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Session Chairmen  
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## POTENTIAL FOR SLIP-SHEET SHIPMENT OF GROCERIES IN TRAILERS

by

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In a 1975 survey of 129 food warehouse operators<sup>1</sup>, including corporate chains, voluntary group, and cooperative warehouses, the median warehouse received 60 percent of its groceries by common carrier truck, 30 percent by rail, and 10 percent by backhaul. As you know, unitized unloading of common carrier trucks is nearly nonexistent, except for backhauls on pallets, and in a few instances, when individual arrangements are made with a local common carrier to ship products on pallets supplied by the food wholesaler. A tremendous opportunity exists to reduce grocery distribution costs by unitizing common carrier truck loading and unloading. In all probability, the volume of merchandise arriving at the warehouse by truck has increased since the 1975 survey. At the same time productivity in truck unloading has not increased and in some cases detention charges are made for excessive delay time at warehouse receiving docks. I well recall an experience at one warehouse, where we were conducting a receiving study, a slip sheeted load of product arrived at the dock. The driver expected unloading to be unitized with a push-pull forklift but was told that such a fork

was not available. You can imagine his response when he was faced with four hours of manual palletizing to get his truck unloaded!

Since the potential savings appeared so great with slip sheet loading and unloading of carrier shipment of grocery products from supplier to warehouse, an indepth study to measure costs of various systems for loading and unloading was contracted with the Paul Shaffer Company. The results of this study, together with research conducted by the Market Research and Development Division, USDA, and observations obtained from industry contacts, provide the basis for this presentation. In the study, costs of four systems of trailer shipment of groceries were studied. The systems included handstack loading and unloading, loading and unloading on pallets, use of slip sheets for loading and unloading with a forklift truck having a push-pull attachment, and loading on slipsheets with forklift truck having a clamp attachment and unloading with a push-pull forklift.

Table 1. Costs with four methods of shipping groceries in trailers.

Cost Item	Handstack	Pallet	Slipsheet Push-Pull <sup>1</sup>	Slipsheet Clamp <sup>2</sup>
	-- Dollars per Load --			
Labor <sup>3</sup>	72.34	14.65	25.69	24.83
Equipment	8.90	2.46	5.12	4.52
Materials <sup>4</sup>	--	25.80	10.00	10.00
Damage <sup>5</sup>	6.54	8.31	11.08	11.08
Dunnage <sup>6</sup>	--	3.60	3.60	3.60
Total direct cost	87.78	54.82	55.49	54.03
Added storage cost <sup>7</sup>	13.28	13.28	13.28	--
Revenue loss <sup>8</sup>	--	30.00	--	--
Total indirect cost	13.28	43.28	13.28	--
Total shipping cost	101.06	98.10	68.77	54.03

<sup>1</sup> Based on forklift with a push-pull attachment for loading and unloading.

<sup>2</sup> Based on forklift with a clamp attachment for loading and push-pull for unloading.

<sup>3</sup> Labor costs are based on \$8.40 per hour including fringe benefits.

<sup>4</sup> Based on a pallet cost of \$1.29 per trip and 44-inch by 52-inch slipsheet cost of \$0.50.

<sup>5</sup> Based on an average case value of \$11.08.

<sup>6</sup> Based on two bands of 1/2-inch glasine tape per unit load at \$0.18.

<sup>7</sup> Added cost at supplier plant.

<sup>8</sup> Based on 20 pallets at 75 pounds each, or 1500 pounds at a tariff of \$2 per hundredweight.

As shown in Table 1, labor costs for loading and unloading ranged from \$14.65 for loading and unloading with pallets to \$72.34 for handstack loading. The costs are based on a 1,320 case load, 66 cases per unit load, 20 unit loads per trailer, and a labor cost including fringe benefits of \$8.40 per hour.

Equipment costs ranged from a low of \$2.46 for pallet loading to a high of

\$8.90 for handstack loading. Forklifts were used to move pallet loads of product into trailers for handstack loading and empty pallets had to be removed and stacked with delays incurred for the forklift and driver. Material cost, ranged from zero for handstack loading to \$25.80 for pallets. Slipsheets were assumed to cost \$.50 each or \$10.00 per load. Damage ranged from an average of 0.6 case for

handstack loading and unloading to one case for slipsheet shipment. Dunnage was not needed in handstack loads, however, provision is made for two bands of 1/2-inch glassine tape per unit load when unit loading is used at a cost of \$3.60 per load.

In a previous study on supplier plant operations<sup>2</sup>, it was determined that additional supplier costs were incurred with use of pallets and pallet racks for plant storage as opposed to palletless storage with use of clamp trucks. The added storage costs totaled \$13.28 per 1,320 case load when pallets are used for storage. The freight costs for most grocery loads are prepaid; hence the wholesaler does not pay the freight charge direct. However, when pallets are used, the carrier will lose potential revenue either because of a loss in transportable weight, equivalent to the pallet weight, or a loss in cubic space occupied by the pallet. In this study, a typical trailer was assumed to have 20 unit loads on pallets, or 1,500 pounds at 75 pounds per pallet. Assuming a freight rate of \$2.00 per hundredweight, the revenue loss for transporting pallets would be \$30.00.

Total shipping costs were \$101.06 for handstacked loading and unloading, \$98.10 for pallet loading and unloading, \$68.77 for loading and unloading on slipsheets using a forklift with push-pull attachment, and \$54.03 for loading on slipsheets with a clamp fork and unloading with a push-pull fork. Therefore, using handstacked loading and unloading as a base, savings would total \$2.96 per load with pallets, \$32.29 per load with slipsheets using a push-pull fork, and \$47.03 per load with clamp loading on slipsheets. If pallets are used as the base, savings with clamp loading would total \$44.07 per load. Based on savings of \$44.07 per load, an estimated industry savings of nearly \$150 million annually can be achieved.

With such a tremendous savings potential, why has the adoption of slipsheets shipment of grocery products in trailers proceeded so slowly? We have found that the greatest progress in achieving cost reduction in the food industry has been when firms involved in the distribution system cooperate on improved methods. The development of the Universal Product Code is a classic example of cooperative effort on improved methods. The use of slipsheets for unitized shipment of grocery products by truck is another total system problem in distribution. It requires an understanding of problems and opportunities by all grocery handlers. The supplier can benefit through the elimination of pallets and their rapidly escalating maintenance cost, and through less costly palletless storage. The carrier will not suffer a revenue loss because of weight or cubic space occupied by the pallet and will achieve more rapid loading and unloading than when handstacking is used. The food distribution warehouse can have more rapid trailer unloading. Thus, all handlers should benefit.

Little is gained if the supplier ships on slipsheets and the warehouse does not have the equipment to unload them. Warehouse managers are reluctant to purchase the necessary unloading equipment until there are more slipsheet loads. The trucker, who is caught in the middle, will continue to unload by handstacking cases, carrying pallets, or refusing the load.

The deterrents to slipsheet shipment of groceries on trailers include the following: (1) very few grocery warehouses have forklift trucks assigned to truck docks that have a push-pull attachment for unloading slip sheet unit loads; (2) the mast on push-pull trucks used at the rail dock is too high to enter most grocery trailers; (3) the

rail dock push-pull forks are too heavy for some trailers; (4) few grocery trailers are loaded with slipsheet unit loads; (5) a high percentage of the truck receipts are less than trailer loads which are typically not unitized, (6) a lack of incentive for wholesale distribution warehouses to use warehouse personnel to unload trucks when this function is usually performed by the carrier, and (7) labor and insurance contracts may prohibit warehouse employees from entering trailers.

How then, can unitized shipment of grocery products on slipsheets be implemented? Probably, the first step needed would be to transfer the unloading allowance, now included in the tariff, from the carrier to the warehouse receiver who will unload the trailer. This will probably provide the incentive needed to get warehouse distributors to request product shipment on slip sheets. As indicated by Glen Johnson, the equipment needed for slipsheet unloading is now available.

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## FOOTNOTES

<sup>1</sup>Bouma, J. C. Truck unloading of manufacturer shipments at grocery distribution warehouses, U.S. Dept. Agr. ARS-NE-68, 23 pp. Feb. 1976.

<sup>2</sup>Bouma, J. C. and Shaffer, P. F., Feasibility of using a second unit load size for distributing groceries; from supplier to distribution warehouse. U.S. Dept. Agr., AAT-NE-2, 20 pp. Jan. 1979.

## THE PROS AND CONS OF SLIP SHEETS

by

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### Introduction

Thank you for the opportunity to present another paper to the Food Distribution Research Society. It's difficult to believe 20 years have passed since I became a charter member and presented a paper at the first meeting. It's also a pleasure to participate in a panel discussing a subject of great interest to all food distribution people.

I happen to be one of the three originators of the 40 x 48 inches pallet concept and I am one of the three co-developers of the Pul-Pac slip sheet system of unit load handling. At the time of the Pul-Pac development, Clark Equipment Company was in the pallet business and offering for sale three types of pallets; a permanent pallet which was plywood sandwiched between layers of metal and the construction was riveted