

**Table 4****VTLs Benefits Assessment For the Model Container Ship****Assumptions and Parameters**

Containers potentially moved as VTLs - 333

Rate of Movement without VTLs=30 containers per hour

Rate of Movement with VTLs=45 containers per hour

Total Hours Needed to Move Containers that can potentially be moved by VTLs:

1 at a time  $333 \text{ (total containers)} \div 30 \text{ (estimated containers per hour)} = 11.1 \text{ hours per job}$ 2 at a time (VTLs)  $333 \text{ (total containers)} \div 45 \text{ (estimated containers per hour)} = 7.4 \text{ hours per job}$ 

Crane Hourly Rental Cost = \$500

Total Rental Cost of Crane not Using VTLs = 11.1 hours times \$500 per hour = \$5,550

Total Rental Cost of Crane when Using VTLs = 7.4 hours times \$500 per hour = \$3,700

**Total Savings on Crane Rental from Using VTLs = \$1,850 (\$5,550 without VTLs minus \$3,700 with VTLs)**

Average Gang Size without Using VTLs = 15 employees

Average Gang Size Using VTLs = 18 employees

Average Employee Hourly Wage Rate = \$47.30

Total Labor Cost without Using VTLs = 11.1 Hours times 15 employees times \$47.30 per hour = \$7,875

Total Labor Cost Using VTLs = 7.4 Hours times 18 employees times \$47.30 per hour = \$6,300

**Total Savings on Labor Costs from Using VTLs = \$1,575 (\$7,875 without using VTLs minus \$6,300 using VTLs)****Total Saving in Longshoring Cost from Using VTLs = \$3,425 (\$1,850 in crane rental savings plus \$1,575 in labor savings)****Other Savings: 3.7 hours in shipping time, 3.7 hours worth of port rental charges**

Source: Office of Regulatory Analysis

There are several factors that will influence the cost estimate of moving containers one at a time versus using VTLs. Based on the model container ship, there are 333 containers stored above deck that can be moved via VTLs. Therefore, dividing the 333 containers

by the total number of containers that the crane operator can move in an hour (30), it will take the crane operator about 11.1 hours for these containers. On the other hand, if the crane operator were moving the containers by VTLs, it would take about 7.4 hours, a 3.7 hour

difference. This is the decrease in labor time needed for the unloading by VTLs instead of one at a time.

Other gains in productivity will be the decreased land and crane rental time needed by the stevedoring companies, which is a direct result of the 3.7 hour