Evaluation and Countermeasures of River-sea Combined Transport in Zhoushan

Sha-sha ZHU*, Wei JI, Yi-wen XIA, Ji-ping ZHANG, Feng-jie ZHU, Jia-hong WANG and Wan-zheng AI
Marine College of Zhejiang Ocean University, Zhoushan 316000, P. R. China
*Corresponding author

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Abstract. River-sea combined transport is becoming an important part of water transport. This paper was based on the ZhouShan river-sea combined transport. It analyzed the existing problems. And explores solutions from the perspectives of route perfection, ship type operation benefit and counterpart Support Policy. This paper is aimed to provide reference to the relevant departments.

Introduction
This paper first describes the Zhoushan river-sea combined transport, and then based on the imperfect route, ship operation efficiency is not enough, there is no counterpart support policy, puts forward the corresponding measures to solve the problem.

The Analysis of the Zhoushan River-sea Combined Transport
Zhoushan is located at the intersection of the Yangtze River, Qiantang River and Yongjiang River into the sea along the southeast coast of China. It is backed by the Yangtze River Delta region, which meets the "T" type of the Yangtze River economic belt and the eastern coastal economic belt. It is the main maritime gateway to the world along the eastern coast of China and the Yangtze River Basin. It forms a 500-nautical mile fan-shaped shipping network with the main ports of Busan, Nagasaki, Kaohsiung, Hong Kong and Singapore in Northeast Asia and the western Pacific Ocean. With the basic construction of Shanghai International Shipping Center and the integration of Ningbo-Zhoushan Port, the cargo throughput of Ningbo-Zhoushan Port and Shanghai Port has leapt to the first and second largest port in the world. Zhoushan is gradually becoming an important fulcrum through the river to the sea in China.

The Problems in the Development of Zhoushan River-sea Transportation
The Imperfect Route
Zhoushan Port has rare conditions for port construction in the world, with 200.7 kilometers of shoreline with a depth of more than 15 meters and 103.7 kilometers of shoreline with a depth of more than 20 meters, and international waterways passing through the port area can pass through giant ships of a class of more than 300000 tons. However, the navigation conditions of Zhoushan river-sea combined transport inland river routes are still not ideal, and the ability to accept container ships is weak, also the navigation capacity of internal and external routes is not balanced. At the same time, the angle between the convenient bridge and the vertical line of the inland waterway is large, which increase the probability of the bridge collision accident. It is very important for the river and sea transport route, With Zhoushan as the axis, to establish river-sea combined transport service center along the river. The current Zhoushan river and sea transport along the establishment of the service center is not perfect, there is no standardized and systematic service system, the information exchange between the routes lags behind. It is difficult to coordinate regulation and control, which lead to a traffic jam.
Ship Operation Efficiency is not enough

In recent years, Zhoushan river-sea combined transport has developed rapidly, and the ship type has also made great progress, but there are still many differences among the transportation cost, transportation efficiency, cargo loss and other factors of different ship types, so the economic benefits produced are also very different. At present, the ship of our country is super-large-scale development, but the river-sea transport ship is a kind of large-scale ship which is different from the shallow draught of the river ship and the sea vessel. It is necessary not only to satisfy the great performance of the ship sailing in the ocean and to meet the good maneuverability of the ship in the narrow rivers, but also to adapt to the navigation conditions of different sections, different seasons, dry season and flood period, and so on.

There is no Counterpart Support Policy

Under the background of the new era, following in the steps of President Xi Jinping, vigorously developing the marine economy and building Zhoushan river-sea combined transport is an important development strategy of Zhejiang Province. Although many river and sea transport fleets have been established, which are ready to vigorously develop. the professional direction is not accurate enough that the fleet is not fully equipped, unable to leave experienced crew members, and cannot recruit new crew members with corresponding professional knowledge. If the corresponding support policies can be issued, it will certainly provide a better development environment for Zhoushan river-sea combined transport.

The Thought and Countermeasures of Zhoushan River-sea Combined Transport

To Research and Find the Perfect Shipping Route

In view of the complicated and changeable inland waterway and weak navigation ability of Zhoushan river-sea combined transport channel, it is necessary to strengthen the monitoring and inspection of each section of inland waterway at first, and form a set of dynamic layout of real-time monitoring of the navigation status of inland waterway. At the same time, the overall situation to improve the design and planning of inland waterway routes, such as cutting corners and taking straight, as far as possible to increase the navigation capacity of inland waterways, alleviate the Zhoushan River-sea combined shipping capacity imbalance between the internal and external routes. In the process of establishing and perfecting the main control and service center of Zhoushan Port, we should quicken the step of establishing the infrastructure and service center along the inland river route, so as to facilitate the Zhoushan General Service Center and the inland river navigation. The close connection between the lines enables Zhoushan, as the axis of river-sea intermodal transportation, to carry the controlled ship safely.

The Optimization of Ship Form

The complicated reloading operation of ships at the transfer port is avoided with the opening of river-sea transport, and greatly reduce the transportation cost. But at the same time, the requirements for ship type become higher, so it is necessary to meet the safety navigation of different river sections. Taking ‘Zhoushan-Ma'anshan ‘ship type as an example, at present, the design concept of 20,000 ton bulk carrier is a little wider and shorter than that of the same kind of ship, which not only meets the navigation requirements of characteristic routes and characteristic sea areas, but also meets the requirements of energy saving and environmental protection. Also ensure that you can dock at the wharf in Ma’an Shan. In order to overcome the mismatch of ship type, resulting in the decline of navigation capacity and unable to increase the speed economy in an all-round way, Zhoushan City adheres to the national strategy as the guide and actively participates in it. With the reform practice of transportation supply side, we should take the initiative to undertake the demonstration test task, continue to promote the development of river and sea direct transportation, and achieve breakthrough results. In particular, since the operation of the country's first direct river and sea ship "Jianghai Direct 1" on April 10, it has completed 14 heavy-duty
voyages, with a cargo volume of 294600 tons, a turnover of 114.67 million tons / km by waterway, and a revenue of 6.3455 million yuan. Profit of 407600 yuan, economic benefits gradually appear, speed, loading, fuel consumption and other ship technologies have also met the design requirements. Combined with the development trend of river-sea combined transport shipping type, it is no longer satisfied with the ship type. In the safe navigation alone, more "more economical, more energy-saving, more high-tech" direction.

**Develop Appropriate Support Policy**

In a clear understanding of the marine economy, government leaders are increasingly aware of the importance of developing marine economic policy. Zhoushan City, through establishing a cooperation mechanism with Yangtze River Navigation Administration and China Classification Society for research and development of river-sea direct ships, has carried out a great deal of preliminary research and exploration and practice work on river-sea direct ships with safety, high efficiency and green economy, and has successfully conquered the structural strength. Many key technologies, such as freeboard and manipulation, provide strong support for the construction of a standardized management system for direct access to rivers and seas. In 2017, the Ministry of Transport issued the documents of the opinions on promoting the development of direct transportation on specific routes, Code for the construction of ships navigable to rivers and seas on specific routes, legal inspection Provisional rules, regulations on safety supervision, measures for crew training, examination and certification, minimum safety staffing standards "1+ 5" documents; In 2018, it also published and implemented the "Code for the Construction of navigable ships on certain routes" (2018), adding new commercial vehicle ro-ro ships and ships under 65m, and bringing Xiangshan Port area into the direct transportation scope of the rivers and seas. The Technical rules for statutory Inspection of ships with specific routes (2018) will soon be promulgated and implemented. It is believed that this series of measures will provide a greater development platform for Zhoushan river-sea combined transport.

**Conclusion**

Transportation is the main artery of economic development. To achieve the goal of building a well-off society in a comprehensive way, we must fully understand the current situation, take development as the first priority, and ensure that the traffic construction can adapt to the modernization development strategy of our country. We will actively face the problems that arise at present, give full play to the government support force, optimize the route and ship type to realize the development of Zhoushan river-sea combined Transport and open up a new road for China's economy.

**References**


