Modeling Container Inspection Operations at Port NY/NJ Terminals

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by

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Project started in August 2005 at the APM Terminals in Port Elizabeth, New Jersey and a detailed simulation model (*PORTSIM*) was developed for the container inspection operation. The model contained details about vessel arrivals, container storage at the yard, presentation of containers to CBP officers and the actual inspection process.

Container inspection process involves imaging anomaly analysis (VACIS), radiation isotope identification (RIID), radiation monitoring (RPM), as well as manual examination.

The key objective of this project is to study the container inspection operation and quantify its performance measures associated with the following operational aspects:

- Inventory of CBP-specified containers
- Container delivery processes by the terminal to CBP
- CBP container inspection operations
- Inspection resources (both CBP and APM Terminals), their capacity planning, and their utilization

To achieve the aforementioned objectives, Rutgers University's LPS team developed a detailed computer simulation model, named *PORTSIM*, of the VACIS operations that accurately captures vessel arrival processes, the current CBP-specified container delivery process, and CBP inspection procedures. The simulation model incorporates

- The incoming work load (vessel arrivals and the corresponding container volume (TEU))
- Unloading operation
- Transfer of CBP-specified containers to the inspection area
- The VACIS and the associated inspection operations

PORTSIM predicts a number of critical performance measures of the container inspection operation.