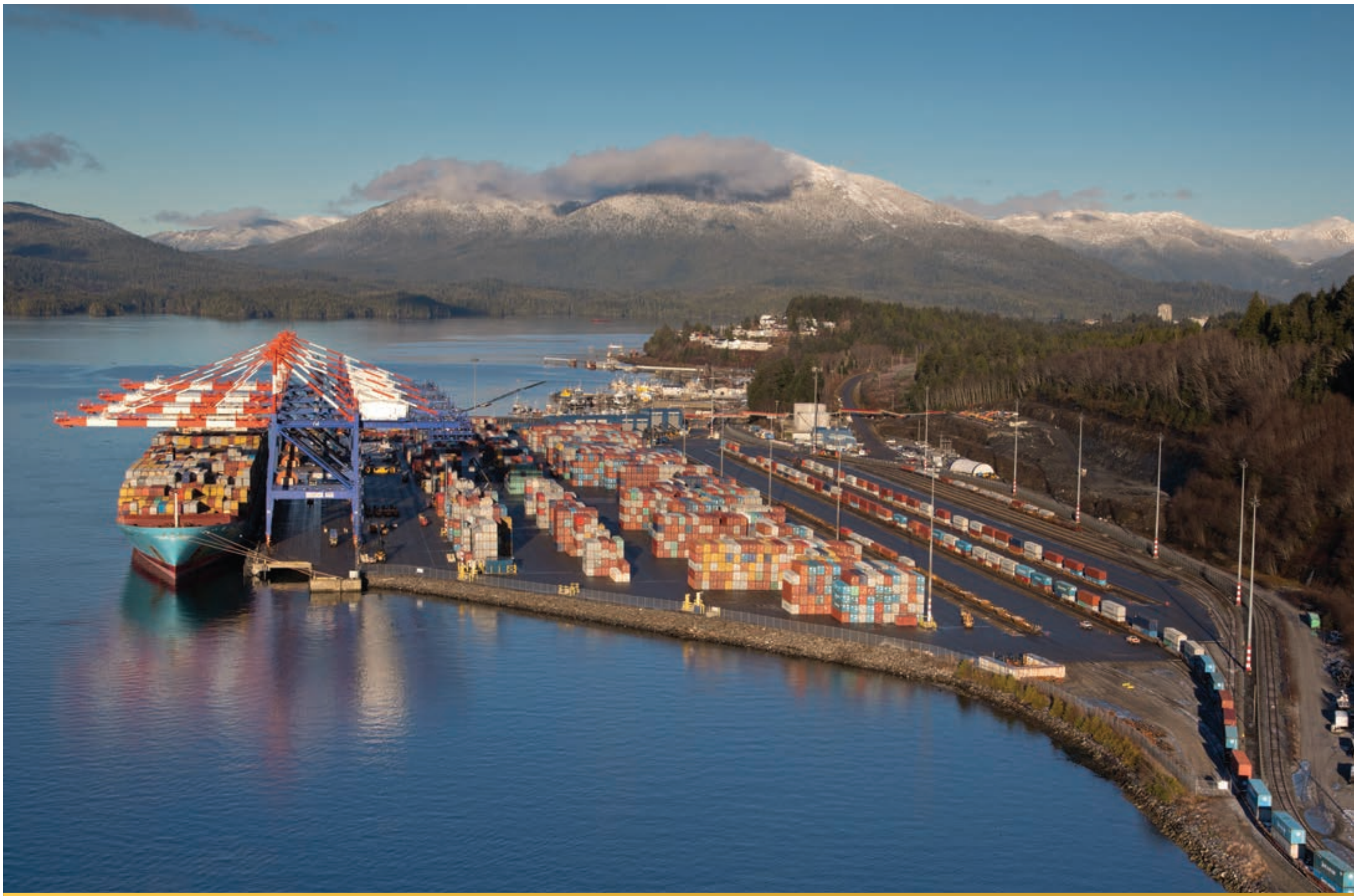

May 2016

PORT OF PRINCE RUPERT
LINKING A WORLD OF OPPORTUNITY

CN

DP WORLD
Prince Rupert

PRINCE RUPERT:
Evolution from remote fishing port into critical container shipping link

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TABLE OF CONTENTS

FIGURES

I. INTRODUCTION

As we drove into the Port of Prince Rupert on a rainy dawn in July 1967, our rattletrap 1959 Opel station wagon got a flat tire. My college roommate and I were on our way to work in Alaska that summer. Our jalopy was too dilapidated to make it up the unpaved Alaska-Canada Highway. We were heading into the port to catch the car ferry that would take us north to Haines Junction in Yukon.

A small fishing port, Prince Rupert looked healthy enough. Fishing trawlers dotted the harbor, and workers on the day's first shift were entering the fish cannery, where the trawlers could unload their catch. There was no sign of the decline that would threaten the lifeblood of this small port in the 1990s, when the collapse of fishing stocks decimated the fleet.

The cannery lingered on until last year, when Chinese competition finally forced its closure. The town's large paper and pulp mill closed long ago. The Fairview Terminal, a multipurpose breakbulk facility, had lost most of its pulp, steel and agricultural products and, most significantly, lumber business. "We at the port authority had a plan for what positions we were going to let go and at what point in time we were going to shut the lights off," said Don Krusel, president and CEO of the Prince Rupert Port Authority.

Fast forward 16 years and Prince Rupert has again become a critical port, thanks to the Fairview Container Terminal, whose 2007 opening ignited the

Fast forward 16 years and Prince Rupert has again become a critical port.

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port's rebirth. Despite the town having a population of only 14,000 and limited local import market, the terminal, now operated by DP World, has turned Prince Rupert into one of North America's fastest-growing container ports, and there's no sign of it slowing down. The terminal's first phase of development is nearing capacity, so a second berth is being built under Phase Two, which will almost double capacity when completed next year.

Prince Rupert's success provides a fascinating study of how the companies that made it work identified a market and found a way to meet each of their needs, while providing an essential link to importers and exporters in the U.S. Midwest and Canada.

II. THE CONTAINER TERMINAL: PRESENT AND FUTURE

Today, the town and port look very much like they did 49 years ago. It's still a small fishing village with new infrastructure built up around it, most visibly the four huge super-post-Panamax cranes towering over the berth at Fairview Container Terminal. Each is capable of handling a container vessel with 22 boxes across its beam.

That berth, built under Phase One of the project, was initially designed to handle an annual capacity of 500,000 20-foot-equivalent container units. The addition of a fourth crane increased that potential to 850,000 TEUs. Volume has grown so rapidly that the terminal's container throughput reached 776,312 TEUs in 2015 — including empties — an increase of 26 percent over 2014.

"We are nearing capacity, and we expect a double-digit gain again" in 2016, Krusel said. Yet the port has been able to manage the surge in demand for its services. "As we get closer to capacity, we seem to be doing better, because we are totally focused on the corridor and the logistics chain rather than on the terminal itself," he said. "We are working with CN to build train sets for certain inland rail ramps on the terminal."

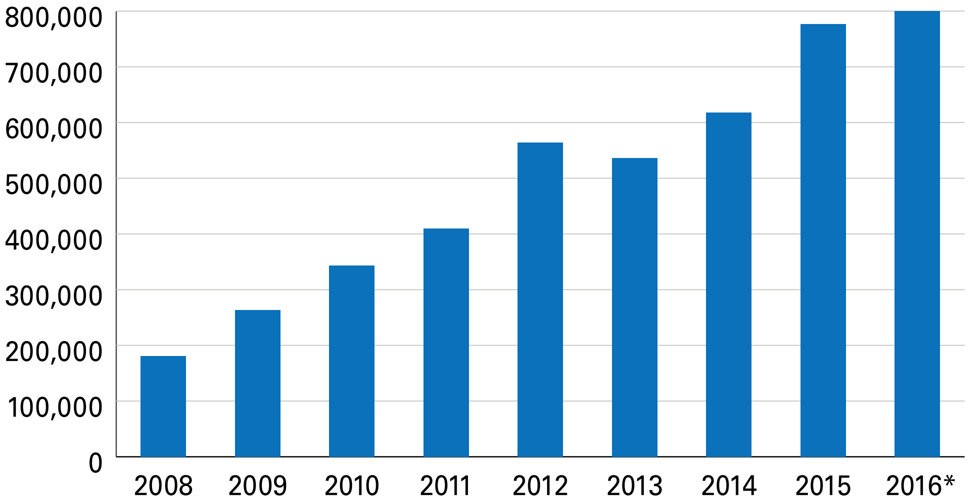
Diversions from U.S. West Coast ports clogged by labor slowdowns related to the extended negotiations for a new contract between the International Longshore and Warehouse Union and the Pacific Maritime Association boosted

FIG. 1 PRINCE RUPERT INTERMODAL TIMELINE

OCT. 31, 2007	2009	2011	2013	2014
First container vessel, the Cosco Prince Rupert, calls on Fairview Terminal.	Cosco adds second weekly service into Prince Rupert.	Hanjin adds weekly service.	Fourth crane added.	CN rail siding added near the terminal.

FIG. 2 PRINCE RUPERT'S CONTAINERIZED VOLUMES

Total volume in TEUs



** Forecasted.*
Source: Prince Rupert Port Authority

the terminal's volumes early last year, although the port doesn't attribute the growth to this. "We haven't really been able to discern how much of that growth last year was the result of the congestion problems, or how much of it was just simply competitive growth," Krusel said.

A softness in the Canadian market contributed to the year-over-year decline of volume growth at Fairview Terminal in the first quarter this year, according to data published on the Prince Rupert website. Imports of fully loaded containers dropped 3 percent from the same quarter last year, and loaded export containers dropped by 2 percent.

In the nine years since the container terminal opened, the number of container lines offering services to the port has grown from one — launch provider Cosco Container Lines — to 10, including those with direct calls and those that share

Q1 2015	Q3 2015	Q3 2015	Q1 2016	JULY 1, 2017
Construction begins on Fairview Terminal Phase 2 North expansion.	DP World acquires Fairview Terminal from Maher Terminals.	Maersk and MSC begin weekly service.	CMA CGM begins slot share with Cosco.	Expected completion of Fairview Terminal Phase 2 North expansion (Capacity in excess of 1.35 million TEUs).

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slots on other operators. The port gets four direct calls per week now, including two by Cosco, one by Hanjin Shipping and one by the 2M Alliance of Maersk Line and Mediterranean Shipping Co., which started last year. Prince Rupert is the first port of call for the Cosco and Hanjin services. The carriers with slot access include, among others, CMA CGM and Cosco's partners in the CKYHE Alliance: "K" Line, Yang Ming and Evergreen Line. Wan Hai Lines will start taking slots on Cosco's CEN service to Prince Rupert this summer.

Lines are hard-pressed to accept additional cargo until Phase Two is completed.

With the terminal's throughput nearing capacity, container lines are hard-pressed to accept additional cargo until DP World completes Phase Two of its expansion next year. "That's our biggest constraint," said Matthew Leech, senior vice president and managing director of the Americas region for the Dubai-based terminal operator, which acquired the Fairview Terminal in 2015. When the 2M Alliance started calling there last October, DP World had to restrict the number of containers it could offload. "We had a berth window, so we told Maersk and MSC that they could come in and start selling the gateway but that we needed to restrict how many boxes they were discharging into the terminal," Leech said. "As we free up more space at the terminal, we will expand that allocation."

A number of carriers are awaiting completion of the expansion to start calling Prince Rupert. "We have pretty strong commitments already, but nothing's lined up in the shipping alliance world today with everything that's going on," Leech said.

Even before the expansion is completed, DP World is moving to make sure the export containers it handles comply with container weighing requirements the International Maritime Organization will implement on July 1 under the amendment to the Safety of Life at Sea convention. It's installing scales at Prince Rupert to weigh outbound containers. "We're not intending to weigh everything coming through," Leech said. "This is only providing a service."

III. THE PRINCE RUPERT CONNECTION

How did the Port of Prince Rupert engineer such dynamic growth? There were three factors: the terminal, the rail line and the labor force.

Prince Rupert's existence has always been tied to the railroad. It was founded in 1910 as the western terminus for what was then the Grand Trunk Pacific Railway, and it was named for Prince Rupert of the Rhine, the first governor of Hudson's Bay Co.

Of the import and export containers Fairview handles, 95 percent move to and from the port by Canadian National Railway Co., the successor to Grand Trunk.

"CN runs the service to Chicago like a Swiss watch," said Walter Kemmsies, managing director, economist and chief strategist for Jones Lang LaSalle's U.S. ports, airports and global infrastructure group. "They go from Chicago to Prince Rupert and back on a very precisely and carefully managed time table. It is probably the best-managed train shuttle service in the world."

"CN runs the service to Chicago like a Swiss watch."

Kemmsies was formerly chief economist at Moffatt & Nichol when the consulting firm did the design and engineering plan for the Fairview Terminal. "Everything depended on CN's ability to deliver like hell," he said. "The railroad had a difficult service to manage, with thousands of miles of track to keep open and available, and the weather can be a serious factor."

On average, CN schedules two intermodal train arrivals and two intermodal train departures per day to and from Fairview Terminal, with an average of 14 train arrivals and 14 train departures per week. During peak season, that can increase to 16 outbound trains per week.

Fairview Terminal performs its own switching of container cars within the terminal, spotting, loading and offloading containers, as well as marshaling dedicated container trains to CN's specifications. The terminal has 12,000 feet of on-dock rail and 21 reach-stackers to do this work.

CN's formula for a smooth-running intermodal service lies in minimizing the time between unloading containers from a ship and loading them onto those railcars in one of the two daily trains destined for inland points. "We need to keep the dwell time on the container from ship discharge to train departure to two days," said Jean-Jacques Ruest, CN's executive vice president and chief marketing officer.

The key to minimizing dwell time is the exchange of electronic data between inbound carriers, the terminal and the railroad. CN receives from ocean carriers

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advance notice of incoming containers prior to their arrival at Prince Rupert. CN utilizes this information to identify the most efficient blocking of container cars by destination and provides that information to Fairview Terminal so its operating crews meet CN's blocking specifications. For export container moves, CN also blocks cars in such a way as to allow efficient transfer of containers from railcar to vessel.

This enables the terminal to unload and stack containers bound for Toronto in one stack and those for Chicago or any other Midwest destination in another, so those bound for the same location can be loaded on railcars together. "Even if we call it the Port of Prince Rupert, there's no freight in Prince Rupert, so we should call it the Port of Chicago, the Port of Toronto or the Port of Detroit, because that's really what you're aiming for," Ruest said.

IV. LABOR MAKES IT WORK

When the port authority began exploring the possibility of bringing containerized trade to Prince Rupert, the local longshore workforce had dwindled to fewer than 40. Most of those who previously worked at the port were forced to find work in Vancouver, a two-day drive to the south, where they would work in stints before returning to their families in Prince Rupert. They had to endure long periods away from home to support their families and pay their mortgages. "The lights were pretty much out at the Fairview Terminal," said Glenn Edwards, president of Local 105 of the International Longshore and Warehouse Union, whose members had lost their jobs at the terminal.

"When we came forward with a concept to bring containers to Prince Rupert, the longshoremen were all onboard," Krusel said. "Glenn (Edwards) appreciated the idea that the entire container traffic that would and could go through Prince Rupert was discretionary."

The port and its labor force had to prove they could move containers through the terminal and through the port quickly and efficiently to gain new business. "So they were as excited as we were to prove that Prince Rupert would be a successful logistics corridor for containers," Krusel said.

The port and labor had to prove they could move containers quickly to gain new business.

Since the terminal opened, the permanent membership in Local 105 has grown to 135. Another 300 casual members work the four days a week when containerships call. Almost half the workforce comes from the local First Nations community. "They were skeptical when we only got one call in 2007, but I told them they had to go and produce and the business would come," Edwards said of his union's members.

The number of hours union members worked in the port increased from 298,369 in 2010 to 646,061 last year. "I used to get complaints from members saying, 'When can I go to work?' " Edwards said. "Now the biggest complaint is, 'When can I get a day off?' "

When Phase Two is completed next year, the terminal likely will start getting two containership calls a day, which will add another 200 to 250 jobs.

V. BIRTH OF A CONTAINER TERMINAL

In the early 2000s, when the idea for building a new container terminal in Prince Rupert was born, the existing Fairview Terminal was handling dwindling volumes of forest products, steel, project cargo, specialty agricultural products and mineral concentrates. But it didn't have the equipment to handle containers. There was no local market for containerized imports — all container trade funneled through Vancouver or through U.S. West Coast ports. Prince Rupert had about 1,000 acres of waterfront land available for industrial development and an existing British Columbia Railway line operated by the province of British Columbia.

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When the port's business bottomed out, Krusel started looking at ways to generate more cargo volumes. "We knew that Prince Rupert certainly was not the destination of any containers," he said. "And so by necessity we had to plan right from the start that we were constructing a logistics chain."

VI. TERMINAL OPERATOR BUY IN

With only a concept in mind, the port authority started calling on terminal operators. "Don (Krusel) was pounding on people's doors," Edwards said. "I remember when he called me up to ask me to come meet with Brian Maher."

Maher, who was president and chairman of family-owned Maher Terminals at the time, saw the potential of building and operating a container terminal at Prince Rupert, the closest North American port to Northeast Asia by up to 58 hours of sailing time. This translates into the ability for ocean carriers to add approximately one round-trip voyage per year, per ship, which boosts their utilization of costly fixed assets with no increase in crewcosts. Prince Rupert's main channel has a depth of 115 feet, more than enough to accommodate the largest vessels dreamed of then and now. The deepest harbor in North America is also ice-free with no congestion and one of the safest West Coast ports, in terms of navigational risk factors.

"By necessity we had to plan right from the start that we were constructing a logistics chain."

Maher Terminals started working on a new concept with the port and CN, which also had tracks in the northwest portion of the province that would connect the port with its main lines to the U.S. and key Canadian markets.

"I remember sitting in our boardroom with CN and Maher engineers and consultants looking at a blank sheet of paper saying, 'OK, we are going to be building something where the container is going to be moving through from ship to rail and on … What does this look like? How do we build this so that those containers move through quickly and efficiently?' " Krusel said.

Maher Terminals, CN and the port authority came up with a plan to convert the old bulk and breakbulk Fairview Terminal into a C$530 million container facility that would be built in two phases on 150 acres of land. Under Phase One, which would cost C$180 million, the partners would build a single, 1,200-foot berth with a draft of 56 feet and annual capacity of 500,000 TEUs. The first part of Phase Two, which is underway, will add a second, 1,425-foot berth that will boost annual capacity to 1.3 million TEUs when completed in 2017. This new berth will have three more super-post-Panamax cranes, bringing the total to seven. The new cranes each have a 25-container-wide reach and are 50 feet taller than what are currently in use.

All of the parties involved recognized the modal shift that was happening and the importance of enabling trade between Asian markets and Canada. Agreements by CN and Maher to invest in the new terminal were matched by commitments by the federal and provincial governments, both keenly interested in the improvement of market access in the Asia-Pacific region for key Canadian export sectors of forestry and agriculture.

This partnership and investment by government, the Prince Rupert Port Authority and CN, with Maher investing in equipment, enabled the first phase of the project to proceed. Despite lack of commitments from any container lines to call, the partners went ahead with the plan because trans-Pacific container volumes were growing at double-digit rates and the ports of Los Angeles and Long Beach — the main gateways for imports from China — were experiencing congestion delays.

Phase One underway, executives continued to pitch the new terminal to container lines.

Maher ordered four super-post-Panamax cranes for the new terminal. In 2010, the company signed a supply chain collaboration agreement with CN and the port authority, setting specific targets and measures for continuous improvement in gateway performance. The agreement creates faster and more reliable supply chains and allows CN and its supply chain partners to offer competitive choices.

After it was acquired in 2007 by RREEF, an infrastructure investment unit of Deutsche Bank, Maher continued to operate the terminal. When the German

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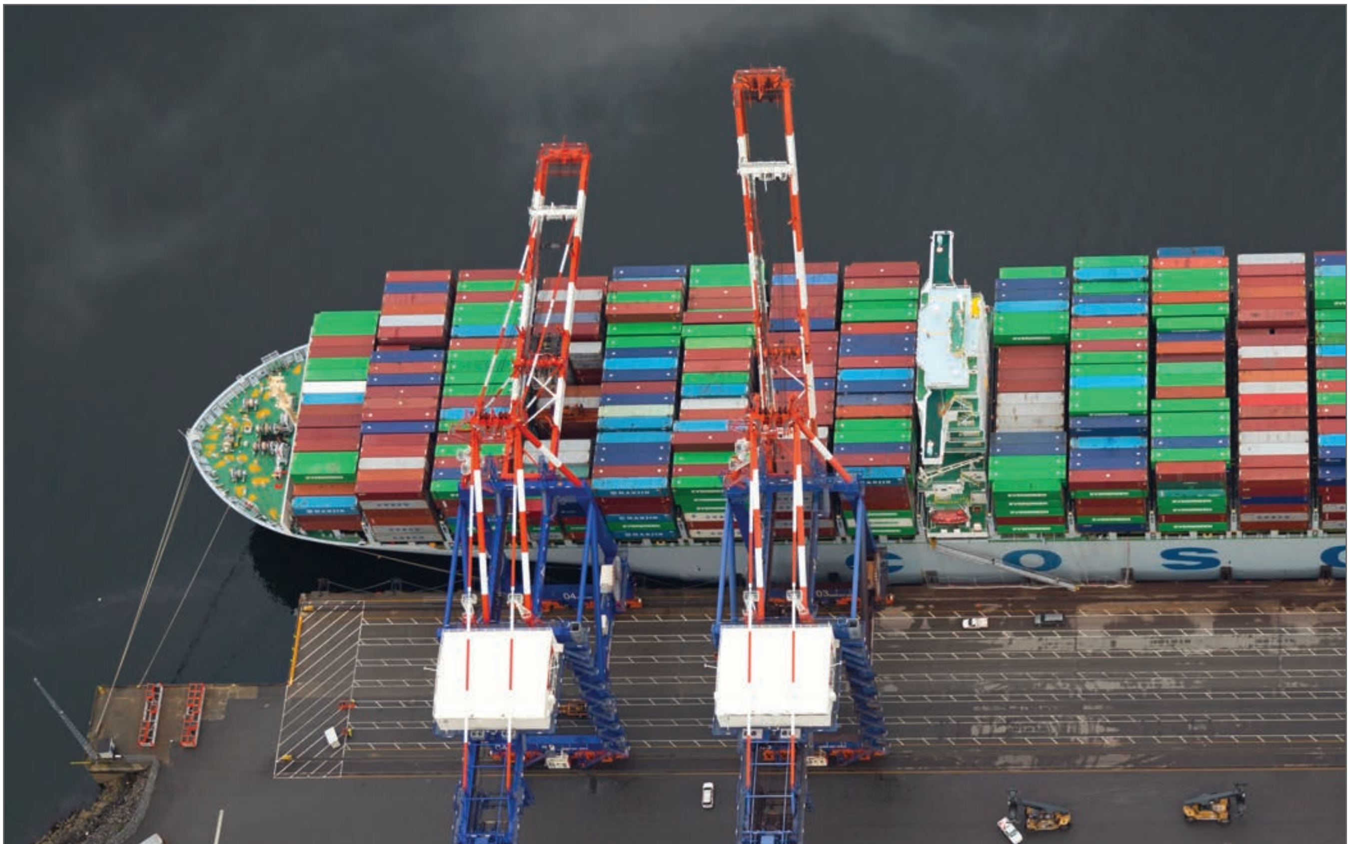

bank decided, last year, to get out of the terminal business, it sold the Fairview Terminal to DP World.

VII. COSCO COMMITS TO PRINCE RUPERT

With Phase One underway, Maher Terminals, CN and Prince Rupert executives continued to pitch the new terminal to container lines. In 2007, as the facility neared completion, Cosco signed up to call the facility. The Chinese carrier saw opportunity because some of its customers wanted to diversify away from congested Southern California ports. "Cosco took a leap of faith and made a market out of it," DP World's Leech said.

"There was a lot of criticism about going to a non-U.S. port with cargo that was going to be winding up going into the U.S., but some of our major U.S. importers requested that this call be established because they wanted the options," said Howard Finkel, executive vice president of the foreign trade division at Cosco Container Lines Americas. The terminal, he said, met and exceeded every expectation the Chinese carrier had when it made the decision, so much so that it has more business demand than it can meet until Phase Two is finished. "There's a finite amount of space there, so we can't grow too much. There certainly are more requests year after year to have a Prince Rupert option in the service contracts."

Cosco operates its CEN service to Prince Rupert as the first port of call with vessels in the 8,500-TEU range. It will soon deploy 13,000-TEU vessels on the route, Leech said. The service takes 11 days from Shanghai to Prince Rupert and on to Chicago via CN in 17 days. Ships on the CEN service then steam from Prince Rupert to Long Beach and Oakland, California, and back to Xingang in China.

VIII. HOW IMPORT VOLUMES GREW

When global container volumes fell for the first time in a decade during the 2008-2009 recession, the new terminal bucked the trend. Even as volumes at other North American ports flattened or declined, Prince Rupert's traffic grew. An initial reason was the cost savings — as much as $400 per container — provided to beneficial cargo owners moving goods from Rupert to the Midwest, over routing via Seattle and Tacoma.

"The 2009 recession really helped Prince Rupert," Kemmsies said. When it hit, and import demand tumbled, logistics managers were told to find a way to slash costs. Importers that tried the Prince Rupert gateway soon discovered its strength extended beyond cost savings to a successful conveyer belt model that moved goods quickly and efficiently, reducing total transit times and improving service reliability. It was this overall value proposition of speed and scheduling accuracy that reduced inventory carrying costs, as an example. "That enabled Prince Rupert to pick up a lot of cargo and gave it critical momentum just after it had opened," Kemmsies said.

During the 2008-2009 recession, the new terminal bucked the trend of falling volumes.

IX. FILLING THE BACKHAUL

The Fairview Container Terminal was conceived mainly to handle imports from Asia destined for the Midwest, but the planners always included exports as part of the mix. Western Canada, particularly British Columbia, has the highest concentration of forest products in North America. "When we first were planning and promoting the concept of Prince Rupert as a container gateway, the skepticism was that we would not be able to fill the containers for backhaul because we weren't in the metropolitan area," Krusel said. "But the reality is that we are getting good backhaul coming from as far away as the U.S. Midwest.

As a partner in the terminal's design, CN put strict requirements on shipping lines calling the port to find cargo for their containers when they bring them back for export to Asia. "The railroad is putting some very tight guidelines around matchback for every carrier," Leech said. "Those carriers have incentive to go out and find opportunities to fill boxes."

The carriers and the railway have benefited from the trend toward containerizing bulk commodity exports, which has been driven by low freight rates. This has

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fueled the growth of exports such as lumber and pulp from British Columbia and specialty grains from the Canadian prairies and the U.S. Midwest.

Approximately 300 miles east of Prince Rupert, CN operates an intermodal container yard in Prince George, which is a major producer of the forest products that are loaded into containers there for export both there and through the Fairview Terminal. "Fifty-nine percent of our export volumes come from British Columbia," Krusel said. "It's all lumber and wood pulp and panel boards and other forest products that are being stuck in containers both at Prince George and then at Prince Rupert."

X. WHAT SHIPPERS LIKE

From the beginning, the partners in the new terminal targeted BCOs as their customers as much as, if not more, than container lines. "We don't necessarily think of our customers as a container line. We're focused on the shippers, both North American import and export shippers," Krusel said. "Most of our dialogue has been with them and not so much with carriers. We have a lot of importers and exporters, and they're in discussions with the shipping lines."

"What's really good about the port is ... the predictability and consistency."

BCOs appreciate this attitude. "It's interesting that I think a port can have that sort of dynamic in dealing with the shipper as well as all the nuances and maybe how particular a shipper can be," said Pat Flynn-Cherenzia, global logistics and supply chain director, Microsoft. She has used the Fairview terminal since it opened and has watched it grow. "I've been with several different companies using Prince Rupert as a port of entry for about seven years. So I've seen it go from a little infantile, very customized, to now a very mature, very sophisticated but still very helpful, port."

Microsoft imports products from China through Prince Rupert, from where they move to other locations:

- By rail to its retail distribution centers in central Canada for its Canadian customers.
- By rail through Chicago to Memphis.
- By rail to Chicago and then by truck to distribution centers in Pennsylvania.

In some cases, it has moved import containers from Chicago on the backhaul to California. In Microsoft's experience, it usually takes 40 hours for the terminal to unload an inbound ship, and then import containers are loaded aboard eastbound CN trains within 24 hours.

"What's really good about the port is not necessarily the cost savings but the predictability and consistency," Flynn-Cherenzia said. "We have an exact time of arrival because we've already anticipated that we'll be cross-docking it and immediately moving it outbound. So getting it down precisely, almost to the minute, is really important for us. And that's why we choose to use that service. The other thing is, it's consistent regardless of the weather."

She lists the pros and cons of the Prince Rupert gateway:

- **PROS:** "We like the fast, reliable, consistent services. There is a financial savings as a result of doing that. We like the good use of the automation. I've been to the port, and there was no problem getting access in and out. The people there have been very good about working with us as opposed to laying out certain rules that I have to abide by. And then of course the cost savings and associated fees as a result."
- **CONS**: "There are limited container movements, so you only have certain vessel sailings. The callings are maybe only once or twice a week, so you have to take them into account when you do your ship scheduling. And then periodically, especially last year when everybody else jumped up to Prince Rupert, we did experience a little bit of port congestion. I think the port thought they had that aptly handled or anticipated, and they did get overwhelmed more than they anticipated, and for probably one month we experienced a little bit of a problem there. But when you think about one month of disruption in seven years, it wasn't too bad."

XI. DP WORLD PLANS FOR FUTURE EXPANSION

The expansion will bring capacity up to more than 2 million TEUs.

The growth of Prince Rupert's container trade has been so strong that DP World and the port authority are considering even more expansion of the port's current annual capacity of 850,000 TEUs. Plans underway will add 500,000 TEUs, for a total of 1.35 million-TEU capacity by July 1, 2017. An additional future phase being contemplated would bring total capacity above 2 million TEUs if approved.

The study of potential expansion will take into account forecasted trans-Pacific trade with the West Coast, current liner services and terminal demand when the current 1.3 million-TEU expansion project is completed next year. For its part, CN continues to invest in rail capacity improvements along its route from northern British Columbia to key markets in central Canada and the U.S. Midwest. CN also has invested in the Kaien long rail siding just outside of Fairview Terminal to help the railroad accommodate growth in container volumes with greater efficiency. CN plans to continue to invest in its intermodal network and terminal capacity to ensure fast, efficient handling of containerized cargoes.

By Peter T. Leach, Editor-at-Large, The Journal of Commerce, IHS

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