

TABLE 3.—MODEL CONTAINER SHIP—Continued

| | Above deck | Below deck |
|--|--|---------------------|
| Loading/Unloading VTL Profile ³ | 333 (2 at a time) 637 (1 at a time) | 2000 (1 at a time). |

Source: Office of Regulatory Analysis.

¹ VTLs can only be used above deck.

² Since liftlocks can only be used for VTLs, the Agency assumes that all locks used to store containers will be certified liftlocks.

³ The costing will be based on a full unloading of the ship.

Benefits

This section reviews the populations at risk of occupational injury or death during the vertical tandem lifting of containers. OSHA anticipates that the proposed standard will decrease the time associated with moving containers from vessel to dock and vice versa and may decrease risk by reducing the total number of lifts per job. To assess the benefits of the proposed standard, OSHA has conducted an historical analysis of the frequency of VTLs and the time associated with such lifts, using a model container ship. These data were used to calculate the reduced time needed to complete a job using VTLs as opposed to lifting one container at a time. The following section estimates the increase in productivity OSHA expects affected employers to realize and describes the methodology used to develop these estimates.

Cost Savings Due to Productivity Gains

This analysis begins with the model container ship, as described above in Table 3. The cycle time estimates used to calculate cost savings are two minutes per container for single lifts (30 containers per hour) and 2.6 minutes for two containers (a total of 45 containers per hour) using VTLs. The actual amounts of time could vary considerably from port to port and across crane operators. These productivity gains are based on moving only two containers in a VTL. The Agency is assuming that the cycle time for loading or unloading a ship with containers is approximately the same. For the loading of the ship, the cycle time includes applying liftlocks to the bottom corner castings so that when they are put on the ship, they automatically lock into place. For the unloading of the ship, this time includes

removing the liftlock from the containers. The actual time is dependent on the skill of the crane operator and the cargo plan. An experienced crane operator can move about 30 forty-foot containers per hour, one at a time, depending on the crane, characteristics of the ship, terminal, wind, *etc.* The Agency is assuming that by using a VTL, the same experienced crane operator can move about 45 forty-foot containers per hour. Using the model container ship, there are about 333 containers stored above deck that could be moved using a VTL. The productivity gains are represented by the difference between moving the containers one at a time and two at a time.

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