

Commission Briefing Paper 4B-03

Implications If Larger Share of Imports Comes Through Mexican and Canadian Ports and Is Transferred to Rail/Trucks for Transport Into The United States

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Introduction

This paper is part of a series of briefing papers to be prepared for the National Surface Transportation Policy and Revenue Study Commission authorized in Section 1909 of SAFETEA-LU. The papers are intended to synthesize the state-of-the-practice consensus on the issues that are relevant to the Commission's charge outlined in Section 1909, and will serve as background material in developing the analyses to be presented in the final report of the Commission.

This paper presents information on the rationale for and the current plans for port developments in Mexico and Canada to handle container cargo destined for the U.S. market, and the potentially available capacity outside the U.S. when these projects are completed. The implications for U.S. rail and truck movements are highlighted.

Background and Key Findings

- Even without a concerted effort by shippers and carriers to shift container cargo to Canadian and Mexican ports for final delivery in the U.S., these two countries' imports from the Far East will increase faster than U.S. container imports.
- Canada (Vancouver and Prince Rupert) is more likely than Mexico to be the initial beneficiary of a shift from U.S. West Coast ports of entry, given the shorter sailing distance from Asia and the existing and relatively uncongested rail corridors serving central U.S. hubs.
- Border crossing capacity will need to be expanded, for both borders, as volumes increase, including both infrastructure and procedural systems.
- The expansion of the Panama Canal in 2015 will slow any shift to Canadian or Mexican ports, as larger vessels from Asia will have all-water access to the U.S. Gulf and East Coast ports.

Staff Comments

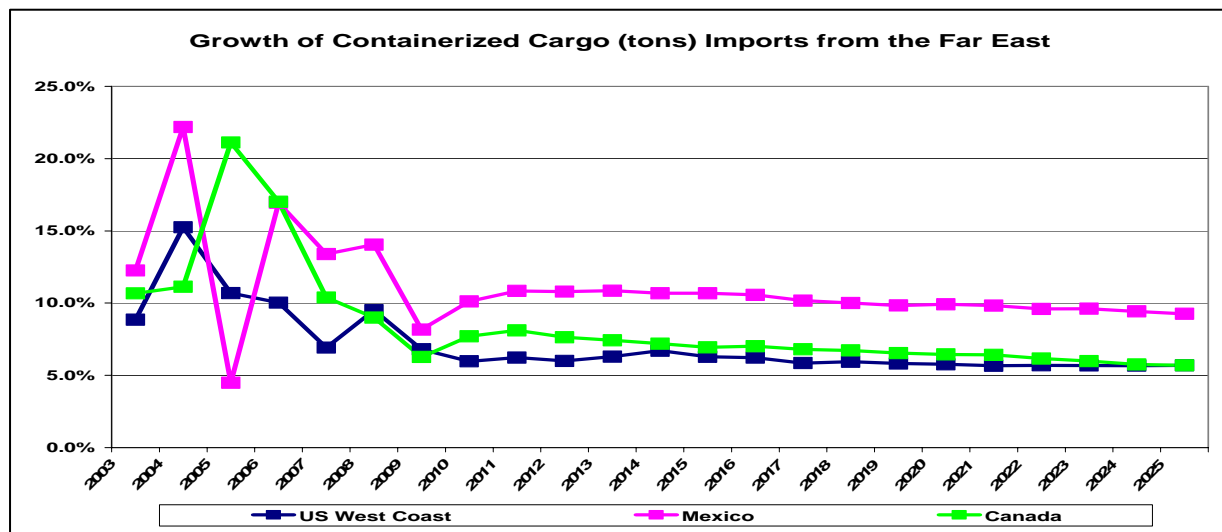
This commission briefing paper is one of several that examine trends and consequences of commodity flows. Paper 01 reviews trends in international trade and trading partners. Paper 02 estimates shifts of trade through West Coast ports to East Coast ports if trading partners change. Paper 03 investigates the role of Canadian and Mexican ports in handling U.S. foreign trade. Paper 09 considers the role of short sea shipping in foreign and domestic trade. Paper 10 outlines forecasts of future commodity flows by geography and mode, and Paper 06 describes economic forecasts that underlie the commodity flow predictions. Forecasts presented in these

papers are based on common methods, but in some cases use different years, commodity classification systems, and geography.

Outlook for US Imports through Mexico and Canada

The outlook for containerized cargo imports through the US West Coast (USWC) is strong, averaging 6.0% annually¹ over the 2005-25 period. USWC containerized imports from the Far East, in particular, will average 6.4% annual growth; containerized cargo from China is projected to average 7.7% annual growth. The near-term growth in these flows is forecast to be faster, as the forecasting models assume long-term equilibrium and stabilization of trade in line with steady economic growth. The changing growth in the USWC, Mexico, and Canada import container cargo trade is shown in the following chart (Source: Global Insight, Inc.).

Although 2006 saw a modest slowdown in the growth of containerized cargo imports from the Far East to the USWC and 2007 will likely be even slower, the long term outlook calls for US imports to grow more slowly than Mexico's and Canada's containerized cargo imports from the Far East, most of which enter through Pacific ports. The annual growth of each of these eastbound flows is shown in the chart below.



In other words, containerized cargo shipments to Mexico and Canada are expected to grow faster than similar shipments to the U.S. This means that, regardless of cargo shifts due to conscious and concerted efforts by shippers and shipping lines to Mexico or to Canada, these countries' share of total Pacific coast imports will increase.

For the USWC, China is the main driver of the growth. Indeed, the outlook calls for China's share of all USWC containerized cargo imports to increase from the 2005 share of 54% to 73% by 2025. This means that, if there is no shifting of this eastbound containerized cargo to entry points to the north or south of the U.S., then nearly 3 of every 4 container cargo tons entering the U.S. West Coast will originate in China.

¹ Global Insight World Trade Model forecast, November 2006

Container imports through the USWC ports move inland by rail and truck, with the highest volumes are destined for the East Central Region and both modes have similar shares of the shipments. (Source: *STB Carload Waybill Sample, 2004 and Transearch, 2004*) Indeed, only in the Pacific region does truck capture most of the cargo movements.



Most ports, shippers, and carriers are expecting that the capacity available along the USWC will be constrained eventually, and there is continued fear of another labor disruption like the shut-down in October 2001. As a result, the players in the Asia-USWC shipping trades are examining options in Mexico and Canada. The three main options in Mexico are highlighted in the map above, along with the related rail lines linking them to the U.S. market. Each of these options is reviewed below.

Mexico

There are three current developments, each targeted to capture U.S.-bound container cargoes that might otherwise pass through USWC ports: Punta Colonet, Port of Manzanillo and Port of Lazaro Cardenas. Combined these facilities are building the capacity to process approximately 7 million TEUs for US destinations by 2035, the annual equivalent of 20,000 intermodal trains of volume².

Punta Colonet

The Multimodal project of Puerto Bahía Colonet in Baja California is conceived as a container port designed to handle cargo that cannot flow through LA/LB or that is attracted by lower costs and faster transit times to the central U.S. market. The plan, based on the forecast that Far East-U.S. container traffic, will double in volume in the next ten years (which is consistent with the Global Insight projections), includes the following operating concessions:

² Based on 350 TEUs per train.

- A deep-sea port
- A specialized container terminal
- A new railroad that connects to the US class I railroad, most likely the Union Pacific, with a length of approximately 200 miles.

The current concept is that these concessions would be awarded to a single entity that would operate both the port and the railway. The final configuration is projected to have a 5 million TEU throughput capacity, using 11 slips for double-crane handling of post-Panamax vessels. Five of these slips are reported to be ready for service in 2009, or six years before the planned opening of the expanded Panama Canal in 2015. The final phase of the project is projected for completion in 2011.³ This is, indeed, a very aggressive expectation, and perhaps unrealistic.

When in full operation, Punta Colonet could be an effective and efficient by-pass around LA/LB for containers from the Far East (mainly China) to the U.S. Pacific, South Central and South Atlantic regions. There is concern that the Union Pacific line along the U.S.-Mexico border is nearly at full capacity (although the UP says it is planning to double-track the line), and therefore, there are other proposals being floated to build a longer rail line inside Mexico, crossing into the U.S. at a point much farther to the east. The Punta Colonet project has drawn a great deal of attention from the largest port operators, the shipping lines, and the railways.

If Punta Colonet becomes a reality, it has the potential to siphon considerable container volumes from LA/LB, especially those destined for the Central and Atlantic regions of the U.S.

Manzanillo

Manzanillo is presently the largest container port in Mexico. It consists of 437 hectares which includes 17 docks and 14 hectares of storage area equipped with 13.5 km. of railways and 5.4 km of roads. In 2005, the port brought in 446,000 TEUs, and exported 428,000 TEUs, a relatively balanced trade. The entire container operation is managed by SSA Marine (Seattle, WA), who is finalizing an expansion agreement with the port authority for two additional berths, thereby expanding the TEU throughput capacity to 1.3 million. By comparison, Manzanillo handled only 0.9% of the LA/LB volume in 2005 (14.2 million TEUs).

The container terminal has the capacity of operating three vessels simultaneously, with up to 120 containers per hour. There is currently no on-dock rail. Opening the port to private investment, with additional resources from the local Port Administration, has provided the funding for new port developments: new infrastructure, terminals, facilities and other port services. This has resulted in an increase from 63,807 TEUs in 1994 to 500,000 which they expect to handle this year.

³ Based on discussions with Mexico's Secretaria de Comunicaciones y Transporte, Mexico, D.F., June, 2006, Lic. Angel Gonzalez Rul.

Statistics: Port of Manzanillo

	<u>2004</u>	<u>2005</u>
Container Movements (TEUS)	830,777	873,976
Containerized (Tons)	6,210,327	6,319,108

*Source: Secretaria de Comunicaciones y Transporte,
Coordinación General de Puertos y Marina Mercante,
(Mexican Federal Government)*

Manzanillo is connected to the U.S. market through the Ferromex rail network, and there is discussion of developing a new cross-border connection at Presidio. Manzanillo is closer to Laredo than Lazaro Cardenas by 225 kilometers, but the Ferromex rail network does not go to Laredo, which may be a net advantage once an alternative and less-congested crossing point is established.

Manzanillo makes a compelling argument as an alternate to LA/LB in terms of distance and transit times. However, industry comments from U.S. and Mexican shippers mention the unreliability of the rail link and the high cost of insurance; these factors will have to be overcome to make Manzanillo truly competitive. Current estimates are that a container shipped from Manzanillo takes 92 hours to reach Laredo, versus 76 hours from Lazaro Cardenas, below.

Lázaro Cárdenas

This port was developed by the Mexican government in the 1960s to serve the steel industry. Since then, it has expanded to become a container port as well, and the concessioning of the container terminal to Hutchison Port Holdings (HPH, a company domiciled in China) has boosted the capacity of the port, with more expansion currently underway. As shown in the map of Mexico above, Lázaro Cárdenas is the Pacific port directly to the west of Veracruz, where HPH also operates the container terminals.

At the port site, dredging to 18 meters, lengthening of the quay from 286 meters to 1,481 meters, and expansion of the container yard from 15 hectares to 117 hectares are all projects that are underway now. When completed, the dynamic capacity of Lázaro Cárdenas will be more than 2 million TEUs, and ULCV vessels (12,000 TEUs capacity) will be accommodated.

From	To	Distance Km
LA/LB	Chicago	3,500
Lazaro Cardenas	Chicago	3,700
LA/LB	Kansas City	2,800
Lazaro Cardenas	Kansas City	3,000
LA/LB	Houston	2,700
Lazaro Cardenas	Houston	2,100

In January, 2006, Kansas City Southern Railroad (KCSR) and Kansas City Southern of Mexico (KCSM) inaugurated a double-stack service from Lázaro Cárdenas to Laredo. The ultimate goal is to have eastbound Asian containers cleared in Kansas City, after passing through Mexico in-bond. The trial run of the operation in January 2006 delivered the container cargo to the customer 2 days faster than the normal route through LA/LB.

Indeed the marketing of the new KCSR service to inland US points is based on the simple geographic facts highlighted in the table above, showing that Lázaro Cárdenas to Houston is shorter than LA/LB to Houston. The required legal arrangements for the in-bond service have apparently been met (with the cooperation of Mexico and Texas). All containers are shipped by a single railway, through to Kansas City. Asian shippers may begin to view Lázaro Cárdenas as an entry to both the U.S. and the central Mexican market (Mexico City, Queretaro, etc.) which has 58 million people and strong industrial development.

Recent container volume statistics for Lázaro Cárdenas are shown below, showing increased volumes in 2005. The 2005 volume was only 1% of LA/LB's volume.

Statistics: Port of Lázaro Cárdenas

	<u>2004</u>	<u>2005</u>
Container Movements (TEUS)	43,445	132,479
Containerized (Tons)	231,092	772,693

*Source: Secretaria de Comunicaciones y Transporte,
Coordinación General de Puertos y Marina Mercante,
(Mexican Federal Government)*

Canada

Vancouver

The Port of Vancouver is the largest port in Canada, situated just north of the Canada/US border. It is the closest major North American port to Asia, and provides a strategic alternative for container cargo destined for U.S. markets. The Port of Vancouver offers super-post-Panamax capacity, increased efficiencies, and three modern container facilities.

Vancouver's 2005 container volumes increased 6% to 1,767,000 TEUs. Plans are underway to increase container-handling capacity to 4.0 million TEUs by 2012. In 2005, Vancouver's volumes were two-thirds those of Seattle-Tacoma.

The Port of Vancouver is connected to every key market in North America. Canadian National (CN), Canadian Pacific Railway (CPR) and Burlington Northern Santa Fe (BNSF) each serve the port directly, and link with all other major U.S. railways, offering transcontinental and double-stack capability to serve markets throughout Canada, the United States and into Mexico. Vancouver is connected directly to the largest US rail hub – Chicago through the CN, CP, and BNSF. The second largest hub – Memphis - is directly served through the CN and BNSF.

During the labor shutdown in LA/LB in October 2001, container cargoes were shifted to Vancouver (and to Seattle – Tacoma), but most of these volumes have now returned to LA/LB.

Prince Rupert

The port of Prince Rupert is North America's closest port to key Asian markets. Situated 436 miles/36 hours sailing time closer to Shanghai than Vancouver and over 1,000 miles/68 hours

closer than Los Angeles, the Port's geographic location puts Chinese shippers closer to their final US markets, meaning that ocean carriers can turn around faster and can benefit from faster transit times between Asian and North American markets.⁴

Prince Rupert has a deeper inner harbor entrance as compared to other West Coast ports, ranging between 38 and 44 meters. Wharf side depth meets and exceeds the requirements for 250,000 DWT and 8,000 TEU vessels. The Port has a long-term strategic plan, aligned with the Pacific Gateway Strategy to increase container handling capacity to 4 million TEUs through 2 terminals by 2020, an increase from 9 to 14%. The Fairview Terminal has been chosen as the site of an ultramodern, high-capacity North American container facility to be built in two phases:

- **Phase I** is scheduled to be completed in late 2007, with 17 meters water depth at the berth, 44 meters water depth at the channel, a throughput capacity of 500,000 TEUs, and direct marine-to-rail intermodal links.
- **Phase II**, scheduled for 2010, will be developed on 150 acres of land and will have two 1,300-foot berths, will have six additional cranes and a capacity of 2,000,000 TEUs. Developers are seeking an infrastructure fund to support the Phase 2 construction.⁵

CN is the only rail carrier providing service to Prince Rupert through the currently uncongested Northwest Transportation Corridor with the lowest rail grade in the Canadian Rockies. Canadian National operates the largest rail network in Canada, and extensive trackage in the U.S. with direct service to Chicago and Memphis. CN markets itself as being the only railway on the continent to serve ports on the Atlantic, the Pacific and the Gulf Coast. Prince Rupert and Memphis are currently forging a 'sister-city' relationship which will tie the cargo handling capabilities of Prince Rupert with the growing distribution and logistics capacity of Memphis to serve the central U.S. market.⁶

Because Canadian exports are typically low-value products such as pulp, sulfur, waste paper, and grain, the expanded container handling at Prince Rupert will likely accelerate the containerization of these bulk commodities.

Other Factors: Panama Canal Expansion

Any shift to Canadian or Mexican ports for US-bound container cargo is likely to be slowed once the Canal is expanded, targeted for 2015. The Canal Authority says that the Canal's share of the Northeast Asia - US East Coast container traffic would fall from 38% in 2005 to 23% by 2025 if they didn't expand, while the Canal's share will increase to 49% with the planned expansion, with consequential shifts in U.S. port and intermodal rail traffic patterns.

Implications for U.S. Rail and Truck Movements

The expected increased flow in U.S. foreign trade through Canadian and Mexican ports will impart pressure on rail and road networks that are somewhat different from those that have been experienced during the massive run-up in U.S. port volumes. While the final destinations (or origins) for much of this trade are not expected to change much, the routes they must traverse are

⁴ Prince Rupert Port Authority

⁵ Wall Street Journal, August 8, 2006, Page 1.

⁶ Discussions with Dexter Muller, Senior Vice President, Memphis Regional Commission, October, 2006.

substantially different in some cases, while in others they would simply compound capacity bottlenecks that have arisen through growth in U.S. West Coast port traffic.

For the Canadian ports of Vancouver and Prince Rupert, the existing rail networks of CP and CN are adequate to handle continued growth in traffic volumes for some time.⁷ Both main lines are maintained to high standards, and the companies are sufficiently profitable to make needed investments to address capacity bottlenecks along their routes. At present, the primary bottlenecks are in the metropolitan regions around Vancouver, BC and Chicago. In Vancouver, over the last several years the ports, together with the railroads, have worked to address capacity issues through operational changes, property swaps, and some improvements in rail infrastructure⁸. These long-term efforts must continue if Vancouver is to remain competitive with other ports. In Chicago, the two Canadian carriers generally face the same set of capacity challenges faced by their Class I brethren, and thus do not have any significant competitive advantages or disadvantages.

The situation with the Mexican ports is more complex. While the infrastructure needs on the Mexican side are discussed previously in this paper, volume growth will require substantial infrastructure investment on the U.S. side of the border as well. Particularly in order for Manzanillo and Lázaro Cárdenas to succeed, investment in rail capacity on the U.S. network must be undertaken. For Lázaro Cárdenas, the challenges are particularly daunting. KCSR, the only rail operator currently serving the port, must rely on a very circuitous 526 mile route through southern Texas and around the congested Houston region entailing extensive trackage rights operations over the Union Pacific.⁹ Although KCSR and the UP have plans to address these bottlenecks, the cost will be in the hundreds of millions and the implementation period commensurate in length. For Manzanillo and the Ferromex connection with the U.S. rail network, there will be an eventual need to construct an improved cross-border connection at Presidio and substantially increased capacity on the U.S. side of the border. Of equal importance, traffic bound for Midwestern and Eastern destinations will suffer the same Houston-area congestion as Lázaro Cárdenas traffic.

Apart from infrastructure requirements for railroad terminals and mainline capacity, a further element requiring sufficient capacity are border crossings. Procedural strategies play an important role, as efforts to streamline customs clearance and other document processing can minimize border delays and infrastructure requirements for temporary storage of trains that are undergoing processing. However, security requirements also play a major part in border delays, and these will not disappear even with improved document processing. Thus, as volumes

⁷ BNSF also has direct access to the port of Vancouver, but thus far has handled little containerized traffic. While its service route to the Midwest is very competitive with CN and CP, BNSF faces greater capacity constraints, particularly in Washington, where it would compete with Puget Sound port traffic. In addition, the BNSF line from Vancouver to Everett, WA, where it connects with the northern tier transcon, would require substantial investment to handle significant new volume.

⁸ For example, see *CN, CP Rail to handle each other's traffic to improve Vancouver port service* 22:01:16 EST Jan 26, 2006, <http://www.cbc.ca/cp/business/060126/b0126158.html>.

⁹ At present, the average scheduled speed for the 285 mile segment from Beaumont to Robstown, TX is 12.8 mph, a clearly non-competitive speed. See "The Haywire Becomes a Livewire", by Fred Frailey, *Trains*, October 2006, pp. 28-39.

increase, border crossing capacity will have to be increased commensurately to ensure acceptable service.

Looking ahead, if there is to be a shift to Canada or Mexico to handle some of the forecast growth in U.S. inbound container cargo, it is more likely that Canada will see the initial impact because of the shorter sailing distance from Asia and the existing and relatively uncongested rail service to central U.S. hubs. Vancouver is likely the first beneficiary of any traffic shifts, as many carriers became familiar with the competitive service alternatives there in the 2001 LA/LB labor action, and US railroads – keen to the potential loss of domestic volumes – seek to steer traffic towards this port. In Mexico, the winners and losers in the port expansion are less obvious, and each facility has obstacles to overcome in order to compete with USWC facilities; themselves seeking to position for the growing Asian trade. Add to this the dynamics of Panama Canal expansion, the competition of Gulf and East Coast ports for expanded water routes and the political instability of the Suez region.

Clearly, the careful monitoring of North American trade patterns for emerging traffic and geographic trends represents an ongoing and urgent exercise for transportation policymakers.

CONSOLIDATED COMMENTS FROM MEMBERS OF THE BLUE RIBBON PANEL OF TRANSPORTATION EXPERTS - PAPER 4B-03

One reviewer commented as follows:

All North American railroads are experiencing capacity limitations throughout their networks, so the notion that cargo will move to Canadian and Mexican ports to capture excess rail capacity in those countries as a better route to the U.S. is not borne by the facts. In fact, all railroads in North America have undertaken significant investments to meet current and projected market demands and have further plans to increase capacity as and when growth occurs.

Another reviewer commented as follows:

Hectares should be converted to acres since most readers will not be familiar with the hectare unit of measurement.