

trade, OSHA has developed this proposal in light of international considerations. Through domestic law and international agreements, the United States has indicated its intention that wherever possible, standards-related activities should not be a barrier to trade. The Trade Agreements Act of 1979 (19 U.S.C. 2501 *et seq.*) addresses technical barriers to trade regarding federal regulation. Section 2532 of this Act states the following:

Section 2532. Federal standards-related activities. No Federal agency may engage in any standards-related activity that creates unnecessary obstacles to the foreign commerce of the United States, * * *.

(1) Nondiscriminatory treatment. * * *

(2) Use of international standards. (A) In general, * * * each Federal agency, in developing standards, shall take into consideration international standards and shall, if appropriate, base the standards on international standards.

Additionally, and consonant with this country's position on barriers to international trade, the United States is a signatory to the Multilateral Convention on the Facilitation of International Maritime Traffic (1965) (Ex. 1–3). As a contracting government, the United States has agreed to:

[U]ndertake to co-operate in securing the highest practicable degree of uniformity in formalities, documentary requirements and procedures in all matters in which such uniformity will facilitate and improve international maritime traffic and keep to a minimum any alterations in formalities, documentary requirements and procedures necessary to meet special requirements of a domestic nature. (Article 3)

Mindful of these international aspects, OSHA has sought to formulate a protective but flexible approach to VTLs. OSHA is confident that its proposed requirements for VTLs are consistent with the relevant provisions of ILO Convention 152 and with most of the provisions of the ISO standard and ICHCA guidelines.

B. Risks and Benefits of VTLs

VTLs can reduce the time it takes to load or unload containers from a ship. The productivity gain is reported to be 5 to 10 percent of the total time (see the Preliminary Economic Analysis below). Although there are some costs associated with extra engineering and work practice controls necessary to handle VTLs safely, the evidence indicates that these costs are outweighed by the overall cost savings to unload the ship. The fact that stevedores have requested OSHA's guidance in performing VTLs and that some are currently performing these lifts is further evidence that they provide

cost savings. The cost savings come from reducing the time (labor costs) for the longshore operations (loading and unloading), and, perhaps more significantly, of hourly capital and labor costs for the cargo ship. VTLs appear to be more economically advantageous when ships are loading or unloading large numbers of empty containers. The extent of the use of VTLs may therefore be dependent on the pattern of trade; for example, when imports exceed exports resulting in more empty containers being shipped out of a U.S. port.

OSHA's current longshoring and marine terminal standards do not prohibit VTLs of empty containers. The Agency's standards also allow for lifting of loaded containers, without specifying whether they are handled singly or as a VTL, if the containers are "handled using lifting fittings or other arrangements suitable and intended for the purpose * * *" (29 CFR 1918.85(f)(1)(iv)).

The ISO's central criterion for VTLs is that the maximum total weight that can be safely lifted in a VTL is 20 tons. It would allow employers to perform VTLs of combinations of empty containers and loaded containers as long as they do not exceed 20 tons (total load weight). In setting a 20-ton limit, ISO evaluated the strength of containers, their corner castings, and the SATLS used for lifting, but did not evaluate the work practices and controls necessary to ensure safe handling. ISO based its limit on research (sponsored by OSHA) by NIST (Ex. 40–10), a study by the Swedish National Testing and Research Institute (Ex. 11–6 H), and ISO's own technical knowledge of containers and SATLS (Ex. 11–6–C). The 20-ton limit provides a margin of safety of a factor of five for strength. (A safety factor of five means that the SATLS and corner castings would not fail with a lift weighing 100 tons. It also means that for a VTL of two containers, if the bottom one was fully loaded, the corner castings and SATLS would still not fail.) OSHA preliminarily concludes that, based on the established strength of containers and liftlocks, VTLs up to 20 tons are safe. (Under the proposal, a SATL may be used as a liftlock only if it has been tested, inspected, certified, and marked with a safe working load.)

ISO concluded that VTLs with a 20-ton maximum weight would mean a "practical" limit for VTLs of three containers (Ex. 40–9). To the best of the Agency's knowledge, employers are not performing VTLs of more than two containers in the United States.

OSHA has preliminarily concluded that the strength of the containers and liftlocks constitutes one factor, but not

the only factor to be considered in performing VTLs safely. Employers must also follow safe handling procedures, including the use of appropriate engineering controls [such as load indicating devices (LIDs)], work practice controls (such as pre-lifts), and administrative controls (such as annual inspection of liftlocks and containers) for handling VTLs. Many of these control measures address risks that were first identified in OSHA's 1994 letter to Sea-Land, permitting VTLs of two empty containers.

The ICHCA guidelines set forth a series of safe handling procedures. As discussed further below, OSHA's proposed rule incorporates many of these procedures, including: requiring annual and on-going inspections of liftlocks and containers; prohibiting spring-loaded latchlocks for VTLs; requiring stevedores to have a written VTL terminal plan for handling VTLs in the terminal; requiring each ship to use only a single type of liftlock; requiring LIDs on container gantry cranes; prohibiting VTLs when winds exceed 34 mph; and requiring pre-lifts to ensure that all liftlocks on the VTL are engaged and holding before raising the VTL unit higher.

VTLs have been performed in the United States since 1986. As noted earlier, Matson reported that they had performed almost 50,000 VTLs of two empty containers or two containers loaded with automobiles without an injury to employees or a documented accident between 1986 and 1998 (Tr. p. 166). Sea-Land reported that by 1999, it had performed 300,000 VTLs of two empty containers without injury (Ex. 36). However, Sea-Land has reported three accidents. The cause of one was unrelated to the typical risk of VTLs—the crane legs did not have sufficient clearance for VTLs and the containers struck the crane legs, causing the lower container to separate from the top container and fall. Sea-Land reported that the crane operator and superintendent violated company rules in this instance (Tr. p. 208). In the second accident, two containers "alligatored" without completely separating when the two SATLS on one end were not engaged in the top corner castings of the bottom container. Following this incident, Sea-Land reported that they instituted a pre-lift test when performing VTLs. In a pre-lift, the combined containers are lifted a few feet up to ensure that all liftlocks are engaged in the corner castings before continuing the lift. A third accident occurred when spring-loaded latchlocks were used to secure containers together. The design of those latchlocks leaves