temperature: the average annual temperature is 12.1°C, extreme maximum temperature is 35.4°C, and extreme minimum temperature is - 16°C.

Tide: The tide is regular semidiurnal tide, with an average high tide height of 3.85 meters, the average height of low tide is 1.08 meters, the highest height is 5.36 meters, and the lowest height is 0.70 meters.

Trend: The trend is semidiurnal tidal current, with the general characteristic that flow rate of rising tides is greater than that of falling tides, and the time of tide rising lasts shorter than falling, the fastest flow direction basically parallels to the coast. The maximum flow rate of rising tide in the front bay is 0.51 m/s, and the maximum flow rate of falling tide is 0.33 m/s.

Wave: Waves in Jiaozhou Bay are mainly small wind waves inside the bay, and open sea waves refract and diffract by the mouth of the bay. ( Zhang & Xu, 2010, pp.1513-1518)

### **3.1.3 Port Conditions**

Qingdao port is composed of four port areas, including Qingdao Old port, Huangdao oil port, Qianwan new port, and Dongjiakou port, with 15 wharfs and 72 berths. No matter how big the ship is in the world, the wharfs of Qingdao port can harbour it. The wharfs include the world's largest container dock dockable for a 19100TEU ship, 400 thousand mineral dock and 300 thousand ton oil dock. Among them, there are 6 berths dockable for 50 thousand ton ships, 6 berths dockable for 100 thousand ton ships, and 2 berths dockable for 300 thousand ton ships. They are mainly engaged in loading and unloading services for containers, coal, crude oil, iron ore, grain and other trading goods, also

international and domestic passenger service. Trading with more than 130 countries and regions, and more than 450 ports in the world, it has been defined as a grand modern integrated port and Northeast Asia international shipping hub port by the State Council. In 2014, cargo-handling capacity reached 465 million tons, with container handling capacity breaking 16.58 million standard containers. The throughput of imported crude oil ranked first in the ports of China, and the efficiency of container loading, container unloading, and iron ore discharging has always been number one in the world.( Wang,2014,pp.327-330)

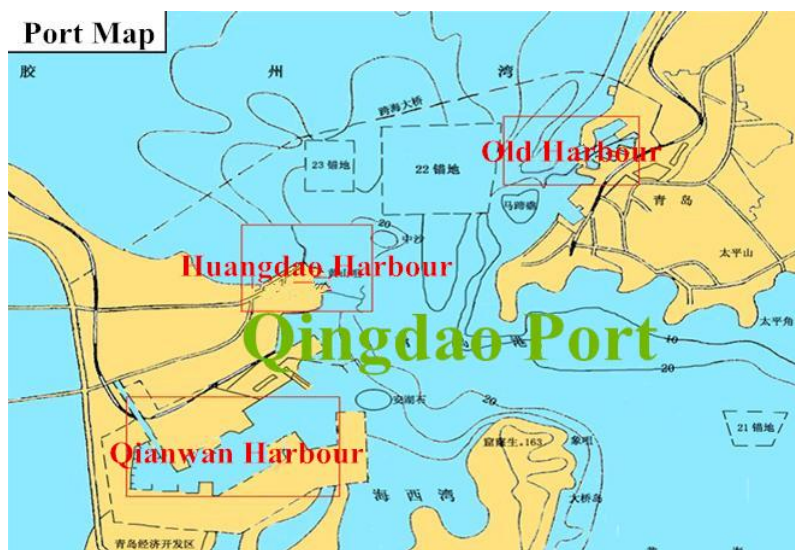


Figure 2: The Diagram of Qingdao Port

Source: Qingdao port group co., LTD

At the same time, Qingdao has been constructing the home port for cruise and building an international cruise destination city. Qingdao municipal government attaches great importance to the construction of a cruise home port, and has specifically established

Qingdao Cruise Home Port co., LTD., as the subject of the home port development and construction. In November 2013, "the Qingdao Cruise Industry Development Planning" (2013-2020) was issued by Qingdao Tourism Bureau, and it proposed the development goals of constructing Qingdao into China's most influential "Cruise Centre in North China" and "Northeast Asia Regional Cruise Home Port"(Chen,2014, pp.60-61). On the wharf construction, a phased, gradual development model is carried out, taking large port as main port and "Olympic sailing centre" in Fushan Bay as a complementary port, with uniting large, medium and small ports together, and making joint upgrades, to achieve home port construction.

The principal part of Project Qingdao International Cruise Home Port Wharf was officially approved on March 31, 2013. The total construction area is 59,000 square meters, with a length of 338 meters and width of 96 meters, the largest space spans 60 meters. The designed customs clearance capacity can be up to 3000 ~ 4000 persons per hour, and the planning throughput of visitors per year can be up to 1.5 million people. The world's largest 225 thousand ton-cruise "Ocean Oasis" and "Sea Charm" can clock in and out at any time. (Qi, 2013)



Figure 3: Qingdao Cruise Home Port

Source: Internet

### ***3. 2 The Conditions of Tourist Ships and Companies***

#### **3.2.1 Sino-Korean and Sino-Japanese Passenger-cargo Liners**

At present, separate ships in Jiaozhou Bay are bound for South Korea and Japan, two voyages per week. The ship on the Sino-Korean route (Qingdao-Incheon) is the new Jinqiao liner, with a passenger quota of 660 people and 280 cases; the ship owner is Weihai Wei Dong Shipping co., LTD. The ship on the Sino-Japanese route is Lixiangzhiguo liner (Qingdao-Shimonoseki), and the ship owner is Japan Olin Steamboat Corporation.

#### **3.2.2 Land (Island) Island Transport Ships**

Land (Island) Island Transport Ships of Jiaozhou Bay mainly include passenger ships in

Qing-huang traffic ferry, Jimi cliff - Lingshan island, Langya - Monastery island, Green island - Tianheng island, Xuejiadao - Zhucha island routes.

Transport services between Tianheng Island, Lingshan Island and (land area) wharfs are provided by self-employed passenger ships, not in the form of corporate management; Most of the ships that go to Zhucha Island and Monastery Island are in the form of tourist affairs; the ferry is mainly used for passenger transport between Qingdao and Xuejia Island, belonging to Qingdao Ferry Co., LTD., The company is a marine traffic tourism enterprise with possession of 5 large ships and 7 clippers. Except for these, strictly speaking, currently there are no other marine tourism transportation enterprises in Qingdao. ( Gao, 2013)



Figure 4: Zhou No. 1 Berthing in Qingdao Ferry Station

Source: Internet



### 3.2.3 Marine Sightseeing Ships

Sightseeing Ships are mainly concentrated in the front sea area of Jiaozhou Bay , now there are a dozen companies with large tourism passenger ships running tourism businesses there. The operating passenger ships are 35 passenger ferries, distributed in Badaxia Gulf, Erzhong Fjord, the Wusi Square, Olympic Sailing Centre, Yinhai world and other waters; The number of companies operating yachts and motorboats is 13, with 119 ships, distributed in Badaxia Gulf, Sea Palace, Zhanqiao Pier, Erzhong Fjord, Little Qingdao Isle, the Navy Museum Pier, Luxun park, Wusi Square, Olympic Sailing Centre, Yinhai world water, Shilaoren Beach, Taiqing Palace of Laoshan Mountain, and other waters.

Table 1: Sightseeing Ships Longer Than 12 Meters

| Serial Number | Name of vessel  | Port of Registry | Length (m) | Design Seating Capacity |
|---------------|-----------------|------------------|------------|-------------------------|
| 1             | Shengshifeiyang | Qingdao          | 24.1       | 33                      |
| 2             | Furi            | Qingdao          | 23.95      | 12                      |
| 3             | Haidiaojingying | Qingdao          | 23.77      | 12                      |
| 4             | Haier           | Qingdao          | 23.13      | 14                      |
| 5             | Huayelianhe     | Qingdao          | 22.6       | 11                      |
| 6             | Huijing         | Qingdao          | 19.49      | 10                      |
| 7             | Dabaisha        | Qingdao          | 19.49      | 12                      |
| 8             | Jingsha         | Qingdao          | 19.49      | 12                      |
| 9             | Yinhai 2008     | Qingdao          | 19.1       | 12                      |
| 10            | Kailutong       | Qingdao          | 17.33      | 12                      |
| 11            | Kangyuan 177    | Qingdao          | 17.27      | 10                      |
| 12            | Haisha 6        | Qingdao          | 16.44      | 11                      |

|    |                  |         |       |    |
|----|------------------|---------|-------|----|
| 13 | Haisha 9         | Qingdao | 16.31 | 12 |
| 14 | Rufengtaishan    | Qingdao | 15.66 | 12 |
| 15 | Fanduliren       | Qingdao | 14.99 | 12 |
| 16 | Kuaile           | Qingdao | 14.72 | 15 |
| 17 | Kasadi           | Qingdao | 14.1  | 13 |
| 18 | Dongfangyili     | Qingdao | 14.09 | 18 |
| 19 | Lansechang xiang | Qingdao | 13.69 | 12 |
| 20 | Haiwu 007        | Qingdao | 13.58 | 11 |
| 21 | Ronghai lhao     | Qingdao | 13.17 | 10 |
| 22 | Chaohui          | Qingdao | 13.12 | 12 |
| 23 | Haierxiongdi     | Qingdao | 12.3  | 11 |
| 24 | Huameidun 1      | Qingdao | 12.1  | 12 |

Source: Qingdao MSA Management department

### 3.2.4 Private Yachts

At present, the number of non-operating yachts registered in Qingdao is 121, and 95 of them hold a valid certificate of nationality. Meanwhile some ships haven't transacted the nationality registration yet. In addition, there are more than 30 passenger sailing ships, belonging to Qingdao Marine Sports School, and Qingdao Sailing Operations Centre (which belongs to Qingdao City Investment Group), there are a few private sailing ships affiliated with the Qingdao Sailing Operations Centre, without public operations. Sailing ships dock in Qingdao Olympic Sailing Base, mainly sailing in the areas on Fushan Bay. Sailing management is relatively scattered, not in a form of continuum. Sailing distance is generally within 5 miles. In addition, "Interim Measures for Sailing Registration Administration" which is issued by Qingdao Sailing Association subordinated to Qingdao Sports Bureau, has registered most sailing ships and put them into their control. Qingdao municipal government organizes sailing experiences involving ten thousand people each year, which also makes sailing ships public welfare nature in Qingdao. In

addition, in the area there are two existing yacht clubs, Yin Hai International Yacht Club and Qingdao International Yacht Club, each with their own wharfs and all kinds of yachts.



Figure 5: A Private Yacht Berthing in the Olympic Sailing Centre

Source: Internet

### ***3. 3 The Development Trend of Marine Tourism***

#### **3.3.1 The Trend of Tourists**

Jiaozhou Bay is in the city of Qingdao; the sea area of Qingdao reaches 13.8 thousand square kilometres. The length of the coastline is 730.6 km, with many good bays and gulfs. Along Qingdao coast, there are 69 islands, and 49 bays. Among them, Lingshan Island is the tallest in northern China; Xuejia Island is the most attractive seaside resort in northern China. Qingdao has great resources and conditions for the development of marine tourism. There are significant resource advantages of developing marine tourism in Jiaozhou Bay, such as hills alongside the sea, beautiful mountains with peaks rising

one above another, city view with red tiles and green trees, also many islands and bays.

Qingdao is a famous and popular tourist city in our country. In 2011, the "2011 China top ten livable cities" ranking was published, and Qingdao occupied the top of the list. The image of Qingdao city is good. As the so-called "eastern Switzerland", Qingdao successively held the 2008 Olympic games and a series of international sailing events. With a positive image as a sunny, seaside tourist city, Qingdao has gathered a wide range of passenger flow throughout the years. Since 2009, the number of tourists in Qingdao has maintained a steady growth, and rapid growth of the tourism economic indicators has been achieved. ( Gao, 2013)

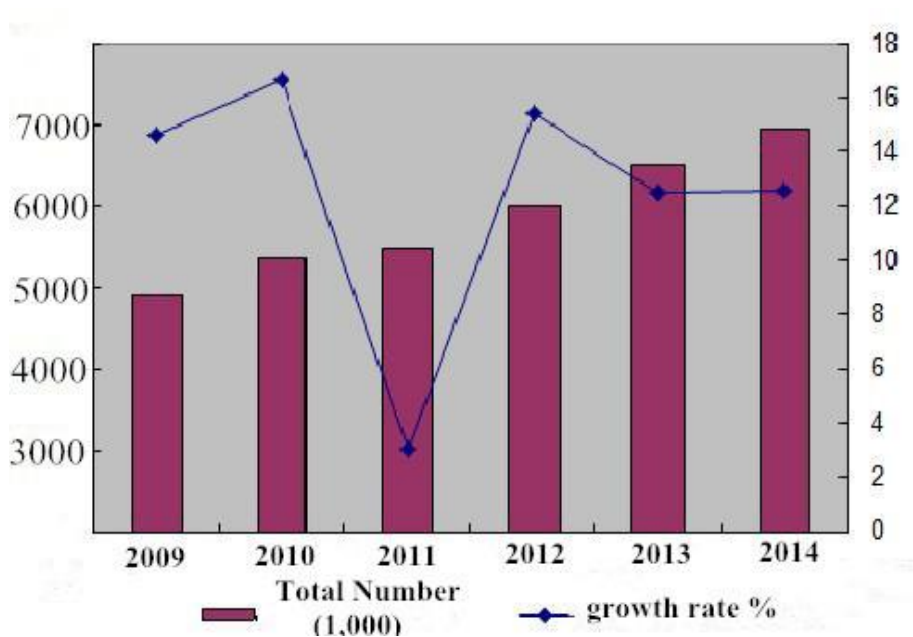


Figure 6: The Total Number of Tourists and Growth Rate in Qingdao City, From 2009-2014

Source: Qingdao tourism administration

In recent years, with the development of tourism industry in Qingdao, the scale of tourist reception has been expanding, the reception number of overnight tourists and tourism income has maintained a fast growth. According to statistics( Wang, 2014, pp.65-68), in recent years, in Jiaozhou Bay the voyage number of marine tourist ships is approximately 70,000 every year, with visitors up to five million passengers on average every year.

Table 2: Statistic of tourist flow 2011-2014

|  | 2011    | 2012    | 2013    | 2014    |
|--|---------|---------|---------|---------|
| <b>Combined daily online passenger ship number</b> | 6516    | 6632    | 6411    | 6751    |
| <b>Combined operation of the voyage</b>            | 71834   | 72584   | 76968   | 68072   |
| <b>Combined carrying passengers</b>                | 4983764 | 5158255 | 5361176 | 4782202 |

Source: Qingdao MSA office

### 3. 3.2 The Trend of Marine Tourist Ships

In 2011, the Blue Economic Zone Construction in Shandong peninsula rose to national strategy, and became an important part of National Marine Development Strategy and Regional Coordinated Development Strategy. This is the first regional development strategy with the theme of Marine economy in China. “The Shandong Peninsula Blue Economic Zone Development Plan” issued by the National Development and Reform Commission explicitly proposed the goal of " building an international famous coastal tourism destination ", and pointed out that Qingdao, Yantai, Weihai and other cities will be built into coastal carefree holiday destination, which will be well known both at China and abroad. The tourism brand of Shandong blue tourism will be built bigger and stronger. Meanwhile preferential policies mating with investment, financing, island

development, and tourism support will be studied.

As the leading city of the Blue Economic Zone Construction in Shandong peninsula, Blue Economic Zone Construction provides unprecedented opportunities and policy advantages for the marine tourism development in Qingdao. The water tourism in Jiaozhou Bay is an important tourism project, with a bright development prospect, so the number of marine tourist ships and crew are bound to increase. Before 2006, the number of tourist ships registered in Qingdao with a gross capacity of above 100 tons was only four. At present, the number of cruise ships registered in Qingdao with capacity of 50 tons is 43, the number for 80 tons is 24, and it is 14 for 100 tons. The development trend of tourist ships is heading towards large-scale in Jiaozhou Bay area. (Zhang, 2013, pp.34-137)

Table 3: Tourist Ships Above 100 Gross Tonnage

| Serial Number | Name of vessel | Port of Registry | Length (m) | Gross Tonnage | Design Seating Capacity | Vessel Age |
|---------------|----------------|------------------|------------|---------------|-------------------------|------------|
| 1             | Lujiaodu 7     | Qingdao          | 64.8       | 2442          | 480                     | 10         |
| 2             | Lujiaodu 2     | Qingdao          | 64.8       | 2442          | 480                     | 10         |
| 3             | Lujiaodu 1     | Qingdao          | 64.8       | 2442          | 480                     | 11         |
| 4             | Lanhaimingzhu  | Qingdao          | 64.77      | 2334          | 298                     | 7          |
| 5             | Lanhaizhenzhu  | Qingdao          | 65         | 2095          | 338                     | 1          |
| 6             | Husha          | Qingdao          | 49.8       | 737           | 98                      | 1          |
| 7             | Pingan         | Qingdao          | 45.46      | 494           | 445                     | 25         |
| 8             | Jintian 1      | Qingdao          | 38.8       | 407           | 488                     | 11         |
| 9             | Jintian        | Qingdao          | 38.8       | 407           | 488                     | 11         |
| 10            | Gangyan        | Qingdao          | 37.75      | 331           | 99                      | 26         |
| 11            | Yongquan       | Qingdao          | 44         | 320           | 260                     | 19         |

|    |               |         |       |     |     |    |
|----|---------------|---------|-------|-----|-----|----|
| 12 | Gongzhuhao    | Qingdao | 31.55 | 160 | 153 | 8  |
| 13 | Lingshan      | Qingdao | 31.5  | 123 | 106 | 29 |
| 14 | Lingshandao 1 | Qingdao | 39.3  | 120 | 144 | 17 |

Source: Qingdao MSA office

### ***3. 4 The Analysis on Maritime Traffic Accident***

In recent years, there are several accidents in tourist ships (See Appendix Table 6) in Jiaozhou Bay, the reason are mainly the following four aspects.

1) Qingdao Port is a comprehensive port which can berth commercial vessels, fishing boats, warships, etc. And the navigable density of port waterway is large. During fishing season or bad weather, the fishing boats fishing in the yellow sea have to recharge or shelter in Qingdao port which makes the navigable waters narrower and traffic density larger, thus shipping order chaos phenomenon is more prominent. Due to the limited area of anchorage zone, fishing boats often drop anchor in the waterway, port or turn around arear which affect the navigation order and security environment, what is more, there are lots of tourist ships entering or leaving the port, so accident is easy to happen when tourist ships turn around.

2) For the implementation of "small vessels berth interim provisions", a lot of tourist ships and fishing boats which don't regulate the behaviour of anchor are easy to causes the accident.

3) During typhoon season, marine tourist company, yacht club and other related units and ships usually have the thought of paralysis, which is easy to cause needless loss.

4) Increased Sailing competition, yacht exhibition and frequent entertainment activities

at sea also bring a great deal of pressure to maritime safety management and rescue.

## **Chapter 4 The Analysis on Safety Management for Marine Tourist Ships in Jiaozhou Bay**

### ***4.1 Marine Sightseeing Ships***

#### **4.1.1 Route Analysis**

The routes for marine sightseeing ships are coastal routes, mainly concentrated in the Front Sea, Luxun Park, Olympic Sailing Centre, Shilaoren Beach, Taiqing Palace of Laoshan Mountain, and other waters. The voyages are short, with sailing time of less than 2 hours.

#### **4.1.2 The Current Management Situation**

Sightseeing ships of Jiaozhou Bay are mainly distributed in the Front Sea beach scenic spot, which is in tourism core range of Qingdao. It is an important part of seashore scenic tourism and the city tourism business brochure in Qingdao. According to statistics, in recent years, the number of tourist voyages for coastal sightseeing and surrounding islands has reached approximately 30,000 in Jiaozhou Bay, carrying nearly one million tourists every year on average. So to say, marine tourism of Jiaozhou Bay is an important form to show the urban tourism culture of mountain, sea, and city in Qingdao. It has become an important way for tourists to experience the seashore characteristics of Qingdao.

Meanwhile since there are features of high public attention and city image correlation in



marine tourism safety, marine tourism safety is a crucial part of marine safety management in Jiaozhou Bay. In recent years, marine sectors have attached great importance to the work of tourist ship safety management in Jiaozhou Bay, adhering to the high standards and strict requirements, via grading daily management and periodic check, and efforts on reorganizing the safety production order of tourist ships in Front Sea, the safety situation has obviously changed when compared to history. But on the whole, the tourism operation level of Front Sea is low, so are the quality of management personnel and the standardization level of companies. The operating mode and the chaos of “three low and two messy” in safety management have not been fundamentally improved. While affecting tourism image of Qingdao city, wasting and destructing coastal tourism resources, it also constitutes the important hidden danger of the marine safety in Jiaozhou Bay. The unified understanding and collaboration of the municipal government departments and related industries is required.

#### **4.1.3 Existing Problems**

##### **4.1.3.1 Decentralized Management and Management Disorder of Shipping Companies**

Except for Qingdao Ferry co., LTD that is a state-run enterprise, other marine tourism companies in Jiaozhou Bay are mainly with decentralized management or individual operation, and some are in the form of subordination. Generally, they have some basic characteristics, such as commonly small scale, poor ability of risk resistance, low staff quality, and weak consciousness of operation abiding by laws and regulations. The level of company management is uneven, oftentimes more attention is paid to benefits than safety. The ventured and illegal operations have happened, and high-risk operation is

relatively common. For present, there are 13 marine tourism companies that operate tourist ships with more than 12 seats, with 36 ships in total; there are 13 companies operating small yachts and motorboats with less than 12 seats; the number of ships with mainly private operation is about 119. Other than just a few marine tourism companies that have a certain scale, most are small and medium-sized companies in decentralized management, with low level of management, internal management confusion, extensive safety management and unfulfilled implementation of relevant requirements. Other coastal tourism cities in the province and the nation generally apply centralized management pattern to marine tourism. By comparison, the decentralized management pattern of marine tourism in Qingdao is surely underdeveloped. To a certain degree, this directly leads to the tourism management chaos and underdeveloped safety condition in Front Sea.

#### **4.1.3.2 The Serious Situation of Vicious Competition in Marine Tourism**

The vicious competition in marine tourism stands out seriously in Jiaozhou Bay. Heavy disruption of normal management order is the main reason for that. Relevant tourism companies lower safety investment, and by all means compress normal operation cost. This has brought fundamental influence to the healthy development, safety, and stability of the tourism industry in the Front Sea. The fare approved by Municipal Price Bureau and other departments of marine travel is generally ¥20 in the Front Sea. But due to the large quantity of marine tourism companies and irregular operation in Jiaozhou Bay, vicious competition and forcing the price down is an open secret, the phenomenon of soliciting guests, grabbing guests, and deducting the quality of service is common. According to business owners, most real earnings are only ¥5 for each passenger; the

lowest is ¥1, which is close to or even lower than normal operating cost. While seriously affecting seashore tourism image of Qingdao, business owners are not willing, and also unable to conduct industrial upgrade or maintain the necessary safety input. This has caused the lack of ability in sustainable and safe development of tourism in Jiaozhou Bay.

#### **4.1.3.3 Unreasonable Layout of Tourism Wharfs and Embarkation Points**

The layout of tourism wharfs and embarkation points is unreasonable in Jiaozhou Bay. Due to excessive dispersion, it is difficult to achieve unified and effective management on wharf sites. There has always been no overall planning and arrangement on marine tourism wharfs and embarkation points in the Front Sea, so business owners mainly choose embarkation points by themselves. Currently, there are 16 tourism operation wharfs in the front-line of the Front Sea, tourism embarkation points for ships with more than 12 seats mainly include embarkation points at Disheng wharf in the Erzhong gulf area, Wusi Square embarkation point in Fushan Bay area, and in the Olympic Sailing Base and nearby sea areas. There are four embarkation points concentrated in Tuanwan island: Zhongyuan, Feiyang, Pingan and Youyi, with 22 ships in total. Other embarkation points respectively are scattered in the front line of Front Sea, including motorboat embarkation points in the waters of Zhanqiao Pier, Little Qingdao Isle, Luxun Park, and Bathing Beach. The number of tourists in Laoshan Bay water has been also gradually increasing recently. Due to the lack of scientific integrity in planning of marine tourism routes in the Front Sea, the unclearness of route area, the mixed sailing of large ships and small boats, and the difficulty of marine traffic management have increased, especially with increased traffic flow density in the tourism seasons. Some

docks and embarkation points, such as the marine traffic flow of Tuanwan Island area with excessive density of tourist flow, increase the risk of passenger shipping and exacerbate the traffic chaos of the Front Sea and the city.

#### **4.1.3.4 The Underdeveloped Type of Tourist Ships**

Most of the tourist ships in Jiaozhou Bay are in small scale, with low standards, underdeveloped types, untimely upgrades, and poor safety. For example, as the main operating strength, there are 36 existing tourist ships with more than 12 seats in Front Sea. Except for the large passenger ship, "Blue Ocean Pearl" of the Qingdao Ferry Company, the rest are all small ones, mostly with seats between 70-90, and mainly constructed of fibreglass. The oldest was built in 2001 with a ship age of nearly 10 years, and there were 23 other ships built before 2005, the vessel-aging phenomenon is already serious. At the same time, due to the lack of mandatory standard updates and poor company operation benefits, the appearance and safety standards of tourist ships operated in seashore scenic area, the gateway of city tourism to Qingdao, are bad. This has greatly lowered the level and image of Qingdao city and seashore tourism. At the same time, tourism safety risks have increased in Jiaozhou Bay area.

#### **4.1.3.5 The Weak Foundations of Safety Management in New Marine Tourism Transport Projects**

The safety management foundations of the emerging marine tourism projects are weak, such as the "Adventure duck" amphibious sightseeing bus. Immature technical conditions and large safety risks are a new hidden danger for marine tourism safety in Jiaozhou Bay. In 2009, Qingdao Sheen Shi Fei Yang, a tourism company, introduced

"adventure duck" amphibious sightseeing bus into marine tourism in the Front Sea of Qingdao. But due to inherent defects of the technical conditions in the amphibious ship, it has only been operated in inland lake and other calm waters around the world. There are no successful experiences of operation at sea. At the same time, the first amphibious ship sightseeing bus of the "adventure duck" series approved by the relevant government department has also exposed the problems of safety management during the trial operation, including poor stability, low wind loading, with limits of sailing only under a sea wind level of 4 and wave height of 0.5 meters, which is not in conformity with objective natural conditions of marine meteorology and hydrology in the front-line of Jiaozhou Bay. In addition, the design of ship structure is unreasonable. Once a disaster happens, it is difficult for the passengers to evacuate and there are no effective means of shore-based emergency rescue. Meanwhile, the operation time of this company is short. It has inadequate understanding of special risks in marine operation. It lacks management experience, and its security system is imperfect. With fluky thoughts, illegally overloaded sailing has appeared many times, bringing new hidden dangers to the marine tourism safety in Jiaozhou Bay.

## ***4.2 Land (Island) Island Passenger Transport Ships***

### **4.2.1 Route Analysis**

There are 69 islands in the Jiaozhou Bay area (and surrounding area), including 10 islands with residents. The number of islands that opened passenger transport between land and island is 4, with 4 routes and 19 ships. The number of islands that have not opened passenger transport of land-island is six (Muguan Island, Dagan Island, Xiaoguan Island, Zhe Island, Green Island, Sanping Island).

#### 4.2.1.1 The Passenger Transport Route from Jimi Cliff to Lingshan Island



Figure 7

Source: Qingdao MSA office

1) Wharf condition: The wharf on the island was founded in 1965, with the investment of 400 thousand Yuan from the local government. A wharf was constructed with length of 40 meters and width of 20 meters. In 1975, on the south of the wharf a landing slope was built. After the investment from the Ministry of Communications, the wharf was expanded. The length became 142 meters, and a 500-ton passenger berth was constructed. The Ministry of Agriculture, currently operating two combination passenger ship berths, invested in the construction of a fishing port in Jimi cliff on one side of the land. There is no matching safety facilities and equipment for safe docking and personnel protection in the wharf of Lingshan Island. There are many fishing boats in

the wharf of Jimi cliff, and the environment is dirty, disorderly and poor, with no waiting hall there.

2) Route condition: The voyage from Jimi cliff to Lingshan Island is 9.2 miles, crossing with cargo ship routes in the direction of Qingdao – Rizhao, prevailing with southeast and northeast wind, often foggy in March - July every year. The annual volume of passenger flow is about 150 thousand.

3) Ship condition: There are 4 passenger ships of long-term operation on this route, "Lingshan" and "Lingshan No.1", subordinated to Wan Shun Da Company, with a ratified passenger capacity of 106 people and 97 people respectively; "Yongshunda" and "Haojing", these two high-speed passenger ships belong to Yong Shun Da Company, with ratified passenger capacity of 95 people and 98 people respectively. The age of "Lingshan" ship is 26 years, relatively old, the other 3 are newly built in the past two years, with a good technological condition. During holidays and peak tourism seasons the route takes the measure of adding temporary passenger ships.

4) Company operation and management condition: There are 2 companies operating along this route, Qingdao Wan Shun Da Ocean & Rail Transport Trade Company and Qingdao Yong Shun Da Tourism Development co., LTD., The competition between the two companies is intense, mutually forcing price down. Though the government offers certain fuel subsidies every year, the two companies are still in a state of business loss. According to information, in 2010, Qingdao Yong Shun Da Tourism Development co., LTD., lost more than 200 thousand Yuan, and with phenomenon of unpaid wages to the crew.

#### 4.2.1.2 The Passenger Transport Route from Langya Port to Monastery Island



Figure 8

Source: Qingdao MSA office

1) Wharf condition : The Monastery Wharf is on the west side of Monastery Island, with a length of 60 meters, width of 7.8 meters, and water depth of 3.5 meters, featuring a mixed wharf for fishing and passengers. Langya Wharf as a fishing port wharf is 270 meters long, 20 meters wide, with depth of 4.5 meters deep..

2) Route condition: The distance between the two wharfs on this route is 1300 meters. The route is greatly influenced by the northeast and southwest wind. Ten thousand passengers are transported annually.



3) Ship condition: Currently, there is one passenger ship of land-island transport, "Langya ", 4 years old, with passenger capacity of 50 people. The ship belongs to the government of Langya Town, operated by Qingdao Monastery Island Transportation Service co., LTD.

4) Company operation and management condition: "Langya" is basically used for residents commuting to and from the island. In the tourism season, there are a few sporadic passengers travelling to the island. Every year, government subsidies equal 20,000 Yuan, and it is in the state of operating at a loss .

#### 4.2.1.3 The Passenger Transport Route from Xuejia Island to Zhucha Island

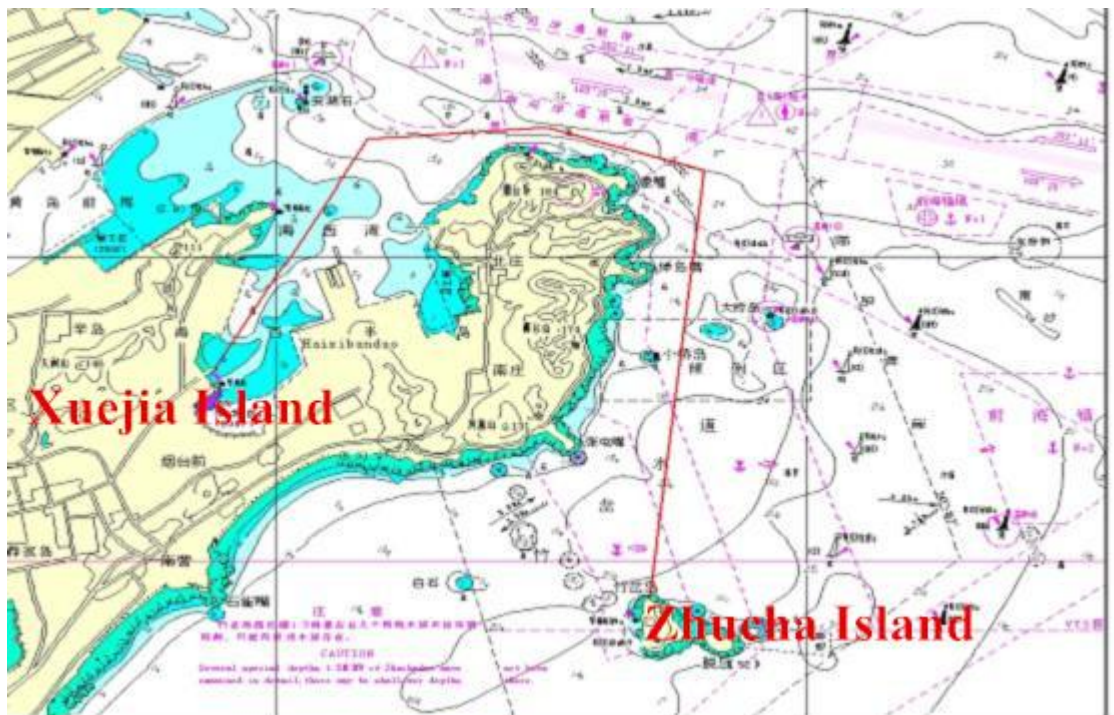


Figure 9

Source: Qingdao MSA office

1) Wharf condition: There is a relevant land-island traffic wharf, the safety protection facilities for passengers boarding and departing ships is imperfect, because the land area close to the sea does not have wharf construction conditions. Currently, the land area close to the route uses the ferry wharf in Xuejia Island.

2) Route condition: The distance from Zhucha Island to Xuejia Island ferry station is 9.2 miles, about 40 minutes of voyage. There are relatively many reefs on this route, and it rolls around the intensive navigation area of Tuan Island, with the big wave and rush flow. Approximately 12,000 people are transported annually.

3) Ship condition: Currently, there is one high-speed passenger ship of land-island transport, "Dragon 5", 12 years old, with capacity of 70 passengers, affiliated to Qingdao Hai Long High-speed Passenger Transport co., LTD., The ship is in good condition.

4) Company operation and management condition: Qingdao Hai Long High-speed Passenger Transport co., LTD., belongs to Qingdao Ferry co., LTD., The company scale is larger, with a perfect relevant safety management system, and the management level is higher. It has invested 1 passenger high-speed passenger ship for land-island passenger transport, with about 20 voyages per month, and a voyage time of half an hour. It is mainly used for students commuting on weekends and residential trips on rally day. Due to a low guest rate, the company is in the state of operating at a loss.

#### 4.2.1.4. The Passenger Transport Route from Green (Donkey) Island to Tianheng Island



Figure 10

Source: Qingdao MSA office

1) Wharf condition: land, all the relevant land island traffic terminals are on the island, but the passenger ship safety protection facilities are not perfect.

2) Route condition: The distance of routes between two wharfs is 1600 meters. The route is greatly influenced by the northeast and southeast wind. The annual volume of passenger transport is about 100 thousand people, of which 1/3 are islanders who

commute to and from the island. The passenger flow is seasonal, with the obvious characteristics of arriving peaks in holiday season. The tourism season is from April to October every year, with more tourists concentrated. November to April of the following year is the off-season for tourism, with less traffic, mainly islanders commute during that time. During the long holidays such as "Qingming festival", "Labour Day", and "National Day", the number peaks of people who travel to and from the island.

3) Ship Condition: Currently, there are 2 common passenger ships of land-island transport with more than 12 seats, "Tianheng No. 1" and "Green island" run by Jimo Tianheng Island Sea Shipping co., LTD. (a joint-stock enterprise jointly organized by San Lian Group Tianheng Island Resort and Tianheng Island Village), with a passenger capacity of 95 and 32 people respectively, 8 years and 14 years old respectively; There are 11 motorboats with more than 12 seats available, mainly used for land-island tourism passenger transport, and land-island traffic. The motorboats are privately owned, with the purpose of making profit.

4) Company operation and management condition: The ships of Tianheng Island Sea Shipping co., LTD mainly are in the form of individual affiliated management. Managing personnel have quite a share of the personal ships, placing heavy personal interests in the business, and affecting the operation of the company as a whole. Except for a tourism income of about 100,000 Yuan every year, Tianheng village receives a subsidy of about 200,000 Yuan. However the company is still in the state of losing money, with unpaid wages for crew.

## **4.2.2 The Current Management Situation**

### **4.2.2.1 Sources of Management Enhancement**

With the database of tourism and land-island transport ships in Qingdao jurisdiction, the sailing area of ships has been further defined, and the Marine Transport Control Measures on Rough Meteorology and Marine Condition in Qingdao has been unveiled, implementing wind scale and marine condition suitable for tourism and land-island transport ships, executing the shipping suspension measures strictly. The equipment of AIS is supervised to carry out in land-island transport ships following regulations, the system of comprehensive safety inspection before key period is established, the safety management situation of every ship operation enterprise in jurisdiction is checked, and corresponding measures on the safety problems checked out is made to strengthen the operation of the company's "source management" and ensure that there is no blind area, or dead angle of the management on tourism and land-island transport ships in the jurisdiction.

### **4.2.2.2 On-spot Management Enhancement**

The on-spot management strength on tourist ships in holidays and tourism season is enhanced, with good preparations in advance, flow, and marine patrol enhancement. There is strict investigation on passenger overloading, sailing beyond navigation area or wind level limit, driving without license, disobeying the requirements of marine traffic, and disturbing the order of marine traffic. The illegal behaviour of transporting passengers in non-passenger ship or unseaworthy ships is suppressed firmly.

#### **4.2.2.3 Management Enhancement of Pollution Prevention**

The garbage and oil sewage reception measure of tourism and land-island ships is further implemented. The lead sealing institution for ship sewerage system is implemented. Lead sealing is implemented on sewerage systems of tourism and land-island ships that comply with sealing requirements. The illegal dredge activities of ships are investigated and strictly punished.

#### **4.2.2.4 Improvement of Communication with Local Government**

Relying on local government, the safety management responsibility of relevant departments on tourism and land-island ships is further clarified. With the active unification of relevant departments, work mechanism of multiple departments' co-management is explored actively; the management of tourism and land-island ships is completed together. In management of companies operating tourism and land-island ships, there are problems of great administrative difficulties and multiple administrative departments. The Qingdao Bureau actively cooperates with the local government and other administrative departments. Jiaonan Marine section signed the Safety Management Responsibility of Land-island Transport Ships with the local government, jointly enhancing the management on operating companies, combining the management of "ship" and "shore" so as to form a work mechanism of co-management, and implement the special work earnestly.

#### **4.2.2.5 Improvement on Early Warning Forecasts**

The system of management management and responsibility system of safety

management early warning forecasts on tourism and land-island ships is improving. Command centres and all marine departments are installed with an early warning information platform, sending received forecast information of bad weather promptly to the companies operating tourism and land-island ships. Also, emergency management system of companies operating ships is inspected comprehensively. For companies without emergency management systems, there will be rectification within a time limit, which ensures the unimpeded access to warning information. The measures are appropriate and effective.

### **4.2.3 Existing Problems**

#### **4.2.3.1 No Passenger Routes to Some Inhabited Islands**

At present, the established land (island) island passenger routes set up do not cover all areas of inhabited islands. There are 6 coastal inhabited islands that have not set up special land (island) island passenger routes (including Muguan island, Dagan island, Xiaoguan island, Zhe island, Green island and Sanping island ). Most of these islands are remotely located. Due to the small populations, passenger flow, or an underdeveloped economy there has been no construction of docks and passenger stations for land (island) island transport ship, or qualified land (island) island passenger ships, or the creation of safe passenger routes. So for a long time, residents on these islands and students who attend school, can only rely on fishing ships and agricultural ships. These ships are not equipped with qualification and safety conditions for passenger transport, and are thus unable to guarantee the safety of land (island) island passenger transport, posing a great hidden danger of safety.

#### **4.2.3.2 Incomplete Wharf Service Facilities**

Due to the characteristics of land (island) island transport, the natural conditions for it are also harsh. Many islands are restricted by various factors, such as relatively underdeveloped economic development, low economic benefits of land (island) island transport, also lack of enough funds to establish a dedicated wharf on the island, and no effective improvement on the port conditions. Some routes of land (island) island passenger transport have no dedicated passenger wharfs, only taking freight or fishing wharfs as passenger wharfs. There are no matching service facilities for passenger stations. Also, basic safety facilities for passengers boarding and ship docking are seriously lacking. These docks cannot meet the basic safety requirements. Due to a lack of special maintenance funds, some wharfs of land (island) island passenger transport jointly sponsored by the Ministry of Transport and local governments, have not established curing mechanism of repair and maintenance after the completion. Currently, most are out of repair. Some wharfs have already been severely damaged, but cannot get timely repair. For example, the wharf for the route of Wangjia Gulf to Jiming Island in Weihai jurisdiction was damaged by typhoon this year, in urgent need of money for an overhaul.

#### **4.2.3.3 Small Company Scale of Land (Island) Island Passenger Transport**

Land (island) island passenger transport companies generally are in small scale, with poor profit, and mostly struggling businesses. It is difficult to achieve enough input to the safety, or maintain high standards of safety management. Except some land (island) island passenger transport companies from islands with mature tourism development, most coastal land (island) island passenger transport companies are small. A large gap



still exists between the company safety management and administration level and ability of the personnel . These companies often pay more attention to benefits than safety, and sailing adventures occur sometimes. It is difficult to achieve standardized management for them. Also, the market of land (island) island passenger transport is narrow. As a means of public transport, the charge standard cannot go beyond the islanders' accepted rate. And some developed tourism routes show signs that malignant competition is appearing, which seriously affect the healthy development of the fragile land (island) island passenger transport routes. At present, most of the land (island) island passenger transport companies lose hundreds of thousands Yuan per year. Without enough support of the government, these companies will be unsustainable, they can only maintain low standards or even close down sailing. The requirements for land (island) island passenger safety are difficult to be implemented.

#### **4.2.3.4 Adverse Safety Technologies of Some Ships**

Currently, the oldest one of the 6 ships engaged in land (island) island passenger transport is 26 years old, but there is no mandatory regulation for discarding fibreglass-reinforced ship in the state, and some old ships need to be updated. Meanwhile, compared with general passenger ships, some land (island) island passenger ships are with low standards of building and testing, and a poor company operating performance. Some ships are in poor maintenance, bad safety, and technical condition and are in need of increased investment. The ships need stricter inspection standards, evaluation tracks for safety situation, and improvement on ship safety to effectively ensure the safety of navigation. In addition, land-island transport is in bad natural environment, especially in the windy weather of winter. When marine ships engaged in

land (island) island passenger transport can't timely sail, the traffic production and living order of the islands will be influenced seriously. Land (island) island transport ships cannot maintain or replicate effectively through profit, most of the islands lack a good economy, and lack an effective "blood producing" and "blood recharging" mechanism. In most land (island) island transport routes, there are no dedicated cargo ships. The daily items the islanders need, including dangerous goods (such as liquefied petroleum gas), are usually transported or entrained together with passengers, with certain hidden dangers to the safety.

#### **4.2.3.5 Lack of Passenger Transport Service Crew for Land (Island) Island.**

Due to the small scale and poor economic benefit, most land (island) island passenger transport companies cannot afford to hire or train crew at high costs. At present, the main means to meet the needs of ship manning is only by transferring fishermen. Most of the crewmembers are elderly, with poor access to education, some even haven't been to elementary school. Quite a number of crew have not been trained in formal skills systematically, and lack theoretical knowledge. They can hardly pass through strict standardized training and testing. They especially have great difficulty in the crew culture theory-training exam, of which the pass rate is low. Certified and qualified crewmembers are unwilling to work in land (island) island passenger transport, because of low-income opportunities.

#### **4.2.3.6 Inadequate Local Policy Support**

The policy support of some local governments is not sufficient, without unified standards, inadequate coverage, and a problem of high threshold, which hinders the

development of land (island) island passenger transport. Local governments have a certain understanding of the importance of land (island) island passenger transport and also have taken some measures to push and support its development. For example, the transport department of the ports provide a certain amount of fuel subsidies for land (island) island passenger transport ships in some ship routes, and some local governments subsidize land (island) island passenger transport routes, etc. But practically, there are no policies and standards of taking land (island) island passenger routes as public transport subsidized by the government. Due to rising oil prices and enterprise management costs, the existing fuel subsidies are in low standards and inadequate coverage, and the role of government support is not fully or effectively played. Also the requirements for setting up land (island) island passenger transport companies are different in different places. In some places, there is a problem with high thresholds hindering the development of land (island) island passenger transport.

#### **4.2.3.7 Unfulfilled Safety Management Responsibility**

In accordance with the requirements of “Measures for Management of Ferries in Shandong Province” and “About Further Improvement on Marine Production Safety” issued by the Government office of Shandong Province, for the ship safety of land (island) island passenger transport enterprises should establish safety production responsibility systems. Local governments shall implement the responsibility system for traffic safety management, and the marine sector shall strengthen daily traffic safety management. But for now, as the department in charge of water traffic safety, local transportation departments do not implement adequate management on land (island) island transportation companies, and lack communication and exchanges with marine

administration. They also don't provide adequate support for the safety management work of the department of marine. Marine departments do not have a strong initiation to report to the local government about problems of land (island) island transport, or to support and assist local government in implementing safety management responsibility. The co-management system between them two is not perfect, and the effective co-management and long-term mechanism need to be improved. In addition, the safety management responsibility in enterprises is not fully implemented, and they are lack of consciousness of responsibility for safety.

#### **4.2.3.8 Insufficient Contingency Ability of Land (Island) Island Passenger Routes**

There are many coastal land (island) island passenger station sites, with long routes, wide distribution, remotely located, far away from main ports and waterways where the professional strength of marine search and rescue is mainly distributed. The marine contingency plan is not perfect, with no dedicated emergency rescue forces of the government or sufficient ability for emergency disposal. Once land (island) island passenger ships encounter accidents, professional rescue forces can hardly arrive at the scene quickly, not to mention to implement timely and effective emergency disposal. The role of the marine search, city and county rescue centre should be implemented completely, coordinating with the strength of social relief organization, to ensure timeliness and effectiveness of saving.

#### **4.2.3.9 Scattered Docking Sites, Management Difficulties**

The operations sites of land (island) island transportation are relatively scattered. Due to a long line, many sites, and a large area, the regulatory power is inadequate. Furthermore,

the management means are limited, regulatory responsibilities are unclear, and the regulatory model is immature. Many landing crafts often conduct the operation of loading and unloading on the beach of the island. Due to the limitation of the tides and unfixed work hours, it is in great difficulty to conduct site management, and unable to conduct timely site inspection on cargo handling of ships.

#### **4.2.3.10 Difficult to Apply Current Relevant Laws and Regulations to Land-Island Passenger Ships**

At present, the land (island) island transport has been applying regulations used by marine ships and crew management. Especially ship construction standards, technical standards, crew evaluation and certification standards, are much higher than the actual condition of land (island) island transport, which increase operating costs. During the actual operation, it is not in accordance with the actual situation of the local economy, and relevant laws and regulations cannot be implemented. Great difficulties have been brought forward to on-site management of front-line law enforcement personnel. If in strict compliance with the regulations, the majority of ships will be grounded, which will lead to the suspension of land (island) island transport and have a large social impact. Otherwise, the enforcement personnel will bear the liability for violation of management regulations. To avoid responsibility, the management personnel appear to give up management sometimes.

### ***4.3 Sino-Korean, Sino-Japanese Passenger-container Liners***

#### **4.3.1 Route Analysis**

As the regional economic and trade cooperation among China, South Korea and Japan is increasingly frequent, Sino-Korean and Sino-Japanese passenger-container liners have become an important way for transportation of passengers and cargo between the two countries. In promoting economic and trade development, and cultural exchanges, the liners play an increasingly important role in international relations. At present, the project of “Sino-Korean Automobile Transport by Land-sea” is piloting in Shandong province. Meanwhile the first stage of trailer transport in Weihai, Qingdao, and Rizhao has been successfully opened. In the Blue Economic Zone Development Plan of Shandong peninsula, there is a proposal of “...promote water-land transport, river-sea transport, ...build the northeast Asia international logistics centre with Qingdao as the locomotive”(Fan, 2014). These have proposed new requirements on safety, convenience of the passenger-container liner on the Sino-Korean and Sino-Japanese routes. The author has also taken security data for the last three months of ships in China, Japan and South Korea. Through the analysis, the author found that the overall safety management of Sino-Korean and Sino-Japanese passenger-container liners are in good situation, with more complete safety management mechanisms. But there are some hidden dangers or deficiencies, which restrict the safe and healthy development of Sino-Korean and Sino-Japanese passenger-container liners.

##### **4.3.1.1 Sino-Korean Routes**

The location of China and South Korea is adjacent. In routes of Weihai, Shidao,

Longan, and Qingdao to South Korea, sunset-departure and sunrise-arrival can be achieved, with one voyage of ship operation every week. At present, there are 17 routes for Sino-Korean passenger-container ships, with 17 active ships, 8 of which are in Shandong area. With a total passenger capacity of 5,643 passengers/voyage, and container capacity of 2,016 TEU/voyage, it accounts for 47% of total routes for Sino-Korean passenger-container liners, and 52.2% of the total seats, 53.2% of the total space. In the Qingdao jurisdiction, there is 1 route with 1 operating ship. The total passenger capacity is 660 passengers/voyage, and the container capacity is 280 TEU/voyage.

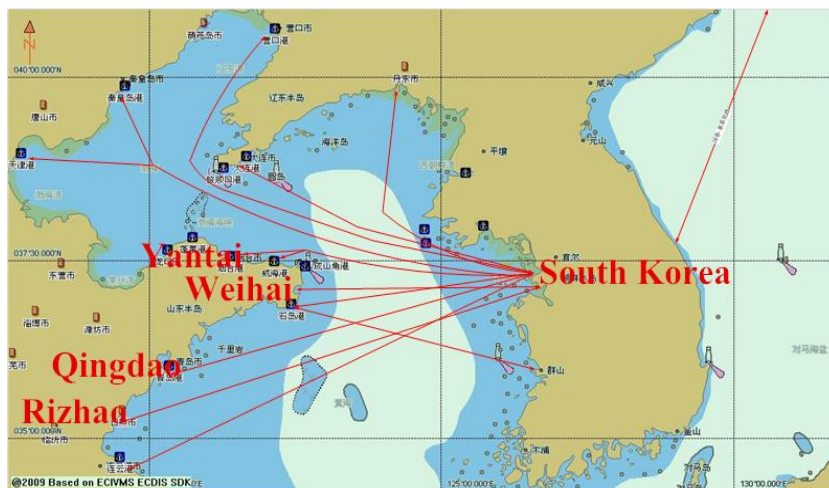


Figure 11: The Route Map of Sino-Korean Passenger-container Liners

Source: Shandong MSA office Navigation administration department

#### 4.3.1.2 Sino-Japanese Routes

At present, in the Qingdao jurisdiction, there is a single route for Sino-Japanese passenger-container liners and the operation of a single ship, the Qingdao-Shimonoseki

passenger-container liner. The total passenger capacity is 699 passengers/voyage, and the container capacity is 455 TEU/voyage. There are 2 voyages of the Qingdao-Shimonoseki passenger-container liner each week. The average annual volume for passenger and cargo has been slowly growing year-by-year, carrying about 12,000 passengers and 81,000 TEU of cargo in 2014.(See APPENDIX Table4 and Table5)

#### **4.3.2 The Current Management Situation**

In recent years, Qingdao Marine Bureau has always taken the safety administration of passenger-container liners in Sino-Korean and Sino-Japanese routes seriously. It is active in taking effective measures, strengthening safety management of passenger-container liners on Sino-Korean and Sino-Japanese routes, which has ensured the stable safety condition of Sino-Korean and Sino-Japanese routes.

##### **4.3.2.1 Combination with Different Activities, Improvement of Management on Sino-Korean and Sino-Japanese Passenger Liners**

In the regular exploration of "four important and one key" and risk source screening activities, from the aspects of "people, ship, environment, management" respectively, risk assessment has been carried on Sino-Korean and Sino-Japanese passenger-container liners. The main risk factors were identified and targeted control measures were formulated. Clearance of the responsible units and departments was made. It is taken as one of the top ten risk sources of water traffic safety in the Shandong area, and key regulations are implemented on it.



#### **4.3.2.2 Regular Launch of Joint Inspection Activities.**

In security screening activities of “Four passengers and two dangers” and the seasonal safety management work of the "Spring Festival" and "National Day" tourist seasons, the Qingdao Bureau and CCS, KR classification society, will select senior inspectors and surveyors to set up a special inspection group. Combined with the characteristics of passenger-container liners, a targeted inspection plan will be researched and formulated, large joint inspection activities will be organized and launched regularly, eliminating hidden accidents or dangers in real time, promoting the safety management level of Sino-Korean, and Sino-Japanese passenger-container liners.

#### **4.3.2.3 Improvement of the Early Warning Forecast for Passenger-container Liners**

After receiving the information of bad weather, such as cold wind, typhoon, etc. the early warning information should be released rapidly to the passenger-container liners heading for ports. The liners should prepare well for wind shelter under organization, the personnel should enhance the organization of the patrol, and ships should implement resistance measures under management. Countering the characteristics of passenger-container liners, port standards of forbid and restricted navigation have been further refined. With measures of reducing the cycle of harsh weather forecasts, combining forecast predictions with actual measurements, and arranging the priority of commuting to and from ports, schedule delays of passenger-container liners can be avoided to the utmost.

#### **4.3.2.4 Establishment and Improvement of the Joint Rescue Mechanism of Passenger-container Liners**

Considering passenger-container liners have the characteristics of carrying a large number of passengers, in “the Rescue Cooperation Agreement of the government of People's Republic of China and the Republic of Korea” and the framework of “Agreement of China Marine Search and Rescue Centre and South Korean Coast Guard about the Performance (the Rescue Cooperation Agreement of the government of People's Republic of China and the Republic of Korea) ”, the VTS transport management centres in Qingdao, Weihai, and other places have signed the deal of joint search and rescue with active passenger-container liners, and joint search-and-rescue exercises are regularly organized, the joint rescue mechanism of passenger-container liner has been further completed.

#### **4.3.2.5 Active Service for Promoting the Healthy Development of Passenger-container Liner Routes**

The policy of no waiting at the port has gradually deepened. For passenger-container liners with good safety integrity, the port inspection formalities are conducted in advance. Then after passenger embarkation, the travel agency supplements the passenger list, which further shortens the waiting time for the ship. The crew of passenger-container liners are organized to visit VTS traffic centre, and communicate with the VTS on the standards of navigation prohibition and limits. The mutual understanding between the crew and passengers is enhanced. The Korean version of marine traffic accidents and relevant laws and regulations are given to crews of South Korean freely, to further improve the warnings about education and publicity of laws and regulations.

### **4.3.3 Existing Problems**

The navigation environment of routes for Sino-Korean passenger-container liners is complex, with high densities of ships in the navigation area, bad marine and weather conditions. Several dangers and accidents of ships have occurred. According to statistics, since 2001, there have been 4 cases of passenger-container liner collision accidents in Shandong's jurisdiction, 2 cases of hanging net accidents, and 1 case (in attachment 2) of a security related event, including one accident of a significant level in the Qingdao area. Through the related statistics, the main existing problems of passenger-container liners in Jiaozhou Bay are found, as follows:

#### **4.3.3.1 Elderly Ships and Some Low Quality Crew**

Currently, the average age of active Sino-Korean, and Sino-Japanese ships in Jiaozhou Bay is 19.5 years, with the oldest being 25 years, and the youngest being 14 years old. A recent centralized major check found that the number of existing defects increase as the ship age of passenger-container liner grows. The number of 25-year passenger-container liners reached 4, stranded defect for 4 items, the defect number of a single ship is twice that of a ship in 20 to 25 years (See APPENDIX Table 6).

The inspection found that there is a significant turnover of crewmembers, new crewmembers are not familiar with navigation characteristics of the area and duties in the strain deployment table. The routes of Sino-Korean (Japanese) passenger-container liners are fixed to a short distance. There have been no serious accidents over the years, which lead to blind confidence and sloppy thinking among the crew on ship safety situations. For some passenger-container liners, crew from two countries are on board

simultaneously, the English level of the crew generally is not high. There are obstacles in communicating in English with other ships and related departments on shore while sailing at sea. Meanwhile, senior crew are mainly Koreans and Korean is the main language used in the actual work. This poses communication obstacles between Chinese and Korean crew. A recent inspection found that inner-crew operational defects account for 24% of the total defects. The crew defects concentrate on emergency exercises being carried out in chaos, some crew are not familiar with the responsibilities, and so on.

#### **4.3.3.2 Improper Safety Management Mechanism of Shipping Companies**

For historical reasons, most ships sail under Panamanian colors ,and investment mostly invest in Sino-Korean passenger-container liners, which are not conducive to ship safety management from the China and South Korean government. Both China and South Korean passenger liner companies adopt a share-holding system, most passenger-container liner companies in Sino-Korean routes only have the ownership and operation of the ship, with management rights belonging to other management companies, which creates the phenomenon of “people who run the ship business do not do management, people who manage the ship do not own the ship”. The safety management initiation of the shipping companies is weakened, and they will depend more on management companies. Meanwhile, since the internal safety management responsibilities and authorities are not clear in some companies, responsibility implementation is not completely conducted. It can lead to mutual shuffles after the accidents. In crew management, shipping companies are not responsible, so even management companies cannot actually manage the crew completely. Crews on and off board are arranged and managed by a third company. Crew companies in South Korea

send Korean crews, and Chinese crew companies send Chinese crews. Three companies manage the crew: shipping companies manage their work, safety management companies implement safety procedures, and crew companies are responsible for the salary. In practice, it is difficult to distinguish management responsibilities, and management implementation is not completely conducted.

Since the schedule of Sino-Korean (Japanese) passenger-container liner is tight, some ship management personnel and crew pay more attention to production than safety. A few of management personnel considers schedules come first, and they can not understand the prohibition and limit measures conducted under harsh marine and weather conditions, some even feel resistance. For convenience, a few crew cover the fire detector which is easy to create a false alarm in the kitchen or other places, or fix the fire door in the life sector, to make it open for a long time, and so on.

#### **4.3.3.3 Unified Management Standards of Responsible Departments in China, Korea and Japan on Passenger-container Liners**

At present, the responsible departments of China, Japan and South Korea rely on relevant international conventions to conduct management on passenger-container liners. But due to the differences in the political systems, economic development of the three countries, management is also different. In China, we take "four passenger and one danger" as the top priority in safety management. Especially after the heavy shipwreck "11 · 24"( Wang, 2001, pp.4-5), a series of measures of improving ro-ro passenger ship safety management have been adopted, including restricting anti-wind grade, implementing on-site visa, shortening period of ship inspection, etc. But these policies are not applicable to passenger-container liners in Sino-Korean routes, especially

prominent in the management on ships with flag of convenience, some ship owners feel resistance to these policies. The shipping management of South Korean government is applying "active non-intervention" policy. On the one hand, strict highly centralized management and management is conducted; on the other hand, they principally do not participate in or interfere in the management and business of shipping companies. Except for few spot checks, the inspections are mainly port state inspections, without carrying out the "movable type". Though through all previous negotiations, China and South Korea reached a consensus that newly added passenger-container ships are restricted to be younger than 20 years old, a ship that is in excess of 20 years old will apply dual classification management. But for the time limit of forced ship discarding, navigation prohibition and limit for harsh weather, they have not yet reached a consensus. Similar negotiation activities in Sino-Japanese routes have not yet been conducted.

#### **4.3.3.4 Singular Management Means of Passenger-container Liners**

All Sino-Korean and Sino-Japanese passenger-container liners are shipping under Panamanian colors. At present, except for management measures of port state inspections, entering and exiting port inspections, ship operation reports, there is a lack of other effective means of marine management. Because there is no wind grade limitation and a lack of similar regulations of ro-ro passenger ships' "no sailing under seven conditions" in Bohai Bay, only port coordination and piloting can be relied on when conducting navigation prohibition and limited standards for bad weather on Sino-Korean and Sino-Japanese passenger-container liners. Safety management of some ships is authorized to other company management systems or the company system is

established in South Korea, thus management on passenger-container ship companies of marine sector lack the grounds for implementation.

#### ***4.4 Private Yachts***

##### **4.4.1 The Current Management Situation**

In order to strengthen project construction and operation management of yacht clubs in Jiaozhou Bay, to regulate the safety management and operation mode of the yacht club, reduce operational security risks, to promote the safe, orderly and healthy development of the yacht economy, and to promote the economic development of yacht industry in Qingdao, in 2010, combining the “Regulations of Yacht Safety Management” with “Marine Traffic Safety Regulations of Qingdao”, Qingdao Marine Safety Bureau formulated the "Guidance for Safety and Pollution Prevention Management on Yacht Clubs in Qingdao Jurisdiction ", providing guidance for safety and pollution prevention management on yacht clubs and yachts within the territory of Qingdao.

##### **4.4.1.1 Improvement of Cooperation, Striving for the Local Legislation**

In terms of the safety management of yachts, the communication with Qingdao government functional departments is improved actively, striving for the support and understanding of city government. The legislation pace of yacht management is accelerated, the “Measures for the Administrative Measures of yachts in Qingdao” is formulated rapidly, and the policy barriers are overcome with acceleration, to promote the further development and expansion of the Qingdao yacht industry.

#### **4.4.1.2 Improvement of Policy Guidance, Promotion of Record Keeping for Yacht Clubs**

Taking record management of club by the wheel, the management regulations and related requirements for yachts are complemented. Through record management of yacht clubs, the management of yacht clubs is standardized, effective management of yachts is achieved. At present, Qingdao Yinhai International Yacht Club has formally submitted the record.

#### **4.4.1.3 Enhancement of Department Linkage, Improvement of Law Enforcement and Resultant Force**

Via integrated enforcement with harbour and shipping, border defence and other functional management departments, act in violation of regulations such as unlicensed yacht and illegal passenger operations are cracked down upon, the purpose of effective regulation is achieved, jointly safeguarding the district order.

#### **4.4.1.4 Improvement of Training, Striving to Improve Crew Quality**

Regular safety skill training for crew is carried on, mainly including navigational safety knowledge, fire control, life saving, ship pollution prevention, and maintenance of the ship manoeuvring system. The crew's own quality is constantly improved, and the emergency response ability is improved to ensure that a swift response and effective rescue can be conducted when encountering accidents and to reduce casualties and property losses to the utmost.



#### **4.4.1.5 Improvement of the Navigation Environment and Striving to Improve the System of Early Warning Forecast.**

The traffic control system is set up and implemented, the construction of a command centre at the Olympic Sailing Centre is actively promoted. Furthermore, the daily management and management of the Olympic Sailing Centre waters is strengthened. The traffic zone is defined according to law and measures of navigation prohibition and limitations are conducted under severe weather conditions. The system of early warning forecast is established and implemented. Warning notices in the ports and wharfs are set up, with timely publishing of warning notices.

#### **4.4.1.6 Improvement of Internal Management, Attempt establishment of the Construction of Safety Management System in Shipping Companies and Yacht Clubs**

According to the characteristics of yachts, the system standards of safety management are formulated with yacht management characteristics. The development of system construction in shipping companies and clubs is tried. The development is similar with guidance on the interests of "good faith yacht management". One professional safety manager is required in every company, to improve the safety management and management of the company.

#### **4.4.2 Existing Problems**

##### **4.4.2.1 Inapplicable Current Laws and Regulations**

The existing laws and regulations for private yachts are not fully applicable. Some

yachts do not meet the existing conditions of registration, and have not obtained the relevant ship certificate, and are in a regulatory vacuum. One of the important reasons is that they cannot be tested so they can't register. It is difficult to effectively bring them into the marine regulatory category. First, the construction source of yachts is complicated, many yachts are imported or designed and made in ship factories without construction qualifications, the related drawings are incomplete, which meet the prerequisites of ship legal checking, so they cannot be tested. Second, the current “the interim provisions on the legal inspection of yachts“ is not applicable to motor sailing boats and other private yachts, so they cannot access inspection or registration.

#### **4.4.2.2 Unclear Management Responsibilities**

The legal definitions of some yachts are unclear, and the regulatory responsibilities are similarly unclear. Some yachts, especially motorboats are used for both sports and entertainment. Except for sports, they are used as private yachts for the purposes of offshore leisure. But because the sport boats and non-operating yachts belong to different legal categories, they have different regulatory departments. Especially for the present time, sports departments have unclear definitions for sports ships.

#### **4.4.2.3 Difficulty in Delineating the Navigation Area Range of Yachts**

Most of the yacht industry is concentrated in coastal scenic areas and downtown, adjacent to functional waters of the city port, entering and exiting routes with a high density of anchorage and ship traffic, therefore it is difficult to delineate the dedicated navigation area. In “The Safety Management Regulations of Yachts”, yachts are required to berth in dedicated berth waters or mooring points published by marine management

departments, but the basis and the way published are unclear. Meanwhile for private yachts with recreational purposes, the navigation and berthing is more random. The yacht operators are more complex and mostly non-professional sailors, which bring a great influence on maintaining a good sailing order and ensuring the safety of navigation.

#### **4.4.2.4 Insufficient Legal Basis of Yacht Club Management**

The legal basis of yacht club management is insufficient, and the safety management role of club is well restricted. The safety management of yacht clubs is quite necessary for ensuring the safety of yacht navigation. But for now, there are insufficient management laws and regulations about the yacht clubs, yacht owners can voluntarily join club management. Meanwhile the marine sector only takes the function of record checking on yacht clubs. Currently, although many yacht clubs have been established, they have not been registered in marine departments. Also, they do not meet the eligibility requirements of “The Safety Management Regulations of Yachts”. The existing laws and regulations are unclear about the management departments for clubs. It is difficult to implement effective management and constraints on the establishment and operation behaviour of clubs.

#### **4.4.2.5 Imperfect Existing Mode of Management on Private Yachts**

The existing regulatory model cannot completely suit safety management requirements on private yachts. In “The Regulations on Safety Management of Private Yachts”, there are some requirements on the management management of private yachts. But they are not comprehensive and operable. With a large number of yachts, wide distribution,

strong manoeuvrability in the jurisdiction, it is difficult for the marine safety administration to have full coverage. Especially for yachts without club management or with unfulfilled club management, it is difficult to implement the safety management and regulatory inspection requirements. So it is very urgent to explore safety management mode for private yachts, to establish a pragmatic yacht safety management mechanism, and to effectively control navigation risks of the yachts.

## **Chapter 5 Suggestions on Improving Marine Tourist Ships Safety in Jiaozhou Bay**

### ***5.1 Marine TOURIST SIGHTSEEING Ships***

#### **5.1.1. Define the Permanent Organizations of Marine Tourism Management**

Under the leadership of city government, the permanent organizations of marine tourism management should be defined. Via the joint conference system, the current fragmented working mode of marine tourism management departments should be improved. Under the unified leadership of the municipal government, the work mode that different departments perform in their duties and jointly renovate tourism management in Jiaozhou Bay should be established gradually. The current focus is to avoid improper competition in the tourism of Front Sea. Comprehensive safety management on tourism in Jiaozhou Bay should be improved, a scientific and effective long-term management mechanism should be gradually formed.

#### **5.1.2 Improve the Integration of Different Marine Tourism Resources in the Front Sea**

Integration of different marine tourism resources should be improved in Jiaozhou Bay. Company's entry criteria should be improved. In the short term, the excessive expansion of capacity should be limited and stopped in the Front Sea. Otherwise, by actively introducing social capital merger and supporting merger and acquisitions of qualified tourism enterprises, tourism companies in the jurisdiction can be integrated into several joint-stock companies, and a new tourism operating mode of unified operation, management, billing, scheduling can be formed in the Front Sea. Via centralized

management, the present situation of disordering management and vicious competition in tourism of Jiaozhou Bay should be eliminated. Via large-scale operations, the operation level of tourism industry in the Front Sea should be improved. The scattered, small, poor and disordering condition should be solved on the basis of system. The unfulfilled security management and poor risk resistance should be fundamentally improved.

### **5.1.3 Improve the Management of Tourism Wharf Sites in the Front Sea**

The management of tourism wharfs in the Front Sea should be improved, tourism wharfs and embarkation points should be planned and laid out scientifically, some extremely scattered wharfs should be cancelled. Centralized and unified management on tourism wharf sites should be implemented. Especially, high concentration of embarkation points and tourist ships brought management chaos and high risks in Bada Gulf, Tuandao Island, so their number should be gradually reduced, and the focus should to be transferred to Erzhong Gulf, Fushan Gulf and other waters. Also, unified construction transformation on wharf embarkation points should be conducted so as to realize reasonable distribution and centralized management of tourism in the Front Sea, and to promote the image of marine tourism in Qingdao.

### **5.1.4 Hasten the Upgrade of Tourist Ships in the Front Sea**

Active measures should be taken to hasten the upgrade of tourist ships in the Front Sea. On the one hand, entry standards should be established and published, entry conditions should be improved, companies and ships with low standards should be forced out gradually. On the other hand, policy and financial support should be improved, to

promote active upgrade of some ships with poor image or safety performance. Ships recommended by government should be defined and actively promoted, encouraging ships to develop in the direction of large-scale, standardization, high-end, and safety, and to enhance the competitive and nice image of tourism in Jiaozhou Bay.

#### **5.1.5 Improve the Overall Planning of Marine Tourism Routes in the Front Sea**

The overall planning of marine tourism routes in Jiaozhou bay should be improved, route area should be reasonably divided. Specific navigation routes should be defined in accordance with the different types and features of tourist ships. On the basis of the existing routes, new routes should be ushered in, high-quality routes should be cultivated, the phenomenon of centralized traffic in some waters should be reduced and eliminated as much as possible, to ensure enough safe distance during navigation of ships, to ensure the travel safety of tourists, to enrich the connotation of sea tourism in Jiaozhou Bay, and to promote urban tourism taste.

#### **5.1.6 Comprehensively Assess the Safety Risks of Emerging Water Tourism Projects**

Under the leadership of municipal government and cooperation of relevant departments, the safety management of "adventure duck" amphibious sightseeing bus should be improved. Strict examination, approval and regulatory measures should be adopted. Meanwhile, the safety risks of this emerging water tourism project should be comprehensively assessed, to further determine if the safety technology and management condition of "adventure duck" amphibious sightseeing bus meets special requirements of marine tourism safety in the Front Sea, Qingdao. Before "adventure

duck " amphibious sightseeing bus are fundamentally improved, and before safety conditions of safe navigation are acquired, its operating should be strictly restricted or suspended to reorganize. Furthermore, before introduction of other possible emerging tourism transport water projects, a risk assessment mechanism should be taken first. Also, emerging marine tourism passenger transport projects with unclear and large safety risks should be introduced cautiously, to ensure the healthy development of the marine tourism industry in Jiaozhou bay.

## ***5.2 Land (Island) Island Passenger Transport Ships***

### **5.2.1 Plan Reasonably and Develop Scientifically**

Relevant government departments should make reasonable orientation, unified planning and management on land (island) island passenger transport, to effectively ensure its scientific development. Government at all levels should give full consideration to the fact that land (island) island passenger transport bears transportation services for islanders, which has the characteristics of public transport and welfare. The part of public transport service on land (island) island transport routes, which is facing difficulties should be brought into urban public transport category, with unified planning and management. Especially on inhabited islands that have no routes, a comprehensive search should be conducted. Routes should be opened up soon and qualified passenger ships should be introduced to cover all inhabited islands with safe and reliable land (island) island passenger routes, to improve the safety conditions of islanders' travel, and to eradicate the hidden dangers of marine traffic. Government at all levels should unveil encouragement policies for developing land (island) island passenger transport, reduce entry barriers, and eliminate development barriers. The curing mechanism of investment,



the execution on construction and maintenance of land (island) island ferry wharfs, and other public facilities should be established. Infrastructure construction and renovation should be improved. In the long run, by improving island economy tourism, the development of island tourism could stimulate land (island) island passenger transport and improve self-motivation of enterprises, to realize the benign development finally.

### **5.2.2 Make Greater Efforts to Support the Sustainable Development of Land (island) Island Passenger Transport**

Due to the nature of social public welfare in land (island) island passenger transport, it cannot completely rely on market operating, and it requires modest fiscal subsidies from government. Government at all levels should establish a long-term mechanism, bring land (island) island transport into the category of public transport management, with full guarantee of the relevant policies, and set up special land (island) island passenger funds. Considering the reality of rising fuel price and enterprise management costs, fuel subsidies standards of land (island) island passenger ships should be improved. Provincial and municipal governments should set up a long-term mechanism of fiscal subsidies and tax breaks for land (island) island passenger transport enterprises, to guarantee sustainable operation of land (island) island transport enterprises, and to realize the benign development of land (island) island passenger transport. Shandong Marine Bureau is applying breaks of port dues and other fees for coastal land (island) island passenger ships in Shandong, to alleviate the burdens and improve the speed of passenger transport development, to guarantee the sustainable enterprise operation of land (island) island passenger transport, which meets civil needs of safe and convenient trips.

### **5.2.3 Integrate Resources and Unify Management to Realize Scale Management of Companies**

For the existing small-scale and difficulties in standardized management on land (island) island passenger transport, and considering the nature of public transport service, the local government should strengthen the appropriate interventions, policy guidance, and overall integration of passenger tourism resources. Unified planning, investment, and management on land (island) island passenger routes should be done, with various means of stock cooperation or joint venture, in the form of one company in one place, one route within one company. The industry entry criteria should be increased, market behaviour should be standardized, and the unified management and standardized operation of coastal land (island) island passenger transport should be realized, to improve the ability and level of company safety management and risk handling, to completely solve the current disorderly operation and vicious competition of passenger transport management, and to ensure the healthy and orderly development of land-island transport market.

### **5.2.4 Improve the Safety Technology Conditions of Ships**

Under the leadership of local government, other departments such as marine, port and waterway, survey, etc. should cooperate, to publish standards of hull assessment and compulsory elimination for FRP ships. A comprehensive survey on the existing safety technology condition of land (island) island passenger ships should be conducted, inspection requirements and standards of passenger ships should be standardized and unified, the safety stability of passenger ships and other factors related with passenger transport security should be reassessed. For ships that do not meet the safety technical

conditions or with security flaws should be supervised and urged to a timely and effective rectification. Ships that cannot be rectified resolutely should be eliminated out of passenger transport market. Safety investment should be improved, financing channels should be broadened, and ship capacity should be updated. Also, landing-island (island) passenger ships with elderly age or difficulties of safety assurance should be eliminated quickly. At the same time, newly built and existing passenger ships with more than 30 seats should be promoted and encouraged to conduct inspection classification, to promptly and effectively improve safety technology conditions of land (island) island passenger ships. For the development of islands with no residents, it is recommended that local government should attach great importance to planning and construction of wharfs, routes and ships, to assure the safety of new land-island routes.

#### **5.2.5 Further Implement Safety Responsibilities of Land (island) Island Passenger Transport**

The focus of "two responsibilities" should be implemented, the primary responsibility of production safety in land (island) island passenger transport enterprises should be strengthened continuously. Communication with companies of propaganda and education should be improved. The establishment and improvement of related safety management systems should be supervised. The main production safety responsibilities of companies should be defined. The development concept of "safety comes first" should be established, so as to promote and fulfil the responsibility system of enterprise safety production. Under the leadership of local government, the joint law enforcement mechanism of safety inspection, marine, transportation, ship survey, tourism and other departments should be further implemented. The coordination and communication

between various regulators should be strengthened. The activities of joint law enforcement should be organized promptly, to comprehensively form a long-term work mechanism that the government leads in uniform, departments supervise and manage according to regulations, enterprises are entirely responsible, and society extensively monitors, so as to forge a comprehensive chain of safety responsibilities.

### **5.2.6 Improve Crew Quality of Land (Island) Island Passenger Transport**

Combined with the actual status of the land (island) island passenger crew, it is suggested that special training and solitary examination should be carried out. The training and examination for the crew of ships under 100 gross tons, and with fixed routes should be increased. Also theory culture test requirements for the crew should be decreased. For some crew, the training and examination fees should be reduced or cut, so as to increase the number of licensed crew members. After passing the examinations, crew should be issued a competency certificate that is applicable for one certain specific route. This can improve the sense of belonging, at the time this can ensure crew are qualified, which can assure the stability of land (island) island passenger transport crew.

### **5.2.7 Improve the Strength of On-site Patrol, Management and Joint Inspection**

During holidays and tourism seasons, the patrol on land (island) island transport sites, wharfs should be further strengthened. During other seasons, on-site inspections should be conducted regularly. Un-seaworthy ships, incompetent crew, and illegal behaviours, such as fishing agricultural ships carrying passengers etc., should be stopped. During patrol, ships overloaded should be strictly prohibited, and local standards of navigation prohibition should be strictly implemented. The order management of passengers

boarding should be supervised to strengthen, prohibiting passengers from excessively concentrating on the upper deck or one side. Passengers and goods should be supervised and urged to load separately, prohibiting passengers from loading together with dangerous goods or carrying hazardous items secretly. Problems found in patrol should be promptly reported to local governments, under the unified leadership of local governments, joint law enforcement should be carried to ban it.

#### **5.2.8 Change Supervision Modes, and Improve the Efficiency**

The characteristics of land (island) island transport bring considerable difficulties to the management of marine sectors. According to the current regulatory requirements, equipping management personnel in every port of every island will increase management costs, and will not conform with the principles of administrative efficiency. The management pattern of the faith system and dynamic law enforcement management can be adopted, establishing credit files for ships in fixed routes, conducting regular visa, and improving work efficiency. In the jurisdiction, dynamic patrol of law enforcement should be conducted, investigating and treating violations in a timely manner. Investment in science and technology should be increased; CCTV monitoring sites should also be constructed to improve electronic monitoring management.

#### **5.2.9 Establish and Improve the Long-term Effective Mechanism of Government-led Joint Law Enforcement**

It is suggested to actively coordinate local governments, or government in town or county, to establish the joint meeting system participating by the local government, marine, transportation and other units. Joint meetings should be organized regularly,

notifying the present situation of land (island) island transport ships and problems found during the patrol, and proposing critical thinking and creative methods to solve the problems. The effective mechanism of government-led joint law enforcement should be established and joint law enforcement should be organized in a timely manner. Also, prevention of the illegal carrying of passengers on fishing boats and agricultural ships should become commonplace. A long-term safety management work mechanism for land (island) island passenger transport that governments lead in unity is necessary, departments should supervise and manage in accordance with regulations, enterprises must be held entirely responsible, and society should extensively monitor the marine situation.

#### **5.2.10 Collaborate With Government and Society Effectively, Improve the Mechanism of Marine Search and Rescue.**

“Marine Search and Rescue Measures in Shandong Province” and other requirements should be practically implemented. The three levels of the marine search and rescue command system: provincial, city, and county (district) should be improved. The role of the city and county search and rescue centres should be fully implemented. The government should lead in unity the work mechanism of marine search and rescue with all sectors of society. There should be better central command coordination, and a well complimented marine sector should be established. The volunteer team construction of marine search and rescue should be broadened, widely invoking social forces of search and rescue, and building upon the coastal rescue network of volunteers in Shandong. A government reward and compensation mechanism for marine search and rescue should be further improved, increasing rewards for social forces, to fully arouse the enthusiasm

of the social assistance force to participate in marine search and rescue. The policy of "prevention comes first; prevention combined with rescue comes second" should be adhered to, widen the channel of the early warning information release, improve the level of forecast and ability, update the mode of ship communication, establish and improve the marine warning monitoring network, and effectively promote early warning and emergency disposal ability of land (island) island passenger routes .

### ***5.3 Sino-Korean, Sino-Japanese Passenger-Container Liners***

#### **5.3.1 Establish Elimination Standards for Sino-Korean and Sino-Japanese Passenger-container Liners**

Considering that Sino-Korean and Sino-Japanese passenger-container liners are ships that are engaged in trade between the two countries, it is suggested that Sino-Korean and Sino-Japanese should establish the elimination standards for Sino-Korean and Sino-Japanese passenger-container liners through consultations, with reference to China's management regulations on old transport ships. For ships that acquire a two-stage entry, ship inspection standards and the scope should be further clarified, in strict accordance with the classification inspection program.

#### **5.3.2 Improve Daily Management of Company System**

It is suggested that the authorities on both sides should implement auditing in strict accordance with the ISM code, and strengthen the daily management company system. During the audit of the system, the authorities of both sides can exchange inspectors, involved in system auditing on passenger-container liner companies, and communicate

with each other about the audit information, so as to promote the unification of the audit standard. In the process of port state management and inspection, management and inspection on the performance of the ship system should be strengthened, to ensure that the system operates effectively.

### **5.3.3 Study to Establish Standards of Navigation Prohibition and Limit on Sino-Korean, Sino-Japanese Passenger-container Liners**

It is suggested that Sino-Korean and Sino-Japanese navigation routes should combine the actual situation of passenger-container liners, the characteristics of the navigable waters, and study how to formulate the standards of navigation prohibition and limit standards on Sino-Korean and Sino-Japanese passenger-container liners, ratify the anti-wind level, and provide legal support for site management of the ships.

### **5.3.4. Improve the Sino-Japanese and Sino-Korean Management Cooperation**

1) The safety joint conference system and safety standards consultation systems should be established for both Sino-Korean and Sino-Japanese passenger-container liners. The liner owners, classification society, industry organizations, local governments, marine affairs and related units should be organized for joint specific conferences, notifying the safety management situation of the ships. For the technology conditions, manning, working language, and safety management of passenger-container liners, mutual safety standards should be consulted and researched, to improve the overall security level of ships in the routes, and to promote standardized competition of industry.

2) The credit rating system of Sino-Korean and Sino-Japanese passenger-container liners



should be established. Classified and graded management should be improved. A comprehensive evaluation on the status of existing passenger-container liners should be conducted, in combination with on-site managements, port state inspections, company system audit, and other related information. The credit rating evaluation of Sino-Korean and Sino-Japanese passenger-container liners should be conducted regularly. For passenger-container liners with good credit, a green channel should be opened up for them, with a priority to arrange clearance, formalities of entering and exiting, reduction of boarding for site inspections, extended periods of port state inspections, etc.; for ships with poor credit, on-site inspections, port state inspections should be appropriately increased, the scope of inspection should be expanded, to maintain high pressure on it.

3) The joint port state control of Sino-Korean should be carried out. The responsible authorities of both sides should carry out not less than two times of joint port state control activities on Sino-Korean passenger-container liners each year. China and South Korea should be responsible for organization and conduction in turn. Inspectors are composed of both Chinese and South Korean. They should communicate about some good practices of local administrative authority in managing passenger-container liner safety. On meteorological and marine conditions and the characteristics of navigation environment in the routes for Sino-Korean passenger-container liners, special provisions of safety management between the two countries should be discussed, to gradually achieve the unified standards of safety management on passenger-container liners, and to improve the safety management level of online passenger-container liners. There also should be similar joint inspection activities for Sino-Japanese passenger-container liners.

### **5.3.5. Improve Regional Joint Rescue Cooperation**

Under the framework of Sino-Korean national marine contact mechanism, related measures of Sino-Korean marine search and rescue cooperation memorandum should be actively implemented. The emergency coordination mechanism of responsible marine departments in the navigation ports of Sino-Korean passenger-container liners should be established. Focus on the characteristics that group death and injury are easy to be triggered in passenger-container liners, targeted contingency measures should be formulated, and existing passenger liner rescue deal should be constantly supplemented and improved, to gradually improve the ability of joint emergency rescue. There should also be similar joint rescue cooperation activities between China and Japan.

## **5.4 Private yachts**

### **5.4.1 Establish the Mechanism of Yacht Inspection and Registration in Conformation with Reality**

The laws and regulations of inspection and registration should be further revised and improved. A work mechanism of practical yacht inspection and registration should be created. The inspection and registration of non-operating yachts is the precondition of taking yachts into the marine management. For the problems that present laws and regulations of examination, registration is not fully applicable to private yachts, it is suggested to revise and improve the laws and regulations of inspection and registration, to make it cover all types of yachts and conform to the trend and characteristics of the

development. The effective combination of principle with flexibility should be taken seriously, simplifying the inspection and registration procedures, improving the working mechanism, then safe and reliable yachts can break through the legal obstacles and obtain effective ship inspection and registration certificate, which will realize overall effective management and control of yachts, and lay the foundation for subsequent marine management work.

#### **5.4.2 Fulfil the Role of Club Safety Management Effectively**

The management pattern of yacht clubs should be further promoted, to standardize the management of yacht clubs, and to play the role of club safety management effectively. Under the actual situation, it is difficult for marine sector to directly and comprehensively implement management of the yacht, and it is practical and necessary to promote management modes of yacht clubs, establish a management pattern of marine sector regulating, yacht clubs taking charge, and yacht owner self-discipline. This is a multiple linkage to guarantee the yacht navigation safety. The management of clubs is very important, so it is suggested to encourage yachts to join clubs by policies, to set up different regulatory requirements on self-management and management by yacht clubs, to guide and promote the operational security risks reduction in the mode of unified management by yacht clubs. At the same time, standards and requirements on the establishment and operation of yacht clubs should be further defined. Related departments should be introduced and pushed to publish club certification and market entry system. Qualification examination and elimination of yacht clubs without corresponding qualifications or with unfulfilled safety management responsibilities should be improved. So as to effectively regulate the management mode of clubs. Also,

overall effective management of yacht safety can be achieved by strengthening the management of clubs.

#### **5.4.3 Improve the Mode of Yacht Management and Management**

The management and administration mode of yachts should be improved, to realize the effective regulation of yacht safety. Yacht safety management cannot just copy the traditional marine management mode, it needs to meet its own characteristics and safety management rules. It is suggested that the regulations of yacht safety management should be further adjusted and improved, and primary safety responsibility of yacht owners should be implemented. Yacht seaworthiness and personnel competency are two keys to control. By establishing the entrance of yacht safety inspection and registration, periodic review of yacht safety and technical conditions, and regular yacht safety inspections, the key links in the process of ensuring yacht safety and seaworthiness are controlled, urging yachts to comply with the safe navigation, improving early warning forecast, implementing the requirements on navigation prohibition and limit for harsh marine and meteorological conditions, and eliminating behaviors of illegal and adventurous navigation. The training and education of yacht operators should be improved, moderately strict standards of safety knowledge and competency for operational staff should be established, to improve safety skills and law-abiding awareness of operation personnel. At the same time, according to the convenient and effective principle, focusing on safe access, education guide, illegal treatment, early warning, and emergency disposal in marine management, traditional safety management means should be improved on the premise of safety assurance, to simplify and reduce the excessive administrative interventions for yachts.

#### **5.4.4 Cooperate Jointly to Eliminate the Blind Area in Yacht Safety Management**

Department cooperation should be improved, a responsibility chain of yacht safety management should be built, and blind area of yacht safety management should be eliminated. There are a large variety of non-operating yachts, with complex situations, often involving marine, ship survey, sports, tourism and other departments. Especially for some private yachts with undefined natures and multiple functions, such as sports nature, the responsible department for management is unclear, and safety requirements are difficult to carry out. It is suggested that in the legislation and management of private yachts, full consideration should be put on the regional characteristics and development patterns of yachts in different regions. Also, flexibility and mobility of the policy should both be taken seriously. At the same time communication and collaboration with relevant departments should be improved, a safety management coordination mechanism should be set up, defining the safety responsibility, building a responsibility chain of the yacht safety management, eliminating blind area in safety management, to realize the effective management of yacht safety, and to ensure the orderly development of yacht industry safety. It is suggested that the Shandong Marine Bureau should formulate " Measures for the Implementation of Yacht Safety Management", and other innovative regulatory measures. They can refer to the model of Hainan province, coordinating with the government of Shandong province to issue and implement to the society.

## **Chapter 6 Conclusion**

Through the analysis on the tourist ship development of advanced regions at China and abroad, and the present situation of safety management experience, combined with the characteristics of the marine tourism economy and the actual situation of tourism development in Jiaozhou Bay, deep analysis and research has been conducted on the problems faced by marine tourism development and the resolving measures. Also, for the existing problems, from the aspects of support, guidance of macroscopic policies, supporting hardware facilities and developing of an environment security system are provided. Professional technical guidance is also provided. To improve safety management of marine department, the internal management of tourist ship company, self-discipline, and other aspects, corresponding countermeasures of marine tourist ship safety guarantee in Jiaozhou Bay are proposed, providing theoretical reference for the healthy development of marine tourist ships in Jiaozhou Bay. Certainly, Safety Management for Marine tourist ships in Jiaozhou Bay involves production management, transportation, marine, and other functional government departments, with diverse management. Marine tourism enterprises are uneven and still in an initial development stage. The laws and regulations for marine tourism safety management are not perfect, especially the local rules and regulations. It takes time to form a very mature safety management mode, there are many existing issues that need to be solved. The intention of this article is to start a great discussion and to provide an insight into significance to future marine tourist ship safety management and marine tourism industry development in Jiaozhou Bay.

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## APPENDIX

**Table 4** Statistics of the Basic Situation of Sino-Korean and Sino-Japanese Passenger-container Liners in Shandong (Source: Qingdao MSA office)

| Serial number | Name of ship           | Ship Type       | Registration | Classification Society | Management Company  | Age | Passenger quota | Container number | Line                 | Lines open time | Range/speed | Note        |
|---------------|------------------------|-----------------|--------------|------------------------|---|-----|-----------------|------------------|----------------------|-----------------|-------------|-------------|
| 1             | Fragrant snow orchid   | Ro/ro passenger | Panama       | CCS                    | hina shipping international ship management company         | 16  | 392             | 293              | Yantai/Incheon       | 2000.1          | 283/22      |             |
| 2             | New golden bridge II   | Ro/ro passenger | Panama       | KR                     | Weihai WeiDong shipping co., LTD                            | 22  | 731             | 280              | Weihai/Incheon       | 1990.9          | 236/25      |             |
| 3             | Zhong da yong          | Ro/ro passenger | Panama       | KR                     | Weihai ten thousand international ship management co., LTD  | 21  | 750             | 214              | Weihai/Pyongtaek     | 2009.6          | 240/25      |             |
| 4             | Yong xia               | Ro/ro passenger | Panama       | CCS,KR                 | DAE will work RYONG MARITIME CO., LTD                       | 22  | 720             | 267              | Longan/Pyongtaek     | 2001.11         | 210/19.5    |             |
| 5             | Shidao                 | Ro/ro passenger | South Korea  | KR                     | Jc styles shipping co., LTD                                 | 22  | 750             | 203              | Shidao/the mountains | 2008.4          | 210/21      |             |
| 6             | Pearl of east China VI | Ro/ro passenger | Panama       | KR                     | Rongcheng city east China ocean shipping co., LTD           | 23  | 1000            | 253              | Shidao/Incheon       | 2002.7          | 220/23      |             |
| 7             | New golden bridge V    | Ro/ro passenger | Panama       | KR                     | Weihai WeiDong shipping co., LTD                            | 14  | 660             | 280              | Qingdao/Incheon      | 1993.5          | 338/27      |             |
| 8             | Rizhao Oriental        | Ro/ro passenger | Panama       | KR                     | Qingdao rong into international ship management company     | 19  | 640             | 226              | Rizhao/Pyongtaek     | 2011.2          | 385/22.5    | answer boat |
| 9             | Ideal of countries     | Ro/ro passenger | Panama       | NK                     | Japan olin steamship co., LTD                               | 25  | 300             | 294              | Qingdao/Shimonoseki  | 1980            | 590/22.6    |             |
| 10            | Yanjing                | Ro/ro passenger | China        | CCS                    | Tianjin jin god passenger and cargo transportation co., LTD | 22  | 399             | 161              | Tianjin/Shidao/Kobe  | 2011.6          | 1100/21     |             |



**Table 5** Statistics of the Basic Situation of Sino-Korean and Sino-Japanese Passenger-container Liner in other regions

| Serial number | Name of ship               | Ship Type       | Registration | Classification Society | Management Company   | Age | Passenger quota | Container number | Line  | Lines open time | Range/speed | Note    |
|---------------|----------------------------|-----------------|--------------|------------------------|--|-----|-----------------|------------------|---|-----------------|-------------|---------|
| 1             | Oriental pearl tower 6     | Ro/ro passenger | Panama       | KR                     | Georim shipping co.,LTD  |     | 800             | 140              | Dandong - Incheon                                 | 1998.7          | 284/21      | replace |
| 2             | Great mercy                | Ro/ro passenger | Panama       | CCS                    | Dain ferry co.,LTD   | 23  | 555             | 142              | Dalian - Incheon                                  | 1995.1          | 292/22      |         |
| 3             | The lilacs                 | Ro/ro passenger | Panama       | CCS                    | China shipping international ship management co.,LTD           | 15  | 394             | 228              | Yingkou - Incheon                                 | 2003.1          | 420/20      |         |
| 4             | Tulip                      | Ro/ro passenger | China        | CCS                    | China shipping international ship management co.,LTD           | 15  | 348             | 228              | Qinhuangdao - Incheon                             | 2004.4          | 400/20      |         |
| 5             | Tianren                    | Ro/ro passenger | Panama       | CCS                    | Tianjin-Inchon international passenger cargo shipping co., LTD | 21  | 604             | 230              | Tianjin - Incheon                                 | 1991.12         | 460/25      |         |
| 6             | Purple magnolia            | Ro/ro passenger | China        | CCS                    | China shipping international ship management co.,LTD           | 16  | 392             | 293              | Lianyungang - Incheon                             | 2004.12         | 390/20      |         |
| 7             | China and South Korea star | Ro/ro passenger | South Korea  | KR                     | China shipping international ship management co.,LTD           | 22  | 668             | 192              | Lianyungang - Pyongtaek                           | 2007.11         | 398/21      |         |
| 8             | Qingdao queen              | Ro/ro passenger | Panama       | KR                     |  | 22  | 750             | 182              | Hunchun - tied rubino - bundle of grass - niigata | 2009.7          | 316/22      |         |
| 9             | New east spring            | Ro/ro passenger | Panama       | KR                     |  | 23  | 649             | 140              | Hunchun - rubino - bundle of grass                | 2000.4          | 316/22      |         |

Source: Qingdao MSA office

**Table 6** The Danger and Accident Statistics

| Serial number | Ships   | Time       | Place                        | Level of accident            | Details   |
|---------------|---|------------|------------------------------|------------------------------|---|
| 1             | New golden bridge 2                           | 2001       | Chengshantou waters          | Small accident               | Hang nets, the loss is unknown.   |
| 2             | The Oriental pearl tower2 & Jida106           | 2006.7.29  | Waters near the Dandong port | An unknown                   | Collision accident, there was fog, poor visibility, Jida 106 carrying 1800 tons of corn sunk, "Oriental pearl" 2 damage was lighter.  |
| 3             | Shiyuan1 & An oil tanker                      | 2008       | Chengshantou waters          | Waters near the Qingdao port | Collision accident, there was fog, poor visibility, tanker leaked some fuel , cause Marine environment pollution.   |
| 4             | New golden bridge 2 & Liaoyu55023             | 2009.10.29 | Chengshantou waters          | Big accident                 | Collision, Liao ZhuangYu 55023 sunk.  |
| 5             | New golden bridge 2                           | 2010.9     | Chengshantou waters          | Small accident               | Hang nets, the loss is unknown.   |
| 6             | The Oriental pearl tower2 & A container ship  | 2011.1.5   | Incheon west coast           | An unknown                   | Collision accident, the Oriental pearl tower 2 hull serious deformation, forced off in advance.   |
| 7             | Pearl of east China 6 & some merchant vessels | 2011.5.26  | Chengshantou waters          | There is no                  | "HUADONG PEARL VI" not in accordance with the regulations for preventing collisions and did not take positive and effective behaviour, nearly causing serious maritime traffic accidents.   |
| 8             | Rizhao Oriental & Liaodan yu 23900            | 2011.7.18  | The yellow sea               | To be determined             | Collision accident, a fisherman missing, fishing nets lost.   |
| 9             | Tianheng 10 & tianheng 5                      | 2012.6.2   | Jiaozhou Bay waters          | Big accident                 | Each carrying 11 passengers from the Donkey island and Tianheng island respectively sailed toward the other side of the dock . On the way, brush touch happened.                            |
| 10            | Yinhai 07 & jinshan 226                       | 2012.7.21  | Jiaozhou Bay waters          | Samll accident               | In Qingdao pier waters, about 200 miles south of collision, the accident caused 1 female tourists clavicle fractures, 6 people flesh injury, two boat hull had different degrees of damage. |
| 11            | Maoxianya 3                                   | 2013.8.16  | Jiaozhou Bay waters          | Big accident                 | 15 persons burns due to the plane accident during the ship returning to Qingdao Olympic sailing center.   |
| 12            | Wantonghaixin 1                               | 2013.10.20 | Jiaozhou Bay waters          | Samll accident               | Run aground   |

Source: Qingdao MSA office