Container Terminal Operations and Block Relocation Problem

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Abstract: Today most overseas shipping of finished consumer goods is done via 20-, 40-, or 45-foot long steel containers aboard deep-sea container vessels. In addition, the amount of meat, fish, fruit, vegetables, and general foodstuffs shipped in refrigerated containers continues to increase. The efficient storage, handling, and retrieval of shipping containers in seaports and on containerships is therefore an important component of global supply chain management.

A problem related to the handling of steel shipping containers called the block relocation problem (BRP) was considered in this investigation. The block relocation problem (BRP) is an important problem at logistics facilities such as seaport container terminals where overhead gantry cranes, straddle carriers, and/or reach stackers sort and stack containerized cargo that awaits a future journey. A mathematical model and a heuristic were introduced to solve the BRP in order to reduce the handling time and to increase the efficiency of the container terminal operations.