

Research and Analysis on Encasement and Drop-and-hook Transport Mode of the Inland Container

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Abstract: As an important port node serving the north and northwest inland hinterland, Tianjin port creates a highway transportation platform featuring drop-and-hook and come-and-go transportation. It can better integrate the national development strategy of "The Belt and Road Initiative" and "Xiongan New Area", and further improve the collection and distribution system of Tianjin port and reduce the logistics cost. To improve the efficiency of logistics between inland and port, gather more inland cargo sources for Tianjin Port and Dry Port, and promote the economic development of hinterland region.

1. Introduction

For short-distance gathering and dispatching ports within 500 kilometers, such as Beijing, Tianjin and Hebei, and short-distance pickup from inland customer factories to railway stations under the mode of sea-rail intermodal transport, the main mode is highway transport. At present, most of them are completed by truck vehicles entrusted to the society. There are some bottlenecks such as small scale of carriers, scattered information resources, low transport efficiency, and difficulty in reducing transport costs. Through large-scale organization and mode innovation, the establishment of inland container drop-and-hook transport sharing platform and the development of round-trip drop-and-hook transport and vehicle-cargo matching business can effectively gather round-trip cargo sources and social vehicles, enhance unit time transport frequency, reduce logistics costs, so as to further improve the logistics function and enhance operating quality of Dry Port, and enhance the radiation efficiency of Tianjin Port to inland cargo sources.

2. The Concept and Significance of Container Drop-and-Hook Transportation

For port logistics, Container Drop-and-Hook Transportation refers to the main vehicle with power transport empty or heavy containers from the port area to the landing or docking platform of inland dry port, then immediately towed back container being full with goods in advance to the port area. The original container is loaded from the small recycling Trailer in the dry port to the surrounding customer factory, and then falls back to the dry port (or carries the goods to the dry port for packing). Short-haul transportation with small circulation between factories and dry ports and long-haul transportation with large circulation between dry ports and Tianjin ports are carried out simultaneously and jointly.

Drop-and-hook mode of transport has strong practical needs and practical significance, which is embodied in the following aspects:

Firstly, by increasing the frequency of transportation per unit time, the fixed cost of single transportation (personnel cost, maintenance and depreciation cost, etc.) can be diluted.

Second, it can alleviate the customer's inventory pressure by packing in advance, and solve the problem that customer factories can't pack in the place of origin because of insufficient site equipment.

Thirdly, by gathering cargo resources, we can give full play to the main hub role of dry port and yard, enhance the organizational and bargaining capabilities of dry port platform to transport enterprises, and improve the service efficiency and quality of the overall transport corridor.

Fourthly, to give full play to the comprehensive effect of Rail-sea intermodal transport plus drop-and-hook connection, suitable container cargo of inland enterprises can be switched around dry ports with special railway line functions, and the overall cost of Rail-sea intermodal transport can be reduced by reducing the transport cost of the door-station.

Fifth, through the construction of matching information platform, we can integrate the social vehicle and cargo sources more efficiently, carry out corresponding large data analysis and application, and achieve a greater degree of round-trip transportation, vehicle and cargo matching, unified bargaining, fund pooling, credit sharing and other online and offline extension services, so as to enhance the synthesis function and benefit of dry ports.

3. Prerequisites for the Development of Container Drop-and-hook Transport

In theory, the key to drop-and-hook transport lies in the continuous round-trip transport, especially the timely pick-up of loaded heavy containers at inland points, to improve the efficiency of transport vehicles. The key conditions to achieve this configuration are as follows:

Firstly, drop-and-hook transportation needs enough supply of goods before it can give full play to its advantages. In the vicinity of dry ports, it is necessary to ensure a sufficient quantity and density of container supply per unit time. After unloading empty containers (or imported heavy containers), trailers transported from port areas to inland dry ports must immediately load the heavy containers that have been loaded in advance and return to port. That is, after the empty container is unloaded by the trailer transported from the port area to the inland dry port, the heavy container that has been loaded in advance must be loaded immediately and returned to the port.

Second, efficient organization management and information software system. Because it involves many links, such as inland customers, freight forwarders, dry ports, transport fleets, shipping companies, port yards, wharfs and so on, it is necessary to have a precise and efficient dispatching organization and a professional information management software system that fits the specific business characteristics in order to achieve the desired results.

Third, the support of the shipping company. For port-oriented container hung transport, the core competitiveness of which is transport frequency, once the links of empty container extraction, transportation and inland advance reserve are disjointed, the timeliness will be impossible to start. Shipping companies need to support the establishment of inland container piping points in dry ports, direct export use of imported containers, early loading of containers and longer shelf life.

Fourth, dry ports should be equipped with necessary facilities and equipment, including working sites, crane machinery, parking platforms, loading and unloading workers and so on. In terms of transport vehicles, in addition to a sufficient number of collecting trucks for large cycle, especially a certain number of inland small cycle collecting trucks need to be equipped according to business scale. On average, 3-4 trailers are needed for each tractor.

4. The Problems of Container Drop-and-hook Transportation

In recent years, many ministries and commissions of the state have issued a number of supporting policies to encourage the development of multi-modal transport, such as drop-and-hook transport, rail-water transport and logistics information platform. However, in practice, due to various reasons, the drop-and-hook transport business in China is limited to some areas and cargo categories, such as around the port. Short-distance reverse transportation of bulk trucks between coal and ore storage bases and wharfs, as well as van trailers for sharing and assembling goods. For the container transportation of many cargo owners, container owners and carriers, a mature multi-point drop-and-hook transport public service platform has not yet been formed, and the corresponding

business scale and operation quality are also unsatisfactory. At present, there are mainly the following difficulties:

1). It is difficult to fully control the supply of goods.

At present, most inland customers entrust a large number of logistics service providers, with complex subcontracting levels, and the relevant sources of goods and transport information are very dispersed. Most of the organizers of drop-and-hook transport have weak ability to gather goods and lack credibility, which makes it difficult to gather and organize sufficient and effective goods.

2). Extensive management, insufficient specialization and informatization

At present, most of the organizers of suspension transport are mainly logistics parks or transport enterprises. Organizers often only understand the simple transport links, and it is difficult to integrate resources and optimize innovation from the point of view of the whole chain of container logistics. At the same time, the logistics software in the market is mainly ERP software for freight forwarder, Trailer dispatch and yard management. There is no mature software in the market for the integrated management information system of container trailer transport business.

3). Coordination and management of multiple participants is difficult.

Regardless of its functional orientation or its own capabilities, most of the current drop-and-hook transport platforms begin with the merging of the existing business of the transport fleet. It is difficult for many transport enterprises to participate in the management, which involves unified allocation of cargo sources, separation of ownership and transportation of trailers and trailers, income and cost-sharing, business information and document delivery. There are many problems, such as unclear responsibilities and obligations of tractors and trailers, which require a long period of running-in for organization and coordination.

4). Initial operational input and cost incentives are inadequate

The key to the difficulty of drop-and-hook transportation is to increase the transportation cost of the small cycle. If it cannot be digested in the initial stage, it will easily lead to the vicious circle of low participation of customers and transport fleets, lack of supply and rising cost.

5. Innovative Practice of Container Drop-and-hook Transportation

Container Drop-and-hook Transportation is a comprehensive business organization, involving many business links and complex organization and coordination. We have selected Shengfang, Beichen and other mid-short-distance dry ports with relatively enough supply for pilot projects, and given relevant support and safeguards. Next, we take Shengfang Dry Port, which is the nearest to Tianjin Port, as an example, to compare and analyze the traditional export production and loading mode and hanging-up mode in terms of timeliness and economy.

1). Regional Sources of Goods

Shengfang dry port is 128 kilometers away from Tianjin Port. There are about 140 export enterprises and more than 10 import enterprises within 30 kilometers around Shengfang dry port. At present, about 600TEU containers are exported monthly, mainly for furniture and steel products, of which 80% are 40-foot containers and 20% are 20-foot containers. About 200TEU containers are imported monthly, mainly for food processing raw materials, ceramic tiles, timber, and most of them are 20-foot containers.

2). Time-effect analysis

According to the 40-foot box as an example, under the traditional mode, it takes about 4 hours for the fleet to empty the box from Tianjin Port yard and transport it to Shengfang Customer Factory. After arriving at the factory, the fleet will wait about 2-3 hours without queuing. After loading, the fleet will return the heavy box to Hong Kong for about 4 hours, the gathering time will take about 1-2 hours, and the whole process will probably take about 1-2 hours. It takes 12 to 13 hours to complete. The average number of times per vehicle per day can be transported.

In the mode of hang-and-drop transport, it takes about 4 hours for the convoy to pick up boxes from the Tianjin Port yard and transport them to Shengfang Dry Port. After the boxes are dropped from the dry port, it takes about 4 hours for the convoy to return to the port in advance from the

heavy boxes packed by the manufacturer, and the gathering time is about 1-2 hours. The whole process takes about 9 to 10 hours to complete. Compared with the traditional mode, it saves 2-3 hours of packing time. At the same time, because the dry port can operate 24 hours, every vehicle can transport 2 times a day.

3). Economic Analysis

In the case of sufficient supply, take 40-foot boxes as an example, within one day's time span, as the frequency of transportation doubled, the profit of each vehicle's drop-and-hook mode increased by 250 yuan compared with the traditional mode; with the increase of statistical days, the increase of the frequency of each vehicle's transport became more obvious, and the average frequency of each vehicle's transport increased from 30 times a month to nearly 70 times in the drop-and-hook mode.

6. Effectiveness of Practice

After careful research and analysis, we have carried out a trial operation of export container suspension transport in Shengfang Dry Port since May this year. From 30 natural containers per month, we have now reached an average of 120 natural containers per month. However, at present, due to the limited funds of dry ports, the relevant preferential policies of local government departments have not yet landed, and the overall volume of business is limited, we need to make joint efforts from all sides to further practice and improve, so as to truly realize the social and economic benefits of inland waterless port suspension transport.

7. Summary of Practical Activities

(1) Getting Policy Support from Local Government

Container drop-and-hook transportation has great social value for improving the level of transportation management in inland areas and reducing the logistics cost of enterprises. We should strive for the support policies of local governments in such aspects as small-cycle transportation subsidies, tax returns, road traffic and the status of dry port logistics hub, so as to reduce the initial transport cost and form a scale-driven effect as soon as possible.

(2) Developing Container Drop-and-hook Transportation Information System

On the basis of the current dry port on Tianjin Port Line, it is necessary to develop special software in the aspects of recycling transportation, box source management, cost clearing and yard operation, combining with the characteristics of drop-and-hook transport business, so as to ensure the tightness and efficiency of the overall dispatching organization.

(3) Integrating the information of the source of goods and seeking the support and participation of the relevant parties

Drop-and-hook transport needs to make full use of the comprehensive functional advantages of ports and dry ports, and guide the gathering of cargo sources and the participation of customers, shipping companies, transport enterprises and other relevant parties. Especially in terms of empty container sources, shipping companies need to give strong support.

(4) Improving the infrastructure and equipment conditions of dry ports

Through the improvement of basic conditions, dry's ports can play an important role in the inland transit base of lifting, container storage and Trailer parking, and through large-scale operations, reduce costs and attract cargo sources.

(5) Subsidy support

In the early stage of operation, subsidies are given to the small-cycle transportation cost of the customer's factory-inland port transit site. In order to form scale effect as soon as possible, and then improve the efficiency of transport frequency, reduce transport costs.

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