The Use of Containers in Canada

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This article describes the flow and use of containers and is based on a study commissioned[1] to identify state of play, major issues and recommended areas for further research.

This article addresses the existing context, and provides a thorough understanding and description of container movements and logistics in Western Canada, in particular, as well as in Central Canada and the Atlantic Region. The article also provides several illustrations of best practices in similar situations in Canada and around the globe.

Background

The background of the article relates to a need determine the volume of empty marine containers in Canada, and causal issues which are viewed by some as a significant lost transportation opportunity in terms of serving certain export markets. Exports from these regions tend to be of lower value and voluminous commodity-based products, and are currently generally moving in bulk, rather than container, mode.

Canadian ports were at the forefront of containerization, when it was first developed in the late 1960s and early 1970s. Today, largely because of the globalization of production made possible by the container, the Canadian market is comparatively small, relative to North America and the world, and is estimated at 4.6 million TEUs (including Canadian cargo moving through US ports), or just 1.5% of the global market of 323 million TEUs.

Since the beginning of the container era there has been an ongoing move towards larger and larger vessels. As of October 2006, there were 250 post Panamax vessels on order and due to be delivered by 2008. They are expected to be placed on the Europe–Far East and transpacific routes before finding their way onto secondary routes like the transatlantic or Suez express services. In September 2006, Maersk Line took delivery of the *Emma Maersk*, "officially" rated at 11,400 TEUs. Others have followed suit with vessels in the 10,000 TEU range.

These vessels will add substantial new capacity to the world's trade lanes and have an impact on rates, service patterns and, especially, ports. They will have gargantuan appetites for cargo, but import containers will continue to move by rail to distribution centres located near large consumer markets or transload facilities located close to ports. Railway companies will increase the amount of cargo moving in block trains. The availability of containers will largely be driven by the local consumer market and the presence of lucrative export cargoes.

Container Flows

Much of North America's trade with Asia and Europe is heavily imbalanced in favour of high value imports moving east- and westbound, respectively. In general terms for every three loaded import containers arriving in Central/Eastern Canada from Vancouver, there is only one export marine container returning westbound loaded with exports. Of the other two empty containers available for loading, one container moves empty directly to Vancouver, while the other empty container is used for moving domestic product, most of which is Alberta- or Vancouver-bound. The repositioning of these marine containers for domestic traffic (DRP) is permitted under cabotage rules as long as the containers are used for one incidental move enroute to the port of exit. This is an efficient way to ship domestic goods moving to Western Canada from the east, although restricting the use to one domestic move may limit some transportation opportunities.

is reloaded to containers for furtherance to ports for loading to a ship. This method of operation provides the opportunity for the steamship lines and railways to better utilize container capacity. A large proportion of the Canadian domestic reposition of marine containers flows into Alberta from Central Canada. From Alberta, those same loaded containers are made empty and forwarded to the Port of Vancouver. Rather than shipping empty containers to Vancouver, shipping lines could potentially send containers by truck to the transload point to load commodities originating from the Prairies.

Satellite terminals

CN and CP are moving away from the handling of empty marine containers at their largest intermodal terminals unless the empties are booked for immediate evacuation for account of the shipping line. Similarly, both railways are moving toward tightening the disciplines in the shipping of containers—through punitive storage rates, narrow receiving windows and truck reservation systems—so that laden containers have minimum dwell time either before being loaded on to a train, or after unloading. Positioning of these containers directly to satellite terminals closer to source load activities might provide a better supply of empties, assuming market conditions and economics are favourable.

Inland terminals

Another variation on both the transload and satellite terminal option would be to combine them with an existing inland terminal or create a new intermodal facility. The latter would require a) sufficient import volume to generate empty containers, or b) sufficient export volume to attract empty containers, as well as c) sufficient volume to pay terminal capital and operating costs as well as additional rail costs.

Shippers association, pools and co-ops

The Midwest Shippers Association was created to assist smaller operators/growers located in the Midwest to market their identity

Nor is cabotage, or the 30 day import rule, seen as a constraint on the creative use of import marine containers. As one shipping line executive told us:

> The existence of the 30 day rule has no apparent bearing on the supply of containers for grain exports. The attraction of export cargo is a function of low cost positioning to the point of loading, a compensatory freight rate and a destination in Asia which is a source of cargo. In the absence of these elements it is more cost effective for the marine carrier to send the container as an empty directly to the place in Asia where it can be used to generate the next high value revenue move.

Opportunities

There are many economic and logistical impediments to shipping more bulk products in empty containers, such as the weight of product, container size and condition, market conditions, logistical issues and container supply. Nevertheless there could be opportunities to address the concerns of Prairie shippers in particular. Those that could be the subject of further study include:

Source load versus port load

The cost differential between source load (which seems most desired on the part of Prairie shippers) and port loading, which seems the preferred option for shipping lines, needs to be examined. One study suggests the difference is especially acute in Saskatchewan, whereas it is about 6% in Alberta. It points out that special crops are not conducive to whole unit train movement and car allocation is an issue. There are several options in this regard:

Transload facilities development further inland

The current CN model of utilizing inland transload terminals (e.g. the new terminal in Edmonton) to ship product previously handled in carload, provides many advantages. Product now flows in carload and

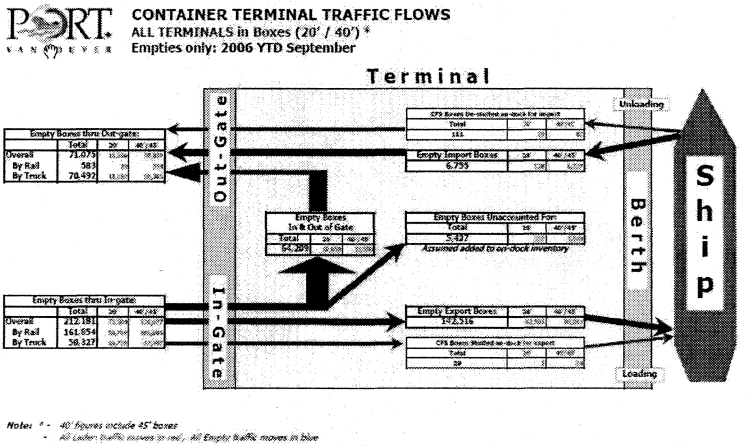
country), Toronto is the largest source of empties. One line brings imports through Vancouver and keeps sending them eastward, where they exit the country through Montreal. Another sends them all the way to Halifax. Most are repositioned back to Vancouver (and occasionally Calgary or Edmonton). They rely on the railways' domestic repositioning programs for most of these moves.

The issue of shipping grain from the Prairies is problematic for some lines. As one shipping line told us:

> We are not interested in shipping grain from the Prairies. We pay about US $2.80 per 20 foot and US $4.00 per 40 per day for our containers. We need at least US $800 a box to make up for delays and make up empty rail rates to make it interesting to us. High volumes of exports from Asia make it tough to add more cycle time in a tight supply. We average US $3,000-$3,800 and up for a loaded import box depending upon origin and destination. If there is a surplus, it may be worth it; supply is tight—very tight. Containers flow much easier to the larger terminals. The other issue is there is not a great supply of 20 foot, which is what the grain shippers like. They cost us at least $100 per box to inspect and make sure the container is okay for food. So this is another problem. Also storage rates at the railway terminals mean we can lose our shirt on any delay and we need to move the containers out of the terminal right away, no matter if the shipper is ready to load. So this can cost more money.

Only two retailers spoke to the study team for this assignment. However, they were extremely representative of the prevailing situation with respect to port usage, transloads, use of 53 foot containers and domestic repositioning. For one retailer, out of a total of over 50,000 TEUs per annum, fewer than 1,500 are shipped empty from Calgary to Vancouver. The rest are shipped full, with either domestic cargo or exports.

The "empty container" situation is quite apparent in Vancouver. As the figure below illustrates, as of September 2006, Vancouver had evacuated over 142,000 TEUs of empty containers.



Source: Vancouver Port Authority

Of 1.2 million TEUs handled in Montreal in 2005, about 124,000 were empty. Theoretically, some of these boxes could be repositioned to the Prairies and loaded out with exports or they could be repositioned to the Maritimes for the same purpose, if the right economic and market situations existed.

Halifax has another perspective. Of 550,000 TEUs handled in 2005, some 80,000 were empties. But Halifax *needs* empties, mainly for reefer cargoes and some dry moves. Thus, many of its lines have to reposition empties from the Caribbean, Europe, Central Canada and even as far away as California.

Shippers and Shipping Line Perspective

Feedback from shipping lines in Central Canada indicated that for most lines (and because it is the biggest consumer market in the

Stated more accurately, in 2005 30% of railed containers moved empty across Western Canada to Vancouver as shown below.

CN&CP Units		Rail Profile Central/Eastern to W Canada (Marine Containers)			
Destination		Export Loads	Empties	DRP Use	
BC	20	42,526	30,665	3,910	
	other	74,023	54,408	21,425	
BC Total		116,549	85,073	25,335	25%
AB	20	5,044	1,641	7,379	
	other	5,813	4,550	47,848	
AB Total		10,857	6,191	55,227	55%
SK	20	973	4,238	1,553	
	other	620	1,082	5,152	
SK Total		1,593	5,320	6,705	7%
MB	20	1,345	1,260	2,811	
	other	1,240	1,154	10,319	
MB Total		2,585	2,414	13,130	13%
	TOTAL	131,584	98,998	100,397	330,979
		40%	30%	30%	

Source: CP & CN 2005 data

Of the roughly 99,000 empty container units shown above moving central/east to west, it should be noted that approximately 85,100 of these are moving directly to Vancouver. Only about 6,200 are Alberta-bound, just over 5,300 are Saskatchewan-destined, and approximately 2,400 are headed for Manitoba. Over 80% of loaded marine containers that are moving to Alberta/Saskatchewan and Manitoba are in (DRP) use.

Domestic cargoes move in a balanced way across most of Western Canada due in large part to the surplus of empty marine containers available. Domestic container fleets and their associated railway movements do not play a significant role in source load or transload alternatives for Western Canada.

preserved (IP) products to international markets and provide logistic and educational services to members.

A co-operative effort could be undertaken to reduce logistics costs for Prairie container shippers. The economic structures already exist on the Prairies for pooling or co-operative arrangements amongst shippers to reduce their overall logistics costs. These solutions could include a seasonal inland terminal for empty/laden storage/despatch, and other services.

Ownership of containers

Further to market influence, is the problem of a lack of suitable 20 foot containers, which is the preferred size for bulk loading. A fleet of these could be purchased and contract with the shipping lines to carry them. At US $1,850 per container, they are not costly. In this way, the backhaul would become the headhaul for the Prairie shipper and they could earn revenue by leasing the container to the shipping line for the return move, although this would only be minimal. The biggest issue would relate to equipment control in foreign countries including return of the containers.

[1] Prepared for Transport Canada, December 2006