

ORGANIZATION OF WAGON FLOWS IN RAILWAY TRANSPORT

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ANNOTATION

The purpose of the work is to study the stages of the organization of wagon flows, which are important for the effective organization of the transportation process in railway transport. The scheme of quick organization of the flow of loaded or empty wagons was presented. It was found that the rapid organization of wagon flows is of great importance in increasing the level of performance of the main performance indicators of railway transport.

Keywords: wagon flows, loaded wagon, empty wagon, sorting station, route.

INTRODUCTION

The organization of train flows, including the establishment of the most rational system of forming trains and the order of their movement along railway lines, forms the basis of the transportation process technology and is the most important means of managing operational work in railway transport [1-12, 14, 17].

The organization of wagon flows as a train should ensure the stable position of railway transport in the market of transport services, minimum transport costs, compliance with the standard conditions of cargo delivery, taking into account the requirements of shippers and receivers [1-8, 13, 15-17].

For this purpose, the system of organization of wagon flows and the order of routing should be aimed at:

- reducing the costs of railway transport related to the delivery of goods and the delivery of empty wagons to loading points, the processing and standing of wagons at stations for technical and cargo operations, the movement of trains along sections, the maintenance of infrastructure and personnel;

- reduce the risk of reduced railway revenue, including by paying fines for late delivery of goods, fines for non-delivery of empty wagons and fines for unsafe carriage.

RESULTS AND DISCUSSIONS

Organization of wagon flows as a train is carried out in accordance with the plan for the formation of freight trains (PFFT) [1, 3, 4, 6, 7].

PFFT includes the following:

- PFFT at railway stations of public railway transport infrastructure;
- directional transportation plan.

PFFT is a single technological process for the operation of all railway stations of the railway network [12-17]. It connects the freight movement with the train schedule.

PFFT solves the following tasks [1, 6, 7, 12, 13]:

1) stimulating the flow of wagons based on economic criteria and logistics principles, taking into account the allowed time of delivery of wagons to the specified destinations, the accepted specialization of railway lines and the high dynamics of demand for railway transport;

2) the most correct distribution of sorting work with non-routed wagons between stations, efficient concentration of vehicle processing in accordance with the technical development of stations and the characteristics of their use, minimizing the time of freight wagons, reducing the number of reprocessing of wagons along the way;

3) intensive use of shunting locomotives, sorting devices and station road development;

4) increasing the productivity of train locomotives and locomotive crews, reducing the use of fuel and energy resources by increasing the weight and length of trains, as well as increasing the number of transit trains that pass locomotives without separating them during their circuit sections;

5) rational organization of loaded route trains from loading points, as well as empty route trains from unloading points;

6) Ensuring rhythmic operational work of railways on the basis of interconnection of PFFT with their traffic schedule and the technology of using non-public railway tracks;

7) transition to a system of centralized management of the flow of wagons in the railway network with modern capabilities for the development of the information environment and the centralization of the operational management of transportation;

8) implementation of modern requirements for the quality of transport services and creation of conditions for cargo transportation management.

The formation of trains from wagon flows is carried out based on the condition of the wagons, that is, loaded and empty wagon flows (Fig. 1).

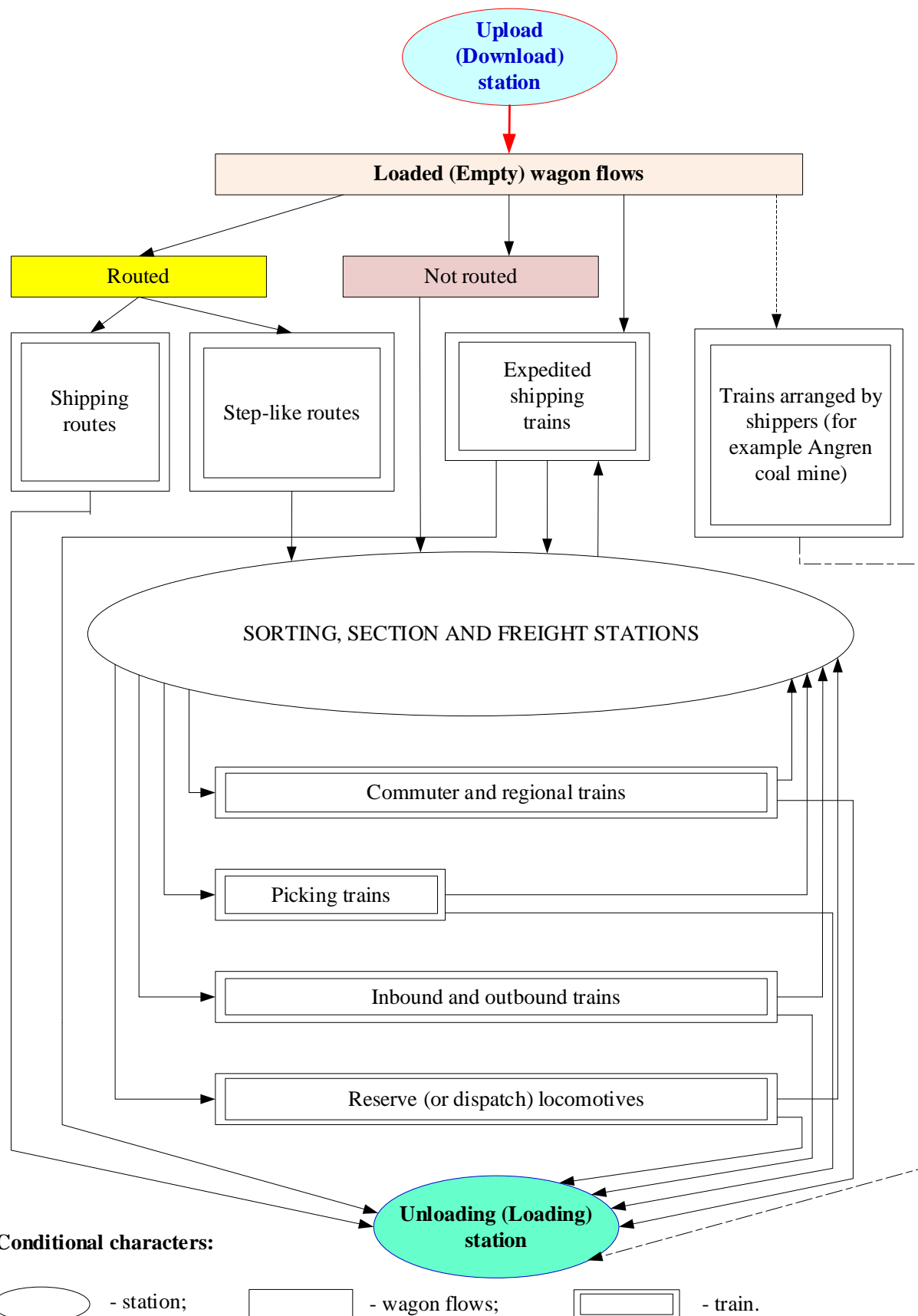


Figure 1. Scheme of organization of trains from streams of freight wagons

In Figure 1, train formation from freight wagon flows is organized as 2 different

routes: routed and unrouted. Unrouted wagons with cargo at the loading station (Fig. 1) can be included in the following categories of trains: passing, section, train, removing, transmitting, dispatching (reserve) locomotives. These trains can take wagons to an unloading station or to another transfer station of the public infrastructure. At the transfer station, these wagons are processed again, as a result of which they are included in new trains of one of the listed categories.

Wagons routed at the loading station (Figure 1) are included in the shipment routes. In this case, the wagons go to the sorting, section or large freight station of the public infrastructure. Here, these wagons are reworked and incorporated into formed trains, which are then moved to unloading stations as unrouted wagons..

Empty wagons are centrally distributed for loading. In this case, the train dispatcher ensures that the necessary wagons are delivered to each station along the route with the help of passing, picking, inbound or outbound trains.

CONCLUSION

It was found that the effective organization of the flow of loaded or empty wagons in railway transport depends on the coordination and management of the work of the departments, centers and farms working together in the process of transportation. Due to the imbalance of wagon flows, quick changes to the “Freight Train Formation Plan” will create an opportunity to minimize ineffective time losses of wagons at stations.

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